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Natura Impact Statement

Reference no.: 2534 Appropriate Assessment – Stage 2 Natura Impact Statement Laragan Soil Infill Site





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Client Name: DASK t/a Taylor construction & civil works

Site Address: Laragan, Collooney, Co Sligo

Project Type: Stage Two Natura Impact Statement

Date: 27/05/2025

Our Ref: 2534 Appropriate Assessment – Stage 2 Natura Impact Statement Laragan Soil Infill Site



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1 Introduction

1.1 Background

This report forms an Appropriate Assessment (AA) Screening Report which was prepared for the infill of soil in Laragan, Collooney, Co. Sligo.

The purpose of this Screening Report is to inform the AA process, which is carried out by the competent authority. Appropriate Assessment is an assessment of whether a plan or project, alone and/or in-combination with other plans or projects, may have significant effects on a European site, collectively known as the Natura 2000 network, in view of the site's conservation objectives.

This report provides information to assist the competent authority in undertaking a Screening Assessment of the proposed development and was informed by a desktop study undertaken by competent ecologists/environmental scientists at ESC Environmental Ltd in May 2025 (Peter McCormick B.Sc. (Hons)), and senior reviewed by Senior Consultants and Environmental Scientists Martijn Leenheer and Leo Cosgrove.

1.2 The Appropriate Assessment Process

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

The Screening Stage of the AA process identifies any likely significant effects upon European sites from the proposed development alone or in-combination with other projects or plans. A series of questions are asked during the Screening Stage of the AA process to determine:

- whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of a European site; and
- whether the project or plan will have a potentially significant effect on a European site, either alone or in-combination with other projects or plans, in view of the site's conservation objectives or if residual uncertainty exists regarding potential impacts.



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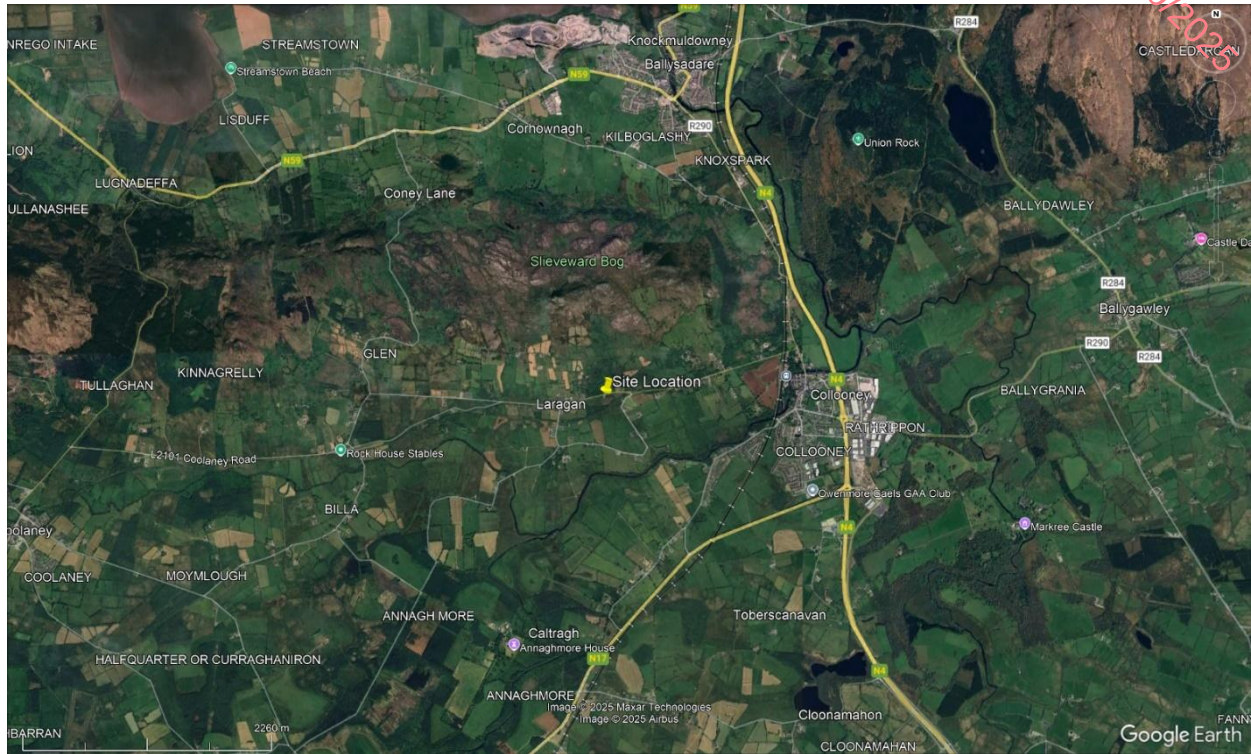


Fig. 1. Location of the Site

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2 Regulatory context

2.1 Relevant legislation

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.

Article 6 of the Habitats Directive provides a strict assessment procedure for any plan or project not directly connected with or necessary to the management of a designated European site but which has the potential to have implications for the site in view of the site's conservation objectives. Articles 6(3) and 6(4) of this Directive also call for the undertaking of an Appropriate Assessment for plans and projects not directly connected with or necessary to the management of, but which are likely to have a significant effect on any European designated sites (i.e. SACs and SPAs).

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

The 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 2015 and that status doesn't deteriorate in any waters.

Appropriate Assessment and the Habitats Directive

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

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

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4,

the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

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

Article 6(4) states:

"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

The provision for an Appropriate Assessment (AA) is transposed into Irish law by Part XAB of the Planning and Development Act 2010 (as amended). Section 177U (4) of the said Acts provides for screening for Appropriate Assessment as follows:

'The competent authority shall determine that an appropriate assessment of [...] a proposed development [...] is required if it cannot be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.'

Section 177U (5) provides as follows:

'The competent authority shall determine that an appropriate assessment of a [...] proposed development, [...], is not required if it can be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.'

An AA should be based on best scientific knowledge and the competent authority should ensure that expertise such as ecological, geological, and hydrological are utilised, where relevant.

The Court of Justice of the European Union (CJEU) has made a number of rulings in relation to AA, regarding when it is required, its purpose, and the standards it should meet. Consideration has been given to the evolution in interpretation and application of directives and national legislation arising from jurisprudence of the European and Irish courts, in respect of Article 6 of the Habitats Directive.

An important ruling from the Court of Justice of the European Union was made in the case "Eco Advocacy CLG v An Bord Pleanála and Keegan Land Holdings Limited ([2021] IEHC 265)". The Court of Justice of the European Union has concluded that standard design features, which have mitigating effects on sites protected under the Habitats Directive, and which have been incorporated into the design of the project can be considered at the screening stage of an Appropriate Assessment. It also confirms that this does not automatically require a Stage 2 Appropriate Assessment.

The Court of Justice of the European Union issued its decision on this issue on 15 June 2023 and stated as follows:

"...in order to determine whether it is necessary to carry out an appropriate assessment of the implications of a plan or project for a site, account may be taken of the features of that plan or project which involve the removal of contaminants and which therefore may have the effect of reducing the harmful effects of the plan or project on that site, where those features have been incorporated into that plan or project as standard features, inherent in such a plan or project, irrespective of any effect on the site"

In Ireland, the requirements of Article 6(3) and (4) of the Habitats Directive have been broadly transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), which has been amended by:

- European Union (Birds and Natural Habitats) (Sea-fisheries) Regulations 2013 (S.I. No. 290 of 2013)
- European Communities (Birds and Natural Habitats) (Amendment) Regulations 2013 (S.I. No. 499 of 2013)
- European Communities (Birds and Natural Habitats) (Amendment) Regulations 2015 (S.I. No. 355 of 2015)
- Planning and Development, Heritage and Broadcasting (Amendment) Act 2021 (Act No. 11 of 2021)
- European Union (Birds and Natural Habitats) (Amendment) Regulations 2021 (S.I. No. 293 of 2021)

This report has taken into consideration the relevant requirements of the Planning and Development Act, 2000 (as amended by the Planning and Development Act 2010).

2.2 Guidance

This report has been carried out using the following guidance (and relevant case law):

- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission [EC]2000).
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (EC, 2006).
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document, National Parks and Wildlife Service, Dublin (NPWS, 2012).
- Circular L8/08 – Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments. Department of Environment, Heritage and Local Government (DoEHLG, 2008).
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission (EC, 2018).
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government (DoEHLG, 2010).
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg (EC, 2007).
- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2001).

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



- The conservation status of a natural habitat is defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.
- The conservation status of a species is defined as the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its population.
- The integrity of a European site is defined as the coherent sum of the site's ecological structure, function, and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.
- Significant effect should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

2.3 Stages Involved in the Appropriate Assessment Process

There are potentially four stages in the AA process; the result of each stage determines the requirement for assessment under the next.

Stage 1: Screening / Test of Significance

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

Stage 2: Appropriate Assessment

Consideration is given if potential impact(s) of a project or plan could cause likely significant effects to the integrity of surrounding European sites, 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 likely significant effects have been identified, an assessment of the potential mitigation to avoid/reduce such impacts is required. A NIS is often produced at this stage to inform the AA which is undertaken by the competent authority. This stage is required where uncertainty of effect arises, or a potential effect has been defined which requires further procedures/mitigation to remove uncertainty of a defined impact.

Stage 3: Assessment of Alternatives

This stage of the potential process arises where adverse effects on the integrity of a European site cannot be excluded and examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. However, in circumstances where there will not be any adverse effects on any European site, the developer places no reliance upon this third stage of the process in the context of this application for planning permission for the proposed development.

Stage 4: Assessment Where Adverse Effects Remain

This is the derogation process of Article 6(4), which examines whether there are imperative reasons of overriding public interest [IROPI] for allowing a project to proceed where adverse effects on the integrity of a European site have been predicted. Compensatory measures must be proposed and assessed as part of this stage and the EU Commission must be informed of the compensatory measures. Again, the developer places no reliance upon this stage of the process in the context of the application for planning permission for the proposed development.

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3 Screening Assessment

3.1 Project and site description

The Appropriate Assessment is to assess the potential for impact on conservation objectives of nearby designated sites due a project consisting of the infill of soil on the site in Laran, Collooney, Sligo.

The project description is as follows:

"Development consisting of the filling / importation of approximately 11757 cubic metres of imported inert soil and stone material within an area of approximately 1.21 hectares at Laran Td., (E.D. Ballysadare East), Co. Sligo for DASK t/a Taylor construction & civil works. A Natura Impact Statement (NIS) will be submitted with the application. A separate application for a Certificate of Registration will also be lodged with Sligo County Council."

3.2 Existing Environment

3.2.1 Desk Studies

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

- National Parks and Wildlife Service - aerial photographs and maps of designated sites, information on habitats and species within these sites and information on protected plant or animal species; conservation objectives, site synopses and standard data forms for relevant designated sites;
- Environmental Protection Agency (EPA)- Information pertaining to water quality, geology and licensed facilities within the area;
- Ordnance Survey of Ireland (GeoHive) - access to spatial mapping data and metadata, including historical layers.
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area;
- Sligo County Council – Information on planning and planning history in the area, landscape characterisation;
- Water Matters – Catchment based information;
- HeritageMaps.ie – general background information relating to the study area
- GSI.ie- Information on water sources, geology, and mapping

3.2.2 Existing Environment

The site is located west of the townland of Collooney in Co. Sligo. The site is approximately 1.13 ha in area. The site is bordered by agricultural grassland on all sides. The local access road is situated to the north the site at Grid Ref (ITM): 566075, 826314. The habitat on the site is Improved Agricultural Grassland (GA1) according to "A Guide to Habitats in Ireland by Fossitt (2000). It is surrounded by mixture of Treelines (WL2) and Hedgerows (WL1).

The site is situated on flat land. The site is within the Sligo Bay (Catchment ID 35) Water Framework Directive catchment area and in the Owenmore [Sligo]_SC_040 Subcatchment. The site is situated within the Collooney

groundwater body (European Code: (IE_WE_G_0048). The nearest watercourse is the Ardcothen (EPA Code: 35A22). This is located on the southern boundary of the site.

The site has bedrock consisting of Sandstone, pebbly conglomerate from the Moy Sandstone Formation. The groundwater vulnerability is classed as Moderate while it is also classed as a poor aquifer. The soil is classed as mineral alluvium, with a subsoil of alluvium.

3.3 Overview of potential Impacts

The proposed development site is not located within or directly adjacent to any designated European site.

The site is in a rural area near Collooney. The project is to infill the site with soil to raise the ground level. There is no construction or demolition to be carried out as part of this project.

There is a river on the south side of the site which is vulnerable to the chance of siltation due to the deposition of soil on site. The importation of dust also has the potential to cause dust emissions to the atmosphere. As the project only consists of the import of soil these are the only potential impacts identified.

There is links via groundwater to some Natura sites identified however due to the nature of the project there is no potential for significant impacts to the sites.

3.3.1 Flood Risk

A Flood Risk Identification study was carried out for the site. The flood risk has been studied using info from Floodinfo.ie

The principal sources for flooding are rainfall or higher than normal sea levels. The principal pathways are rivers, drains, sewers, overland flow and river and coastal floodplains. Fluvial Flooding occurs due the rise in water levels from a river or other watercourses, Tidal Flooding occurs when the areas around the sea are inundated with seawater during a storm surge and Pluvial Flooding occurs as a result of rainfall-generated overland flow and includes overflowing drainage systems. There is no potential for tidal flooding on this site due to distance from the coast.

The main possible sources of fluvial flooding identified for this site is the Owenmore River, which is located south of the site. The main possible source of pluvial flooding are from excessive rainfall.

Flood event probabilities are referred to in terms of a percentage Annual Exceedance Probability, or 'AEP'. This represents the probability of an event of this, or greater, severity occurring in any given year. These probabilities may also be expressed as odds (e.g. 100 to 1) of the event occurring in any given year. They are also commonly referred to in terms of a return period (e.g. the 100-year flood), although this period is not the length of time that will elapse between two such events occurring, as, although unlikely, two very severe events may occur within a short space of time. The following table sets out a range of flood event probabilities for which fluvial and coastal flood maps are typically developed, expressed in terms of Annual Exceedance Probability (AEP), and identifies their parallels under other forms of expression.

The maps on Floodinfo.ie show the site is outside identified flood zones. It has also been identified that the site is not on the path of floodwater flows. It is 630 m from the 0.1% AEP flood zone of the nearest river.

Based on the information above, it is concluded that the site of the proposed development is not within any Flood Zones in accordance with the Planning System and Flood Risk Management Guidelines for Planning Authorities.

Pluvial flooding from surrounding areas is not expected to pose an issue. The new development should therefore not adversely impact on flooding and flood risk.

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3.4 Determination of the Likely Zone of Influence

Guidance in AA of plans and projects in Ireland notes that a distance of 15 km is recommended for the identification of relevant European sites in the case of plans. For some projects the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in-combination effects.

Using the source-receptor-pathway model an examination of the potential effects of the proposed development was undertaken (alone and/or in-combination) to identify what European sites, and which of their qualifying interests or special conservation interest species were potentially at risk. This was required to determine the Zone of Influence (Zol) for the proposed development.

It is vital that an assessment of potential source-pathway-receptor links is undertaken to assess potential impact links between the receptor (European sites) and source (proposed development) to establish the risk of any likely significant effects. Additional designated sites including proposed Natural Heritage Areas (pNHA's), Natural Heritage Areas (NHA's) and RAMSAR sites were also reviewed, as although they do not form part of the AA, they often provide important supporting functions to European sites.

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

3.5 Natura 2000 sites identified

In compliance with the Departmental Guidance, this screening assessment includes any Natura 2000 sites within or adjacent to the plan area, and any Natura sites within the Zone of Influence for the area (see Appendix 1), depending on the likely impacts of the plan and the sensitivities of the receptors. Due to the size, scale, and location of the site the Zone of Influence is determined to be 15 km. The Natura sites identified within a 15 km range of the site are listed in Table 1 & 2 with reference to full spatial illustration available in Appendix 1. Sites were evaluated for the potential of impacts arising, as an individual development or in combination with other plans or projects.



Table 1. List of Special Areas of Conservation within 15km of the site

Special Area of Conservation (SAC)	Distance to site	Pathway identified
Unshin River SAC (Sitecode: IE0001898)	0.6 km S	The project is connected via surface water and groundwater to the Natura site.
Union Wood SAC (Sitecode: IE0000638)	2.25 km NE	The project is connected via groundwater body to the Natura site.
Ballysadare Bay SAC (Sitecode: IE0000622)	3.4 km N	The project is connected via surface water and groundwater to the Natura site.
Lough Gill SAC (Sitecode: IE0001976)	7.7 km N	The project is connected via groundwater body to the Natura site
Templehouse and Cloonacleigha Loughs SAC (Sitecode: IE0000636)	8.2 km SE	The project has no connections to the Natura site via surface water or groundwater.
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Sitecode: IE0000627)	10.1 km N	The project has no hydrogeological links other than the marine.
Ox Mountains Bogs SAC (Sitecode: IE0002006)	12.4 km E	The project is connected via groundwater body to the Natura site.
Bricklieve Mountains and Keishcorran SAC (Sitecode: IE0001656)	14 km SE	The project has no connections to the Natura site via surface water or groundwater.
Knockalongy and Knockachree Cliffs SAC (Sitecode: IE0001669)	14.2 km NE	The project is connected via groundwater body to the Natura site.

Table 2. List of Special Protection Areas within 10 km of the site

Special Protection Areas (SPA)	Distance to site	Pathway identified
Ballysadare Bay SPA (Sitecode: IE0004129)	3.6 km N	The project is connected via surface water and groundwater to the Natura site.
Cummeen Strand SPA (Sitecode: IE0004035)	10.3 km N	The project has no hydrogeological links other than the marine.
Drumcliff Bay SPA (Sitecode: IE0004013)	14.4 km N	The project has no hydrogeological links other than the marine.

There are Nine SACs and three SPAs within the 15km range of the site. Seven of the identified Natura 2000 sites have hydrological/geographical pathways or connections. There are surface water and groundwater connections to the Unshin River SAC, Ballysadare Bay SAC and SPA. Groundwater connections to the Union Wood SAC, Lough Gill SAC, Ox Mountains Bogs SAC and the Knockalongy and Knockachree Cliffs SAC. There are no hydrogeological connections to Cummeen Strand/Drumcliff Bay SAC, Cummeen Strand SPA and Drumcliff Bay SPA other than the marine.



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3.5.1 Natura sites considered

Natura sites identified and considered in this screening assessment are presented in Table 3 on the next page.

Table 3. List of Natura sites considered for appropriate assessment screening, including distance to the proposed site and respective site qualifying interests.

Site name/code	Description of Potential Impacts	Site qualifying interests
Unshin River SAC	There is potential for impact due to the following reasons: - Nature of the project - Surface water pathways and groundwater pathways identified	<u>Annex I Habitats</u> - Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation [3260] - Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] - Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <u>Annex II Species</u> - Salmon (<i>Salmo salar</i>) [1106] - Otter (<i>Lutra lutra</i>) [1355]
Union Wood SAC	There is no potential for impact due to the following reasons: - Nature of the development - Lack of pathways for impact Despite there being a connection with groundwater there is no potential for impact on conservation objectives due to the project.	<u>Annex I Habitats</u> Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]



Ballysadare Bay SAC	There is potential for impact due to the following reasons: • Nature of the project • Surface water pathways identified via the Unshin River	<u>Annex II Species</u> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Humid dune slacks [2190] <u>Annex II Species</u> • Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>) [1014] • Harbour Seal (<i>Phoca vitulina</i>) [1365]
Lough Gill SAC	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact Despite there being a connection with groundwater there is no potential for impact on conservation objectives due to the project.	<u>Annex I Habitats</u> • Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <u>Annex II Species</u> • White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092] • Sea Lamprey (<i>Petromyzon marinus</i>) [1095] • Brook Lamprey (<i>Lampetra planeri</i>) [1096] • River Lamprey (<i>Lampetra fluviatilis</i>) [1099] • Salmon (<i>Salmo salar</i>) [1106] • Otter (<i>Lutra lutra</i>) [1355]
Templehouse and Cloonacleigha Loughs SAC	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact	<u>Annex I Habitats</u> • Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] • Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]



Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact	<u>Annex I Habitats</u> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] • Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] <u>Annex II Species</u> • Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>) [1014] • Sea Lamprey (<i>Petromyzon marinus</i>) [1095] • River Lamprey (<i>Lampetra fluviatilis</i>) [1099] • Harbour Seal (<i>Phoca vitulina</i>) [1365]
Ox Mountains Bogs SAC	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact Despite there being a connection with groundwater there is no potential for impact on conservation objectives due to the project.	<u>Annex I Habitats</u> • Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] • Natural dystrophic lakes and ponds [3160] • Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] • European dry heaths [4030] • Blanket bogs (* if active bog) [7130] • Transition mires and quaking bogs [7140] • Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] <u>Annex II Species</u> • Geyer's Whorl Snail (<i>Vertigo geyeri</i>) [1013] • Marsh Saxifrage (<i>Saxifraga hirculus</i>) [1528]



Bricklieve Mountains and Keishcorran SAC	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact	<u>Annex I Habitats</u> • Turloughs [3180] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] • Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>) [8120] <u>Annex II Species</u> • Marsh Fritillary (<i>Euphydryas aurinia</i>) [1065] • White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092]
Knockalongy and Knockachree Cliffs SAC	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact Despite there being a connection with groundwater there is no potential for impact on conservation objectives due to the project.	<u>Annex I Habitats</u> • <i>Trichomanes speciosum</i> (Killarney Fern) [1421]
Ballysadare Bay SPA	There is potential for impact due to the following reasons: • Nature of the project • Surface water pathways identified	<u>Annex II Species</u> • Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] • Grey Plover (<i>Pluvialis squatarola</i>) [A141] • Dunlin (<i>Calidris alpina</i>) [A149] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] • Redshank (<i>Tringa totanus</i>) [A162] • Wetland and Waterbirds [A999]
Cummeen Strand SPA	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact	<u>Annex II Species</u> • Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] • Oystercatcher (<i>Haematopus ostralegus</i>) [A130] • Redshank (<i>Tringa totanus</i>) [A162] • Wetland and Waterbirds [A999]
Drumcliff Bay SPA	There is no potential for impact due to the following reasons: • Nature of the project • Lack of pathways for impact	<u>Annex II Species</u> • Sanderling (<i>Calidris alba</i>) [A144] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] • Wetland and Waterbirds [A999]



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4 Identification of Likely Significant Effects

4.1 *Potential for Likely Significant Effects*

There are nine SACs and three SPAs within the 15km range of the site. Seven of the identified Natura 2000 sites have hydrological/geographical pathways or connections. There are surface water and groundwater connections to the Unshin River SAC, and the Ballysadere Bay SAC and SPA. There are groundwater connections and pathways available to the Union Wood SAC, Lough Gill SAC, Ox Mountains Bogs SAC and the Knockalongy and Knockachree Cliffs SAC. There are no hydrogeological connections to Cummen Strand/Drumcliff Bay SAC, Cummeen Strand SPA and Drumcliff Bay SPA other than the marine.

The potential impacts for the Natura sites have been identified in section 3.3. The majority of sites identified have been shown to not have any potential impacts from the project due to a lack of pathways.

Natura sites with groundwater connections have been identified however due to the distance from the project and type of activity being carried out on site there will be no potential impacts on groundwater.

There has been surface water connections identified with three of the Natura sites and due to the activity of the project there is the potential for impacts to these sites due to siltation from soil runoff.

During the project dust was identified as a potential impact. However, due to the topography of the site and surrounding areas, the trees and hedgerows act as a natural barrier the chance of significant impacts to nearby designated sites.

Due to the hydrogeological connections the potential impacts to designated sites have been studied in detail in the table below.



Table 4. Analysis of Potential Impacts on Conservation Objectives.

Natura 2000 site	Conservation Objective	Potential Impact
	<u>Annex I Habitats</u>	
Unshin River SAC	Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	The conservation objective for this habitat is to maintain favourable conservation conditions. The main potential for impact comes from the potential for surface water runoff from the site causing siltation of the watercourse. The degradation of the habitat can be attributed to a number of interrelated factors, including nutrient enrichment, siltation, low flows arising from drought and over-abstraction of groundwater, and unsuitable management practices according to the document "Hatton-Ellis TW, Grieve N & Newman J (2003). Ecology of Watercourses Characterised by <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> Vegetation. Conserving Natura 2000 Rivers Ecology Series No. 11. English Nature, Peterborough."
	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The location of the habitat is upstream of the confluence between the Owenmore River and the Unshin River. Due to this, there is no potential for any of the identified potential impacts to have an impact on this habitat.
	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The location of the habitat is upstream of the confluence between the Owenmore River and the Unshin River. Due to this, there is no potential for any of the identified potential impacts to have an impact on this habitat.
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The location of the habitat is upstream of the confluence between the Owenmore River and the Unshin River. Due to this, there is no potential for any of the identified potential impacts to have an impact on this habitat.



	<u>Annex II Species</u>	
Unshin River SAC	Otter <i>Lutra lutra</i>	The conservation objective for this species is to maintain favourable conservation conditions. The main potential for impact is via siltation of the surface water. Otters are particularly vulnerable to siltation as it causes disruption in the food supply of the otters. Without any mitigation measures it can be determined that there is a potential for impact on otters via siltation.
	Salmon <i>Salmo salar</i>	The conservation objective for this species is to maintain favourable conservation conditions. The potential for siltation of the river has potential for impact as Salmon need clean gravels for spawning. The rapid accumulation of sediments has detrimental effects on salmon's life cycle. The fact that the survival of eggs is dependent on a well-supplied oxygenated water through the streambed gravels, the seepage of fine sediments into spawning beds leads to suffocation of eggs. Once the eggs are hatched, the alevins need to make its way through the gravels to the open streams and if the intra gravel passages are blocked with fine sediments, the emerging fish are trapped. The potential for siltation has potential to impact Salmon.
	<u>Annex I Habitats</u>	
Ballysadare Bay SAC	Estuaries [1130]	The conservation objective for this habitat is to maintain favourable conservation conditions. The only potential impact from the project is siltation of the estuary. The extent of this habitat is usually determined by the tidal range in the estuary, and this will not be impacted by the development. Therefore this has no potential for significant impact.
	Mudflats and sandflats not covered by seawater at low tide [1140]	The conservation objective for this habitat is to maintain favourable conservation conditions. The only potential impact from the project is siltation of the estuary. The extent of this habitat is usually determined by the tidal range in the estuary, and this will not be impacted by the development. Therefore this has no potential for significant impact.
	Embryonic shifting dunes [2110]	The conservation objective for this habitat is to maintain favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The habitat is located c. 16.2 km downstream of the project. The main potential for impact is siltation of surface water. The scale of the project combined with the distance to the receptor habitat means that there is no potential for impact due to the proposed project.



Ballysadare Bay SAC	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The habitat is located c. 16.2 km downstream of the project. The main potential for impact is siltation of surface water. The scale of the project combined with the distance to the receptor habitat means that there is no potential for impact due to the proposed project.
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The habitat is located c. 16.2 km downstream of the project. The main potential for impact is siltation of surface water. The scale of the project combined with the distance to the receptor habitat means that there is no potential for impact due to the proposed project.
	Humid dune slacks [2190]	The conservation objective for this habitat is to restore favourable conservation conditions. This habitat has been mapped in the conservation objectives document for the SAC. The habitat is located c. 16.2 km downstream of the project. The main potential for impact is siltation of surface water. The scale of the project combined with the distance to the receptor habitat means that there is no potential for impact due to the proposed project.
	Annex II Species	
Ballysadare Bay SAC	Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>) [1014]	The conservation objective for this species is to maintain favourable conservation conditions. This species has been mapped in the conservation objectives document for the SAC. The species is located c. 16.2 km downstream of the project. The main potential for impact is siltation of surface water. The snail species is a terrestrial species and there is no potential for siltation from the project to impact this species
	Harbour Seal (<i>Phoca vitulina</i>) [1365]	The conservation objective for this species is to maintain favourable conservation conditions. The Harbour Seal is located all throughout the Ballysadare Bay SAC. The most important sites to the species are breeding sites, usually located on isolated islands or shorelines, moulting haul-out, and resting haul-out sites. The project has no potential for an impact on the health of any of these sites. Due to the nature of the development and the distance from the site to the areas used by the Harbour seal (c. 11 km) the potential for siltation is low, and the potential for impact is negligible as there is little potential for siltation to affect the seals at this distance.



	Annex II Species	
Ballysadare Bay SPA	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	The conservation objective for this species is to maintain favourable conservation conditions. This species winters here in Ireland, arriving in Ireland from Late August onwards. Relatively little roosting is carried out by this species on the site, and it has been found that the flocks were highly mobile between the estuary and terrestrial areas during the course of a day. The geese were found to utilise all suitable grasslands over the surrounding lands and at all states of the tide. There will be no habitat loss due to the proposed development, either terrestrial or marine. Therefore it has been deemed there is no potential for significant impact on the Brent Goose population due to the proposed development.
	Grey Plover (<i>Pluvialis squatarola</i>) [A141]	The conservation objective for this species is to maintain favourable conservation conditions. In Ireland, Grey Plovers occur as both passage and wintering birds and are thought to originate from Russian breeding populations. They mainly forage intertidally and have a characteristic mode of foraging whereby they stand motionless watching the mudflat surface before snatching a prey item from the sediment. It has been determined during the SAC examination that there is no potential for significant impact on the mudflats utilised by this species. Therefore it has been deemed there is no potential for significant impact on the Grey Plover population due to the proposed development.
	Dunlin (<i>Calidris alpina</i>) [A149]	The conservation objective for this species is to maintain favourable conservation conditions. Dunlin are a highly migratory wader species. Ireland has a small and declining breeding population of <i>Calidris alpina schinzii</i> which are believed to winter mainly in west Africa. Similar to other bird species in this table, the Dunlin are attracted to this site by the mudflats in the outer estuary, which are used for foraging. It has been determined during the SAC examination that there is no potential for significant impact on the mudflats utilised by this species. Therefore it has been deemed there is no potential for significant impact on the Dunlin population due to the proposed development.
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	The conservation objective for this species is to maintain favourable conservation conditions. Bar-tailed Godwits are a wader species considered characteristic of coastal wetland sites dominated by sand. The birds forage by probing within intertidal sediment for invertebrate species. The species mainly utilises the outer estuary and forages in the mudflats present at low tide. It has been determined during the SAC examination that there is no potential for significant impact on the habitats utilised for foraging by this species. Therefore it has been deemed there is no potential for significant impact on the Bar-tailed Godwit population due to the proposed development.



	Redshank (<i>Tringa totanus</i>) [A162]	The conservation objective for this species is to maintain favourable conservation conditions. Redshanks forage mainly by pecking at the surface or probing within intertidal mudflats; favouring the muddier sections of sites. It has been determined during the SAC examination that there is no potential for significant impact on the habitats utilised for foraging by this species. Therefore it has been deemed there is no potential for significant impact on the Redshank population due to the proposed development.
	Wetlands and Waterbirds [A999]	The conservation objective for this special conservation interest is to maintain favourable conservation conditions. Waterbirds are defined as „birds that are ecologically dependent on wetlands” (Ramsar Convention, 1971). The wetland habitats contained within this SPA are considered to be a Special Conservation Interest in their own right. The conservation of the wetlands for the waterbirds is closely linked with the habitats examined in the Malahide Estuary SAC. As there is no potential for impact on the habitats, there is no potential for impact on the Wetlands Special Conservation Interest.

4.2 Potential for Indirect Impacts

Due to the nature and location of the site there is no potential for significant indirect impacts on any European site identified.

4.3 Potential for In-Combination Effects

The characteristics of existing, proposed, or other approved plans or projects, which may result in in-combination effects with the proposed development and have likely significant effects on European site(s), were assessed. As there are no emissions that can have any impact on any European Site, there is no significant potential for in-combination effects.

5 Screening conclusions

There is no potential for impact on the conservation objectives of Ballysadare Bay SPA and Ballysadare Bay SAC due to the proposed project.

An in depth examination of the conservation objectives for Unshin River SAC, which shares a surface water connection to the site, concluded that there is potential for impacts to the conservation objectives of the Natura site due to siltation from soil being deposited at the site. The conservation objectives that have the potential to be impacted in the Unshin River SAC are:

- To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation.
- To maintain the favourable conservation condition of Atlantic Salmon (*Salmo salar*)

6 Stage II – Natura Impact Statement

6.1 Introduction

The main objective of this stage (Stage 2, Natura Impact Statement (NIS)) in the Appropriate Assessment process is to determine whether the proposed development, either alone or in combination with other plans, programmes and projects, will result in significant adverse impacts to the integrity of the nearby SACs and SPAs with respect to these sites structures, species, functions and/or conservation objectives. This stage also outlines the mitigation measures that should be taken in order to avoid any negative impacts of this application, should it receive consent.

In this section, the Natura 2000 site identified in the previous section will be described in greater detail in terms of its site characteristics and threats and pressures.

As was stated in Section 4 while Ballysadare Bay SAC and Ballysadare SPA were deemed to have surface water connections to the site. However, it has been concluded that due to the distance to the site and the characteristics of the species and habitats present at these Natura sites that siltation would not lead to any significant impacts as both sites are in a tidal estuary and estuaries are not at risk from siltation due to their nature. Therefore, the Ballysadare Bay SAC and SPA are not included in the NIS investigation as there is no potential for impact on the conservation objectives of this site.

6.2 Natura 2000 sites

6.2.1 Unshin River SAC

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

Table 5: Habitat composition of Unshin River SAC, including habitat classification and percentage cover

Habitat class	% Cover
N10: Humid grassland, Mesophile grassland	73.0
N06: Inland water bodies (Standing water, Running water)	6.0
N23: Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	1.0
N07: Bogs, Marshes, Water fringed vegetation, Fens	4.0
N20: Artificial forest monoculture	1.0
N14: Improved Grassland	1.0
N16: Broad-leaved deciduous woodland	11.0
N08: Heath, Scrub, Maquis and Garrigue, Phygrana	2.0
N07: Bogs, Marshes, Water fringed Vegetation, Fens	4.0
N09: Dry grassland, Steppes	1.0
Total cover:	100

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

There are a number of areas of woodland, many of which flood, included within the site. These wet alluvial woodlands are found on water-logged soils and species such as Alder (*Alnus glutinosa*), Ash (*Fraxinus excelsior*), willows (*Salix spp.*), Pedunculate Oak (*Quercus robur*) and birch (*Betula spp.*) are common. Occasionally, Lime (*Tilia sp.*) and Horse-chestnut (*Aesculus hippocastanum*) are found also. The ground flora is diverse in places, and species such as Meadowsweet (*Filipendula ulmaria*), Wild Angelica (*Angelica sylvestris*), Lesser Celandine (*Ranunculus ficaria*), Wood Anemone (*Anemone nemorosa*), Yellow Iris (*Iris pseudacorus*), Bracken (*Pteridium aquilinum*), Reed Canary-grass (*Phalaris arundinacea*), Soft Rush (*Juncus effusus*), Common Valerian (*Valeriana officinalis*), Bramble (*Rubus fruticosus agg.*), Enchanter's-nightshade (*Circaea lutetiana*), Purple Loosestrife (*Lythrum salicaria*), Golden Saxifrage (*Chrysosplenium oppositifolium*), Greater Tussock-sedge (*Carex paniculata*), Remote Sedge (*Carex remota*), Bottle Sedge (*C. rostrata*), Common Nettle (*Urtica dioica*), Hart's-tongue (*Phyllitis scolopendrium*), Broad Buckler-fern (*Dryopteris dilatata*) and Lady-fern (*Athyrium filix-femina*) are all found. A number of non-native shrub species, some of which are invasive, are found: Snowberry (*Symphoricarpos albus*), Rhododendron (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*). These wet grasslands are upstream along the Unshin River of the confluence between the Owenmore River and the Unshin River. Due to this, there is no hydrological connection between the proposed development and this priority habitat.

Table 11: List of most important known impacts and activities with high effect on Unshin River SAC.

Threats and Pressures	Rank	Internal/External
J02.10: Management of aquatic and bank vegetation for drainage	Low	Internal
I01: Invasive non-native species	High	Internal
A02.01: Agricultural intensification	Medium	Internal
B02: Forest and Plantation management & use	Medium	External
A04.02.02: Non intensive sheep grazing	Medium	Internal

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

The Unshin and its tributaries form a very important system for Atlantic Salmon, a species that is listed on Annex II of the E.U. Habitats Directive. The Owenboy/ Owenbeg river is the principle spawning and nursery tributary for the system's salmon fishery. The Unshin and its tributaries is the most important salmon producing river in Co. Sligo. The system also supports a good population of Trout. The Annex II species Otter has been recorded in and near this site. Two notable bird species which occur along the river are Whooper Swan, which feeds in the wet grasslands that flank the river, and Kingfisher. Both are listed on Annex I of the E.U. Birds Directive. The trophic status of the river increases downstream indicating that some enrichment is taking place.

However, the quality of the Unshin River and particularly its aquatic macrophyte communities, make it rare in both an Irish and European context, and it is considered one of the most pristine rivers in the country.

Table 12. List of Unshin River SAC qualifying interests and specific conservation objectives.

Site qualifying interests	Specific Conservation Objectives
Floating River Vegetation [3260]	The permanent area occupied by the river vegetation should be stable other than that occurring from natural patterns of variation
Orchid-rich Calcareous Grassland [6210]	The permanent area occupied by the river vegetation should be stable other than that occurring from natural patterns of variation
Molinia Meadows [6410]	The permanent area occupied by the river vegetation should be stable other than that occurring from natural patterns of variation
Alluvial Forests [91E0]	The permanent area occupied by the river vegetation should be stable other than that occurring from natural patterns of variation
Atlantic Salmon (<i>Salmo salar</i>) [1106]	Long term population trend stable or increasing; no significant decrease in the range, timing and intensity of use of areas by salmon, and it is the principle spawning and nursery tributary for the system's salmon fishery
Otter (<i>Lutra lutra</i>) [1355]	Long term population trend stable or increasing; no significant decrease in the range, timing and intensity of use of areas by otters, other than that occurring due to natural patterns of variation

7 Identification of potential impacts

The identification of potential impacts and the assessment of their significance typically require the identification of the type and magnitude of the impacts. For example, will the impacts be short term or long term, direct, indirect or cumulative and will they occur during construction or operation. This section will establish whether the impacts of the proposed soil depositing on Laragan Road, Collooney that were identified in the previous section, are likely to occur and whether or not they are significant.

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

- Water quality and habitat deterioration due to siltation from soil runoff from soil being deposited on site.
- Dust due to soil being deposited on site.

It should be noted that the site development and operation will not be carried out within any designated SAC or SPA site, lead to habitat loss, land-take or fragmentation of habitats. There will be no interference with the boundaries of any designated area and no infilling of any designated area will occur.

7.1 Siltation due to soil run off

There is a potential for significant short-term negative impact to the conservation objectives of the Unshin River SAC due to soil runoff from the site entering the Owenbeg river located to the south of the proposed site. These conservation objectives are:

- To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation.
- To maintain the favourable conservation condition of Atlantic Salmon (*Salmo salar*)

As both of these species are highly sensitive to changes in water quality conditions an increase in siltation of the river could have a negative impact on these species and conservation efforts.

7.2 Dust

As noted in Section 3.3, Overview of Potential Impacts, Dust was identified as a potential impact. However, due to the topography of the site and surrounding areas, the trees and hedgerows act as a natural barrier the chance of significant impacts to nearby designated sites. The mitigation measures provided in Section 8 to reduce soil runoff from the site may also reduce dust generated.

7.3 Other Plans or Projects in the Area

Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first; through persistent additions or losses of the same materials or resource, and second; through the compounding effects as a result of the coming together of two or more effects.

The potential for cumulative impacts is low due to the nature of the potential impacts. The only changes to be carried out on site will be the soil infill however due to the nature of the surrounding area and the sites location there is no potential for cumulative impact from other developments in the area.



8 Mitigation Measures

In order to avoid any significant impacts on the conservation objectives of nearby Natura 2000 sites, a number of mitigation measures must be fully implemented and followed. Measures have also been suggested that will help to protect the local biodiversity of the surrounding area and to ensure the protection of local wildlife.

8.1 Mitigation measures specific for Soil runoff and siltation

The Unshin River SAC is located close to the development site and it has been noted that there is a strong hydrogeological link via surface water to the Owenmore River running to the south of the site. Mitigation measures have been developed to prevent any potential contamination due to siltation to the nearby Natura designated sites. It is vital that there is no deterioration in water quality in the designated sites near the development. This will protect both habitats and species that are sensitive to pollution, especially siltation.

- Silt fences should be used to prevent any soil runoff from entering the southern waterway
- Natural solutions such as riparian buffer zones such as hedgerows should be considered to reduce soil in surface water runoff
- The soil will be placed and compacted in layers to prevent water ingress and degradation of the material
- Soil should not be deposited during heavy rainfall as this would lead to soil runoff.
- The 24 hour advance meteorological forecasting service from Met Éireann will be used.
- Release of suspended solids will be controlled by interception (silt trap) and management of site runoff. If there is a requirement to release water, it will be to grassed areas of low gradient to allow water to percolate to ground. The location and specification of the settlement areas will be agreed with a site ecologist.

8.1.1 Dust

The following measures will be undertaken to avoid or minimise negative effects to the surrounding area due to dust from soil being deposited on site:

- Soil should be moistened so it is slightly damp but not waterlogged as this will reduce dust being generated when the soil is deposited.
- Work should not be carried out during weather with high winds as this could disperse soil.
- The 24 hour advance meteorological forecasting service from Met Éireann will be used.
- Soil should be compacted as it is deposited to prevent loose soil from creating dust.
- While there are natural barriers such as hedgerows around the site dust barriers such as mesh fences should be considered to help reduce wind on site and catch dust.
- Once deposited soil should be undisturbed as this could lead to dust being generated.

9 Findings of no significant effects

Name of project: Natura Impact Statement for the infill of soil in Laragan, Collooney, Co. Sligo.

Name and location of Natura 2000 sites: There are nine SACs and three SPAs within the 15km range of the site. Seven of the identified Natura 2000 sites have hydrological/geographical pathways or connections. There are surface water and groundwater connections to the Unshin River SAC, Ballysadere Bay SAC and SPA. Groundwater connections to the Union Wood SAC, Lough Gill SAC, Ox Mountains Bogs SAC and the Knockalongy and Knockachree Cliffs SAC. There are no hydrogeological connections to Cummeen Strand/Drumcliff Bay SAC, Cummeen Strand SPA and Drumcliff Bay SPA other than the marine.

Description of project: The project consists of depositing soil on a greenfield site located at Laragan, Collooney, Co. Sligo.

Is the project directly connected with or necessary to the management of the site? Yes.

Are there other projects or plans that together with project being assessed could affect the site? No.

The assessment of significance of effects:

Describe how the project is likely to affect the Natura 2000 site:

- Deterioration of water quality in Unshin River SAC arising from siltation due to soil runoff from the site.
- Dust pollution due to soil being deposited at the site.

Explain why these effects are not considered significant: The strict mitigation measures outlined in this plan must be fully enforced to ensure that these impacts will not occur.

Describe how the project is likely to affect species designated under Annex II of the Habitats Directive. If the mitigation measures outlined in Section 5 are attached to any grant of planning permission and fully implemented, then any direct, indirect or cumulative impacts upon these species will be negligible.

Data Collected to carry out the assessment:

Who carried out the assessment: Peter McCormick, Environmental Scientist

Sources of data: NPWS, EPA, Groundwater Data Ireland, National Biodiversity Data Centre, Sligo County Council.

Level of assessment completed: Stage II Appropriate Assessment – Natura Impact Statement.

Where can the full results of the assessment be accessed and viewed: Full results included in this document



Appendix 1 – Supporting Maps

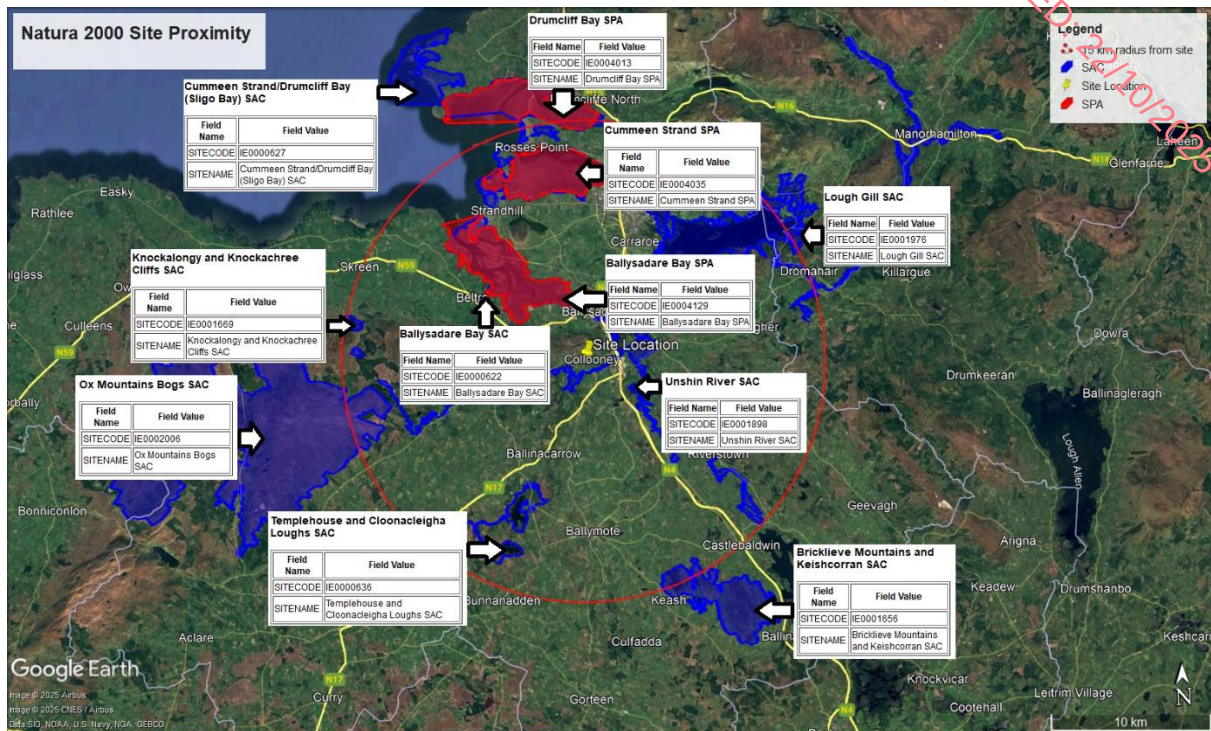


Figure 1: SACs and SPA relative to the site location
15km radius in red

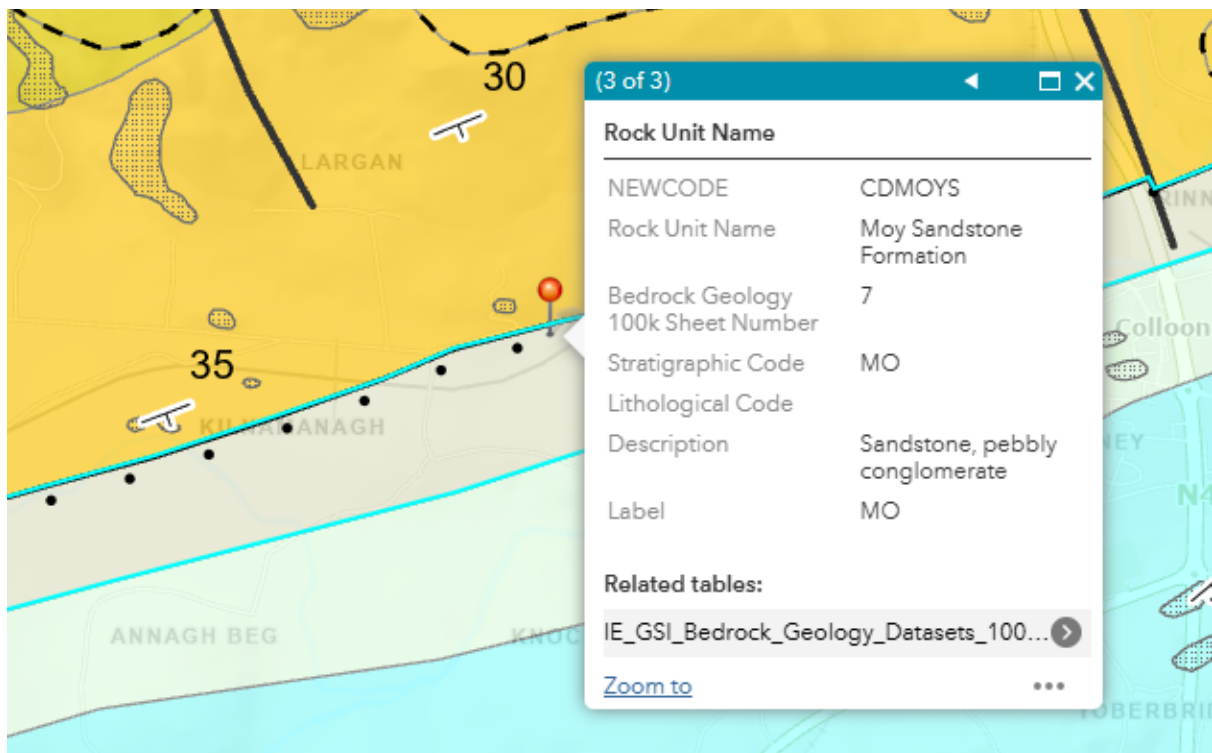


Figure 2: Bedrock Map

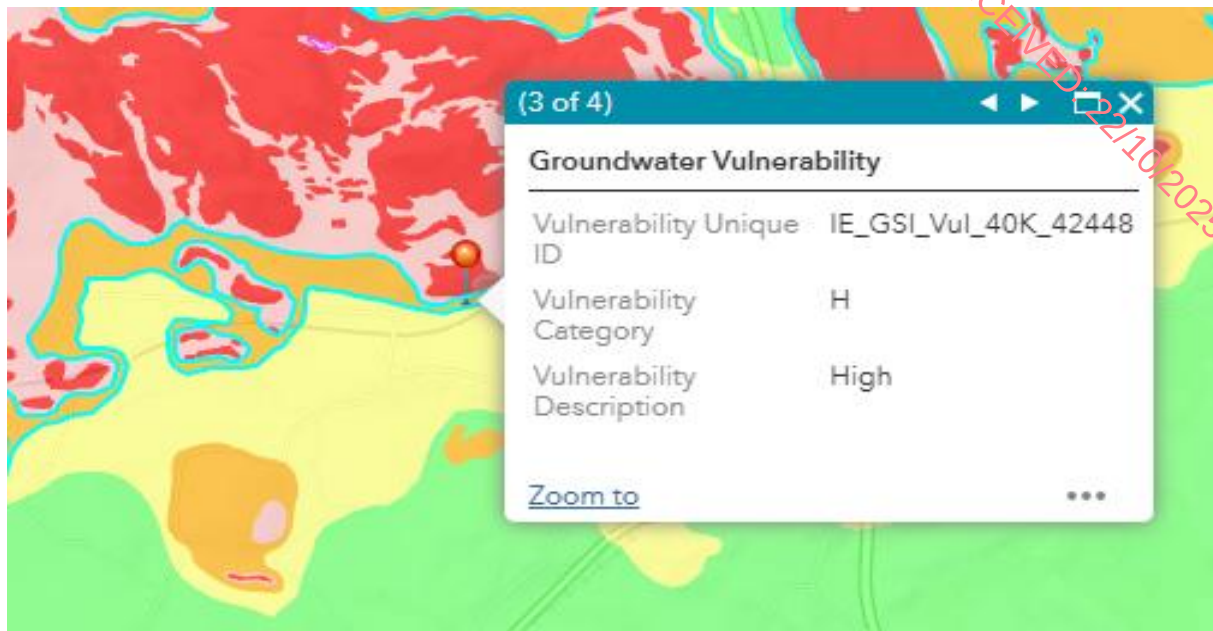


Figure 3: Groundwater Vulnerability Map



Figure 4: Groundwater Resources Map



Figure 5: Soil map

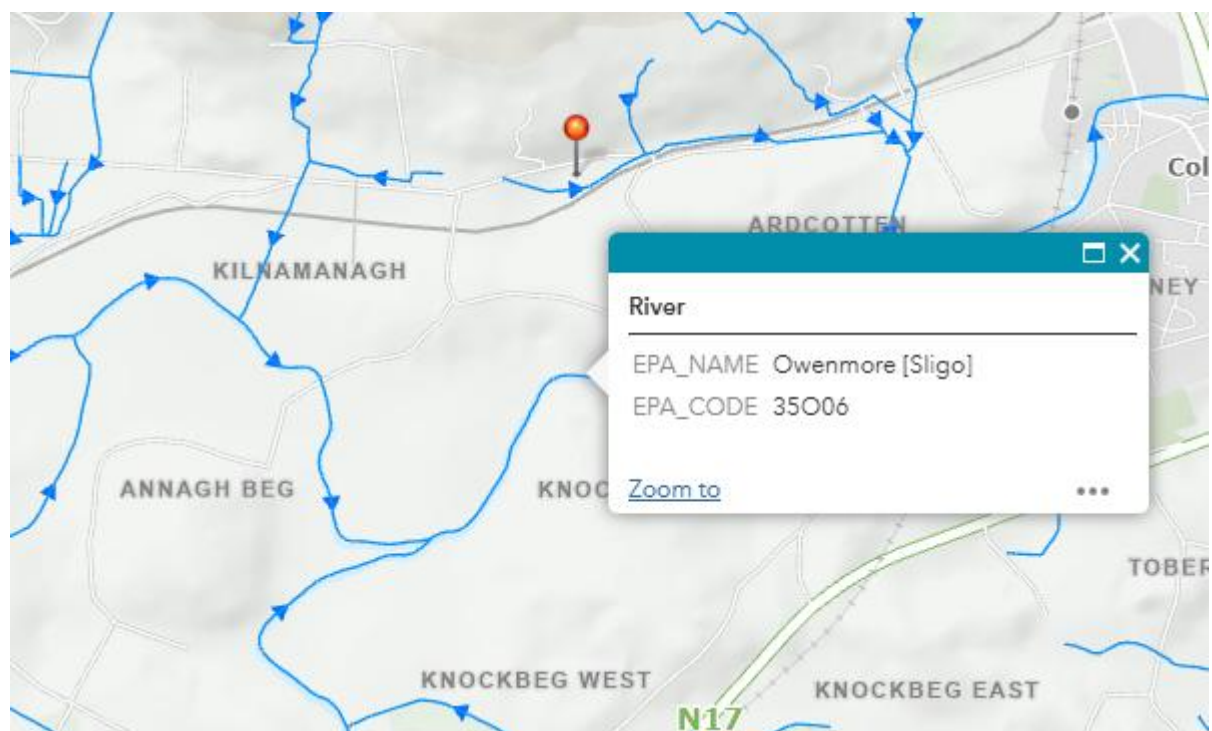


Figure 6: Surface water map



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Appendix 2: Conservation Objectives Document for Unshin River SAC

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National Parks and Wildlife Service

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Conservation Objectives Series

Unshin River SAC 001898



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreacht
Department of Housing,
Local Government and Heritage

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**National Parks and Wildlife Service,
Department of Housing, Local Government and Heritage,
90 King Street North, Dublin 7, D07 N7CV, Ireland.
Web: www.npws.ie
E-mail: natureconservation@housing.gov.ie**

Citation:

**NPWS (2021) Conservation Objectives: Unshin River SAC 001898. Version 1.
National Parks and Wildlife Service, Department of Housing, Local Government
and Heritage.**

**Series Editors: Rebecca Jeffrey and Christina Campbell
ISSN 2009-4086**

Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

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:

- 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.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

* indicates a priority habitat under the Habitats Directive

001898	Unshin River SAC
1106	Salmon <i>Salmo salar</i>
1355	Otter <i>Lutra lutra</i>
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
6410	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*

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Please note that this SAC is adjacent to Ballysadare Bay SAC (000622), Union Wood SAC (000638), Lough Arrow SAC (001673) and Lough Arrow SPA (004050). See map 2. The conservation objectives for this site should be used in conjunction with those for the adjacent sites as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	1992
Title :	Owenmore River Catchment. Proposed Arterial Drainage Environmental Impact Assessment - Botanical and Ornithological Surveys
Author :	Goodwillie, R.N.; Buckley, P.; Douglas, C.
Series :	Unpublished report
Year :	1996
Title :	River Unshin – macrophyte community. Notes of records made during May 1996 RHS surveys
Author :	Holmes, N.T.H.
Series :	Unpublished report to NPWS
Year :	2006
Title :	Otter survey of Ireland 2004/2005
Author :	Bailey, M.; Rochford, J.
Series :	Irish Wildlife Manuals, No. 23
Year :	2007
Title :	Supporting documentation for the Habitats Directive Conservation Status Assessment - backing documents. Article 17 forms and supporting maps
Author :	NPWS
Series :	Unpublished report to NPWS
Year :	2008
Title :	National survey of native woodlands 2003-2008
Author :	Perrin, P.M.; Martin, J.; Barron, S.; O'Neill, F.H.; McNutt, K.E.; Delaney, A.
Series :	Unpublished report to NPWS
Year :	2010
Title :	A provisional inventory of ancient and long-established woodland in Ireland
Author :	Perrin, P.M.; Daly, O.H.
Series :	Irish Wildlife Manuals, No. 46
Year :	2013
Title :	National otter survey of Ireland 2010/12
Author :	Reid, N.; Hayden, B.; Lundy, M.G.; Pietravalle, S.; McDonald, R.A.; Montgomery, W.I.
Series :	Irish Wildlife Manuals, No. 76
Year :	2013
Title :	Irish semi-natural grasslands survey 2007-2012
Author :	O'Neill, F.H.; Martin, J.R.; Devaney, F.M.; Perrin, P.M.
Series :	Irish Wildlife Manuals, No. 78
Year :	2013
Title :	Results of a monitoring survey of old sessile oak woods and alluvial forests
Author :	O'Neill, F.H.; Barron, S.J.
Series :	Irish Wildlife Manuals, No. 71
Year :	2018
Title :	The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats
Author :	Martin, J.R.; O'Neill, F.H.; Daly, O.H.
Series :	Irish Wildlife Manuals, No. 102

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Year : in prep.
Title : The monitoring and assessment of four EU Habitats Directive Annex I woodland habitats
Author : Daly, O.H.; O'Neill, F.H.; Barron, S.J.
Series : Irish Wildlife Manuals

Year : in prep.
Title : Floodplain and callows grasslands in Ireland
Author : Martin, J.R.; O'Neill, F.H.; Daly, O.H.
Series : Irish Wildlife Manuals

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Other References

Year : 1982
Title : Otter survey of Ireland
Author : Chapman, P.J.; Chapman, L.L.
Series : Unpublished report to Vincent Wildlife Trust

Year : 1991
Title : The spatial organization of otters (*Lutra lutra*) in Shetland
Author : Kruuk, H.; Moorhouse, A.
Series : Journal of Zoology, 224: 41-57

Year : 1993
Title : Notes on the flora of the Owenmore Catchment Cos Sligo (H28) and East Mayo (H26)
Author : Douglas, C.; Goodwillie, R.; Mooney, E.
Series : Irish Naturalists' Journal, 24(5): 218-220

Year : 2000
Title : A guide to habitats in Ireland
Author : Fossitt, J.A.
Series : The Heritage Council, Kilkenny

Year : 2002
Title : Reversing the habitat fragmentation of British woodlands
Author : Peterken, G.
Series : WWF-UK, London

Year : 2003
Title : Ecology of watercourses characterised by Ranunculion fluitantis and Callitriche-Batrachion vegetation
Author : Hatton-Ellis, T.W.; Grieve, N.
Series : Conserving Natura 2000 Rivers Ecology Series No. 11. English Nature, Peterborough

Year : 2006
Title : Otters - ecology, behaviour and conservation
Author : Kruuk, H.
Series : Oxford University Press

Year : 2010
Title : Otter tracking study of Roaringwater Bay
Author : De Jongh, A.; O'Neill, L.
Series : Unpublished draft report to NPWS

Year :	2010
Title :	Water Quality in Ireland 2007-2009
Author :	McGarrigle, M.; Lucey, J.; Ó Cinnéide, M.
Series :	Environmental Protection Agency, Wexford
Year :	2013
Title :	Management strategies for the protection of high status water bodies
Author :	Ní Chatháin, B.; Moorkens, E.; Irvine, K.
Series :	Strive Report Series No. 99. EPA, Wexford
Year :	2013
Title :	Interpretation manual of European Union habitats- Eur 28
Author :	European Commission- DG Environment
Series :	European Commission
Year :	2015
Title :	Water Quality in Ireland 2010-2012
Author :	Bradley, C.; Byrne, C.; Craig, M.; Free, G.; Gallagher, T.; Kennedy, B.; Little, R.; Lucey, J.; Mannix, A.; McCreesh, P.; McDermott, G.; McGarrigle, M.; Ní Longphuirt, S.; O'Boyle, S.; Plant, C.; Tierney, D.; Trodd, W.; Webster, P.; Wilkes, R.; Wynne, C.
Series :	Environmental Protection Agency, Wexford
Year :	2016
Title :	A narrative for conserving freshwater and wetland habitats in England
Author :	Mainstone, C.; Hall, R.; Diack, I.
Series :	Natural England Research Reports Number 064
Year :	2016
Title :	Irish Vegetation Classification: Technical Progress Report No. 2
Author :	Perrin, P.
Series :	Report submitted to National Biodiversity Data Centre
Year :	2017
Title :	Water Quality in Ireland 2010-2015
Author :	Fanning, A.; Craig, M.; Webster, P.; Bradley, C.; Tierney, D.; Wilkes, R.; Mannix, A.; Treacy, P.; Kelly, F.; Geoghegan, R.; Kent, T.; Mageean, M.
Series :	Environmental Protection Agency, Wexford
Year :	2019
Title :	Water Quality in Ireland 2013-2018
Author :	O'Boyle, S.; Trodd, W.; Bradley, C.; Tierney, D.; Wilkes, R.; Ní Longphuirt, S.; Smith, J.; Stephens, A.; Barry, J.; Maher, P.; McGinn, R.; Mockler, E.; Deakin, J.; Craig, M.; Gurrie, M.
Series :	Environmental Protection Agency, Wexford
Year :	2021
Title :	The Status of Irish Salmon Stocks in 2020 with Catch Advice for 2021
Author :	Gargan, P.; Fitzgerald, C.; Kennedy, R.; Maxwell, H.; McLean, S.; Millane, M.
Series :	Report of the Technical Expert Group on Salmon (TEGOS) to the North-South Standing Scientific Committee for Inland Fisheries

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Spatial data sources

Year :	2018
Title :	Grasslands Monitoring Survey 2015-2017
GIS Operations :	Dataset clipped to the SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	6210, 6410 (map 3)
Year :	2021
Title :	Floodplain and Callows Grasslands in Ireland
GIS Operations :	Dataset clipped to the SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	6410 (map 3)
Year :	Revision 2010
Title :	National Survey of Native Woodlands 2003-2008. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	91E0 (map 4)
Year :	2018
Title :	Woodland Monitoring Survey 2017-2018
GIS Operations :	QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	91E0 (map 4)

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Conservation Objectives for : Unshin River SAC [001898]

3260 Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachium* vegetation

To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachium* vegetation in Unshin River SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Kilometres	Area stable or increasing, subject to natural processes	Conservation objectives concentrate on the high conservation value sub-types of the habitat. Selection of the SAC was based on the vegetation communities of the Unshin River, which were described by Goodwillie et al. (1992) as of international importance, the Unshin being one of the few undrained limestone rivers in Ireland, and by Holmes (1996) as the 'best reach of a river for macrophytes ever experienced' having an 'unquestionably unique' combination of species. The SAC also includes much of the Owenbeg/Owenboy River and lower Owenmore. Goodwillie et al. (1992) described the site in detail. The Unshin flows out of Lough Arrow SAC, and Templehouse and Cloonacleigha Loughs SAC is upstream of the Owenboy on the Owenmore
Habitat distribution	Occurrence	No decline, subject to natural processes	As noted above, the habitat is distributed throughout the alkaline Unshin River, which has many slow-flowing, deep and meandering stretches and some faster-flows, including low-falls/cascades (Goodwillie et al., 1992; Douglas et al., 1993; Holmes, 1996). The Owenbeg/Owenboy is also in the SAC and is a more base-poor mountain river subject to spates (Goodwillie et al., 1992). The Owenbeg joins the Owenmore above Collooney and the Unshin joins below Collooney. Further study of Irish rivers is needed to interpret the broad description of habitat 3260 which covers from upland bryophyte/macroalgal dominated to lowland depositing rivers with pondweeds and starworts (European Commission, 2013)
Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes	The Unshin flows from spring-fed Lough Arrow, and Holmes (1996) considered that the lake has a stabilising influence on the river's flow regime, as does the significant base-rich groundwater input. Goodwillie et al. (1992) described the broad flow regime of the Unshin as slow-moving over much of its length, but with two steeper stretches with falls/cascades. Deep, ponded sections occur in peat, meandering stretches through alluvium and some faster stony reaches. By contrast, the Owenbeg rises in the Ox Mountains and is a spatey river. A series of waterfalls occurs near Collooney below the confluence of the Owenmore and Owenbeg/boy Rivers. A natural flow regime is required for both plant communities and channel geomorphology to be in favourable condition, exhibiting typical dynamics for the river type (Hatton-Ellis and Grieve, 2003)

Hydrological regime: groundwater discharge	Metres per second	Maintain appropriate hydrological regime	Carboniferous limestone and calcareous shale dominate the catchments and, as a result, groundwater makes a significant contribution to the rivers in the SAC, particularly the Unshin. As noted above, Holmes (1996) highlighted the stabilising effect of the significant base-rich groundwater input on the flow-regime of the Unshin, as well as its critical influence on the river's macrophytes. It is essential that the appropriate groundwater contributions necessary for the natural functioning of the habitat be maintained and that there is no significant disturbance of the catchments' groundwater regimes
Substratum composition: particle size range	Millimetres	Maintain appropriate substratum particle size range, quantity and quality, subject to natural processes	Goodwillie et al. (1992) described the Unshin, Owenbeg and Owenmore rivers. Fine particles dominate the slow-flowing Unshin, which also has stony stretches and bedrock cascades; peat occurs in the upper reaches. The Owenbeg has a gravel bed and peat is a significant feature of its valley. The Owenmore is flat, slow-moving, partly channelised and dominated by fine sediments. Although many high conservation value sub-types are dominated by coarse substrata and bedrock, certain sub-types, notably those associated with lake inflows/outflows, peatlands and groundwater inputs, such as those in this SAC, are dominated by fine substrata. The size and distribution of particles is largely determined by the river flow and geology. The chemical composition (particularly minerals and nutrients) of the substratum is also important. The quality of finer sediment particles is a notable driver of rooted plant communities
Water quality	Various	Maintain/restore appropriate water quality to support the natural structure and functioning of the habitat	Goodwillie et al. (1992) stated that the Unshin becomes more nutrient-rich as it approaches Collooney. Holmes (1996) also found, based on macrophyte trophic indicators, that the Unshin becomes more enriched as one moves downstream, and noted a significant deterioration below Newtown. By contrast, EPA Q values have generally improved in a downstream direction from Q3-4 or Q4 at Bellarush Bridge below Lough Arrow to Q4-5 at Ballygrania Bridge and, under the Water Framework Directive, a High Status objective applies to the lower Unshin. See also The European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2019, EPA river water quality reports (e.g. McGarrigle et al., 2010; Bradley et al., 2015; Fanning et al., 2017; O'Boyle et al., 2019) and Ní Chatháin et al. (2013)
Typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition	Typical species have not been fully defined but may include higher plants, bryophytes, algae and invertebrates. Goodwillie et al. (1992), Douglas et al. (1993) and Holmes (1996) recorded macrophytes in the Unshin. All highlighted the exceptionally high species-richness and importance of the community. Holmes (1996) hadn't encountered such rich and unusual combinations of river plants (e.g. <i>Apium inundatum</i> , <i>Littorella uniflora</i> , <i>Oenanthe fluviatilis</i> , <i>Potamogeton praelongus</i>) on the British Isles or Europe and the Unshin had >30% more species than rivers of similar type in GB and Ireland; other species recorded include <i>Cinclidotus sp.</i> , <i>Hygroamblystegium fluviatile</i> , <i>Pellia endiviifolia</i> , <i>Callitriche obtusangula</i> , <i>C. stagnalis</i> , <i>Hippuris vulgaris</i> , <i>Lemna minor</i> , <i>L. trisulca</i> , <i>Menyanthes trifoliata</i> , <i>Myriophyllum spicatum</i> , <i>Nuphar lutea</i> , <i>Potamogeton crispus</i> , <i>P. natans</i> , <i>P. pectinatus</i> , <i>P. praelongus</i> , <i>Ranunculus penicillatus</i> subsp. <i>penicillatus</i> , <i>Sparganium emersum</i> , <i>S. erectum</i>

Floodplain connectivity: area	Hectares	Maintain/restore the area of active floodplain at and upstream of the habitat	Holmes (1996) also recorded emergent and marginal species in the Unshin including <i>Berula erecta</i>, <i>Caltha palustris</i>, <i>Carex paniculata</i>, <i>Cicuta virosa</i>, <i>Comarum palustre</i>, <i>Geum rivale</i>, <i>Glyceria fluitans</i>, <i>Lysimachia vulgaris</i>, <i>Pedicularis palustris</i>, <i>Phalaris arundinacea</i>, <i>Phragmites australis</i>, <i>Ranunculus circinatus</i>, <i>R. flammula</i>, <i>R. lingua</i>, <i>Schoenoplectus lacustris</i>, <i>Typha latifolia</i>, <i>Veronica anagallis-aquatica</i>. River connectivity with the floodplain is important for the functioning of this habitat. Channels with a naturally functioning floodplain are better able to maintain habitat and water quality (Hatton-Ellis and Grieve, 2003). Floodplain connectivity is particularly important in terms of sediment sorting and nutrient deposition. High conservation value rivers are intimately connected to floodplain habitats and function as important wildlife corridors connecting otherwise isolated or fragmented habitats in the wider countryside (Hatton-Ellis and Grieve, 2003; Mainstone et al., 2016)
Riparian habitat: area and condition	Hectares	Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types	A number of areas of wet alluvial woodlands occur along the Unshin (see 91E0 objective in this volume). See Goodwillie et al. (1992) and Douglas et al. (1993) for information on the fringing habitats along the Unshin and Owenbeg/Owenboy Rivers, which included willow woodland, peatland, tall herb and reedgrass and reedswamp. Some of the riparian species recorded by Holmes (1996) are listed above. Riparian habitats are integral to the structure and functioning of rivers, even where not part of a floodplain. Fringing habitats contribute to the aquatic food web, provide habitat for life-stages of fish, birds and aquatic invertebrates, assist in the settlement of fine suspended material, protect banks from erosion and contribute to nutrient cycling. Shade may suppress algal growth and moderate temperatures. Equally, fringing habitats are dependent on rivers, particularly their water levels, and support wetland communities and species of conservation concern. See Mainstone et al. (2016)

Conservation Objectives for : Unshin River SAC [001898]

6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)

To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) in Unshin River SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Some areas supporting species-rich calcareous grassland were surveyed as part of the Irish Semi-natural Grassland Survey (ISGS; O'Neill et al., 2013) and the Grasslands Monitoring Survey (GMS; Martin et al., 2018) within the sub-site Cloonmacduff (site code 1541), located just east of Collooney. An area of 1.9ha of the habitat was mapped by the GMS (Martin et al., 2018). See map 3. It is important to note that further unsurveyed areas may be present within this large SAC
Habitat distribution	Occurrence	No decline, subject to natural processes	Distribution based on the GMS (Martin et al., 2018). See map 3. The main areas of this habitat at the Cloonmacduff sub-site (code 1541) appear to be along the slopes of the hillocks which pepper the site. Note that further unsurveyed areas of the habitat may be present within this large SAC
Vegetation composition: positive indicator species	Number at a representative number of 2m x 2m monitoring stops; within 20m surrounding area of monitoring stops	At least 7 positive indicator species present in monitoring stop or, if 5–6 present in stop, additional species within 20m of stop; this includes at least two 'high quality' positive indicator species present in stop or within 20m of stop	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018), where the lists of positive indicator species, including high quality indicators, are also presented. A small number of additional positive indicators for upland examples of this habitat are also provided (Martin et al., 2018). These documents should be consulted for further details. The areas mapped as 6210 at Cloonmacduff (1541) were noted by ISGS (O'Neill et al., 2013) to be species-rich, with good cover and spread of positive indicator species
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Negative indicator species collectively not more than 20% cover, with cover of an individual species not more than 10%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018), where the list of negative indicator species is presented
Vegetation composition: non-native species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of non-native species not more than 1%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Vegetation composition: woody species and bracken	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of woody species (except certain listed species) and bracken (<i>Pteridium aquilinum</i>) not more than 5%	Woody species that can occur above 5% cover are juniper (<i>Juniperus communis</i>), burnet rose (<i>Rosa spinosissima</i>), mountain avens (<i>Dryas octopetala</i>) and hoary rock-rose (<i>Helianthemum oelandicum</i>). However, cover of these species above 25% may indicate transition to another Annex I habitat such as Alpine and Boreal heaths (4060) or <i>Juniperus communis</i> formations (5130). Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Vegetation structure: broadleaf herb:grass ratio	Percentage at a representative number of 2m x 2m monitoring stops	Broadleaf herb component of vegetation between 40% and 90%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018). Broadleaf herb component of vegetation between 30% and 40% may be allowed to pass on expert judgement (Martin et al., 2018). Broadleaf herb cover was noted as being high at Cloonmacduff (1541) by the ISGS (O'Neill et al., 2013)
Vegetation structure: sward height	Percentage at a representative number of 2m x 2m monitoring stops	At least 30% of sward between 5cm and 40cm tall	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018). Sward height was low when the sub-site Cloonmacduff was surveyed by the GMS (Martin et al., 2018), due to sheep preferentially grazing drier parts of the sub-site (code 1541)

Vegetation structure: litter	Percentage cover at a representative number of 2m x 2m monitoring stops	Litter cover not more than 25%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Physical structure: bare soil	Percentage cover at a representative number of 2m x 2m monitoring stops	Not more than 10% bare soil	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Physical structure: grazing or disturbance	Area in local vicinity of a representative number of monitoring stops	Area of the habitat showing signs of serious grazing or disturbance less than 20m ²	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)

Conservation Objectives for : Unshin River SAC [001898]

6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*)

To restore the favourable conservation condition of *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*) in Unshin River SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Habitat area	Area stable or increasing, subject to natural processes	Some areas supporting <i>Molinia</i> meadows were surveyed as part of the Irish Semi-natural Grassland Survey (ISGS; O'Neill et al., 2013) and the Grassland Monitoring Survey (GMS; Martin et al., 2018) within the sub-site Cloonmacduff (grassland survey site code 1541), located just east of Collooney. Additional areas were surveyed in 2021 as part of a nationwide survey of floodplain grasslands (Martin et al., in prep.). The total area of habitat mapped in the SAC is 4.88ha. See map 3. It is important to note that further unsurveyed areas may be present within the SAC
Habitat distribution	Occurrence	No decline, subject to natural processes	Distribution based on Martin et al. (2018) and Martin et al. (in prep.). See map 3. Note that at Cloonmacduff (1541) some areas are intermixed with PF1 (rich fen and flush; Fossitt, 2000), while others grade into a more rank sward; the latter tends to be less species-rich, and not referable to the Annex vegetation type. Note that further unsurveyed areas of the habitat may be present within the SAC
Vegetation composition: positive indicator species	Number at a representative number of 2m x 2m monitoring stops; within 20m surrounding area of monitoring stops	At least 7 positive indicator species present in monitoring stop or, if 5–6 present in stop, additional species within 20m of stop; this includes at least one 'high quality' positive indicator species present in the stop or within 20m of stop	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018), where lists of positive indicator species are presented (consult for details). Note that purple moor-grass (<i>Molinia caerulea</i>) is a positive indicator species and should be present in at least one monitoring stop, or within 20m of a monitoring stop, for the attribute to pass (Martin et al., 2018). Note that Martin et al. (2018) mention two additional species which may be considered, should stops fail marginally on presence of indicators. High quality positive indicator species which have been recorded at Cloonmacduff (1541) include: meadow thistle (<i>Cirsium dissectum</i>), marsh hawk's-beard (<i>Crepis paludosa</i>) and western marsh-orchid (<i>Dactylorhiza majalis</i>). While the cover of positive indicators has been noted to be generally good in parts of Cloonmacduff, some areas are rank and dominated by soft rush (<i>Juncus effusus</i>) due to uneven grazing pressure (Martin et al., 2018)
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018), where the list of negative indicator species is presented
Vegetation composition: non-native species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of non-native species not more than 1%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Vegetation composition: moss species	Percentage cover at a representative number of 2m x 2m monitoring stops	Hair mosses (<i>Polytrichum</i> spp.) not more than 25% cover	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Vegetation composition: woody species and bracken	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of woody species and bracken (<i>Pteridium aquilinum</i>) not more than 5% cover	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)

Vegetation structure: broadleaf herb:grass ratio	Percentage at a representative number of 2m x 2m monitoring stops	Broadleaf herb component of vegetation between 40% and 90%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018). Broadleaf herb component of vegetation between 30% and 40% may be allowed to pass on expert judgement (Martin et al., 2018). Herb cover and diversity has been noted to be generally high at the Cloonmacduff site (1541), but some areas are rank and dominated by soft rush (<i>Juncus effusus</i>) due to uneven grazing pressure across the site (Martin et al., 2018)
Vegetation structure: sward height	Percentage at a representative number of 2m x 2m monitoring stops	At least 30% of sward between 10cm and 80cm tall	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Vegetation structure: litter	Percentage cover at a representative number of 2m x 2m monitoring stops	Litter cover not more than 25%	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Physical structure: bare ground	Percentage cover at a representative number of 2m x 2m monitoring stops	Not more than 10% bare ground	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)
Physical structure: grazing or disturbance	Area in local vicinity of a representative number of monitoring stops	Area of the habitat showing signs of serious grazing or disturbance less than 20m ²	Attribute and target based on O'Neill et al. (2013) and Martin et al. (2018)

Conservation Objectives for : Unshin River SAC [001898]

91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)*

To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* in Unshin River SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)* is present within Unshin River SAC. The surveyed habitat comprises numerous small stands, many of which are less than 1ha in area. As part of the National Survey of Native Woodlands (NSNW), the sub-sites Woodview Gate (Markree) (NSNW site code 523), Toberscanavan III (Markree) (528), Bridge (Coopershill) (530), Ardneaskan (Coopershill) (531), Isolated Woodland (Coopershill) (532), Coolbock Bridge (533), Fidwog (534), Knocknacross (535) and Closkeybridge (537) were surveyed by Perrin et al. (2008). Sub-site Fidwog (code 534) was also included in national monitoring surveys (O'Neill and Barron, 2013; Daly et al., in prep.). Map 4 shows the minimum area of alluvial forests within the SAC, which is estimated to be 8.87ha (Perrin et al., 2008; Daly et al., in prep.). It is important to note that further unsurveyed areas may be present within the SAC
Habitat distribution	Occurrence	No decline, subject to natural processes. The surveyed woodland areas are shown on map 4	Distribution based on Perrin et al. (2008) and Daly et al. (in prep.). It is important to note that further unsurveyed areas may be present within the SAC
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	The target areas for individual woodlands aim to reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions (Peterken, 2002). In some cases, topographical constraints may restrict expansion
Woodland structure: cover and height	Percentage; metres; centimetres	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%	The target aims for a diverse structure with a canopy containing mature trees, shrub layer with semi-mature trees and shrubs, and well-developed field layer (herbs, graminoids and dwarf shrubs) and ground layer (bryophytes). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013). Perrin et al. (2008) found the shrub layer and/or field layer to be poorly developed within a number of the alluvial forest sites surveyed within the SAC
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	Described in Perrin et al. (2008). See also the Irish Vegetation Classification (Perrin, 2016; www.biodiversityireland.ie/projects/ivc-classification-explorer)
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	The target species for 91E0* are alder (<i>Alnus glutinosa</i>), ash (<i>Fraxinus excelsior</i>) and willows (<i>Salix</i> spp.). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)
Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	Periodic flooding is essential to maintain alluvial woodlands along river and lake floodplains, but not for woodland around springs/seepage areas

Woodland structure: dead wood	Number per hectare	At least 19 stems/ha of dead wood of at least 20cm diameter	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem. Dead wood comprises old senescent trees, standing dead trees, fallen dead wood (including large branches) and rotten stumps of any tree species. Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)
Woodland structure: veteran trees	Number per hectare	No decline	Veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources
Woodland structure: indicators of local distinctiveness	Occurrence; population size	No decline in distribution and, in the case of red listed and other rare or localised species, population size	Includes ancient or long-established woodlands (see Perrin and Daly, 2010), archaeological and geological features as well as red listed and other rare or localised species. Parts of the alluvial forest habitat at Fidwog (NSNW site code 534) have been categorised as Long-established Woodland (I) i.e. they appear on the 1830s 1st edition Ordnance Survey maps but no further evidence of antiquity could be found in older documentation (Perrin and Daly, 2010). The tree lungwort lichen (<i>Lobaria pulmonaria</i>) was recorded at Woodview Gate (Markree) (site code 523) (Perrin et al., 2008). See also the conservation objective for otter (<i>Lutra lutra</i> ; Annex II species code 1355) in this volume
Woodland structure: indicators of overgrazing	Occurrence	All five indicators of overgrazing absent	There are five indicators of overgrazing within 91E0*: topiary effect on shrubs and young trees, browse line on mature trees, abundant dung, severe recent bark stripping, and trampling (Daly et al., in prep.). Perrin et al. (2008) noted that parts of Fidwog (NSNW site code 534) were grazed by cattle, and Closkeybridge (537) was grazed by sheep from adjacent pastures
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	The target species for 91E0* are alder (<i>Alnus glutinosa</i>), ash (<i>Fraxinus excelsior</i>) and willows (<i>Salix</i> spp.) (Daly et al., in prep.; O'Neill and Barron, 2013)
Vegetation composition: typical species	Occurrence	At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present	A variety of typical native species should be present, depending on woodland type. The target species for 91E0* are alder (<i>Alnus glutinosa</i>), ash (<i>Fraxinus excelsior</i>) and willows (<i>Salix</i> spp.). Positive indicator species for 91E0* are listed in Daly et al. (in prep.) and O'Neill and Barron (2013)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	Negative indicator species (i.e. any non-native species, including herbaceous species) should be absent or under control. Invasive non-native species are a significant pressure affecting the alluvial forests habitat within Unshin River SAC. The non-native trees beech (<i>Fagus sylvatica</i>), sycamore (<i>Acer pseudoplatanus</i>) and horse-chestnut (<i>Aesculus hippocastanum</i>) are present within the alluvial forests habitat (Perrin et al., 2008). Invasive non-native trees were problematic at the monitoring site at Fidwog (NSNW site code 534) (Daly et al., in prep.). Perrin et al. (2008) recorded dense areas of Rhododendron (<i>Rhododendron ponticum</i>) at Woodview Gate (Markree) (site code 523) and Toberscanavan III (Markree) (528). Close to the river bank at Ardneaskan (Coopershill) (531), the shrub layer was dominated by Japanese knotweed (<i>Reynoutria japonica</i>) and cherry laurel (<i>Prunus laurocerasus</i>)
Vegetation composition: problematic native species	Percentage	Cover of common nettle (<i>Urtica dioica</i>) less than 75%	Common nettle (<i>Urtica dioica</i>) is a positive indicator species for 91E0* but, in some cases, it may become excessively dominant. Increased light and nutrient enrichment are factors which favour proliferation of common nettle (Daly et al., in prep.). Perrin et al. (2008) noted that <i>U. dioica</i> was abundant in wetter areas at Closkeybridge (NSNW site code 537)

Conservation Objectives for : Unshin River SAC [001898]

1106 Salmon *Salmo salar*

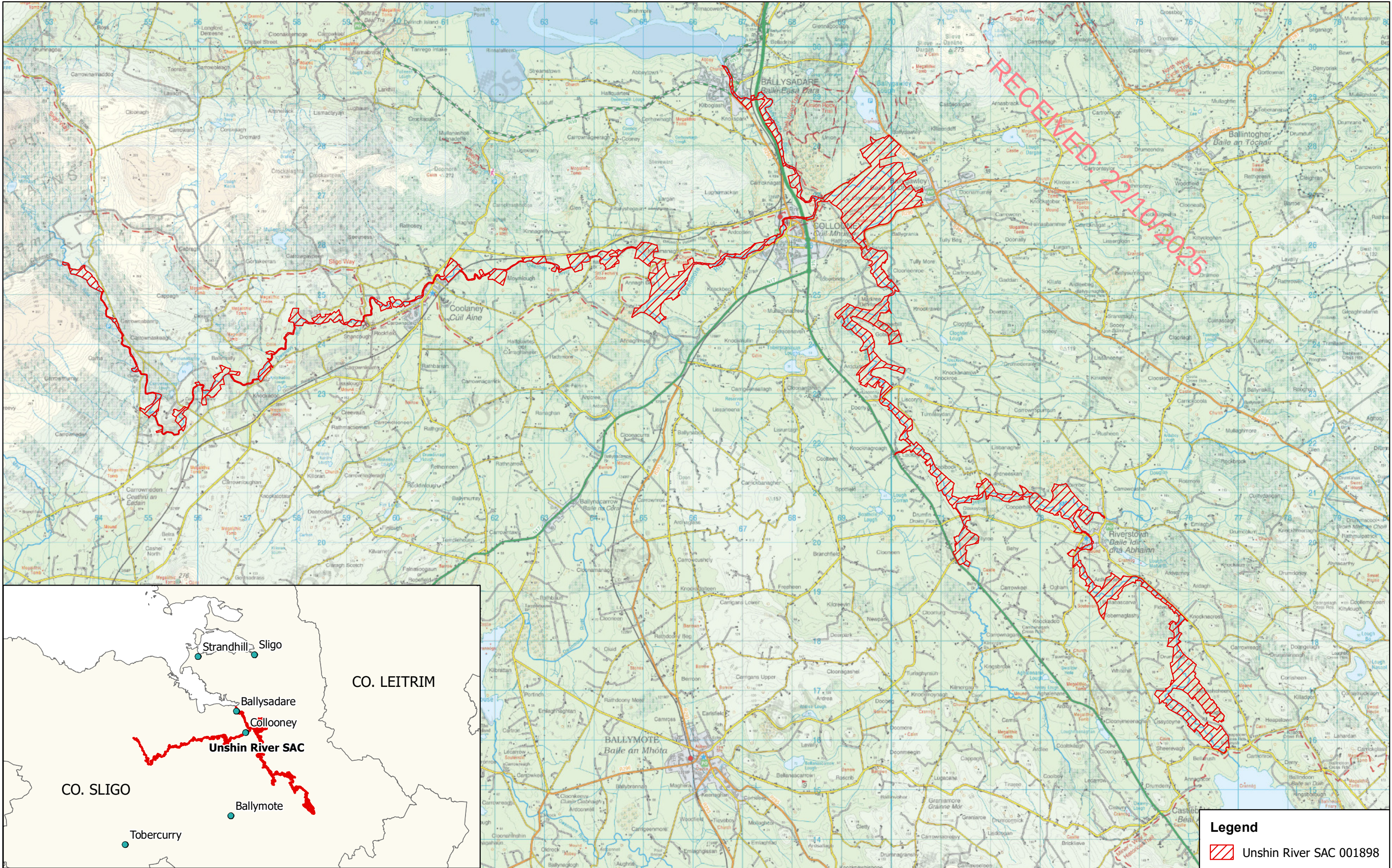
To maintain the favourable conservation condition of Atlantic Salmon (*Salmo salar*) in Unshin River SAC, which is defined by the following list of attributes and targets:

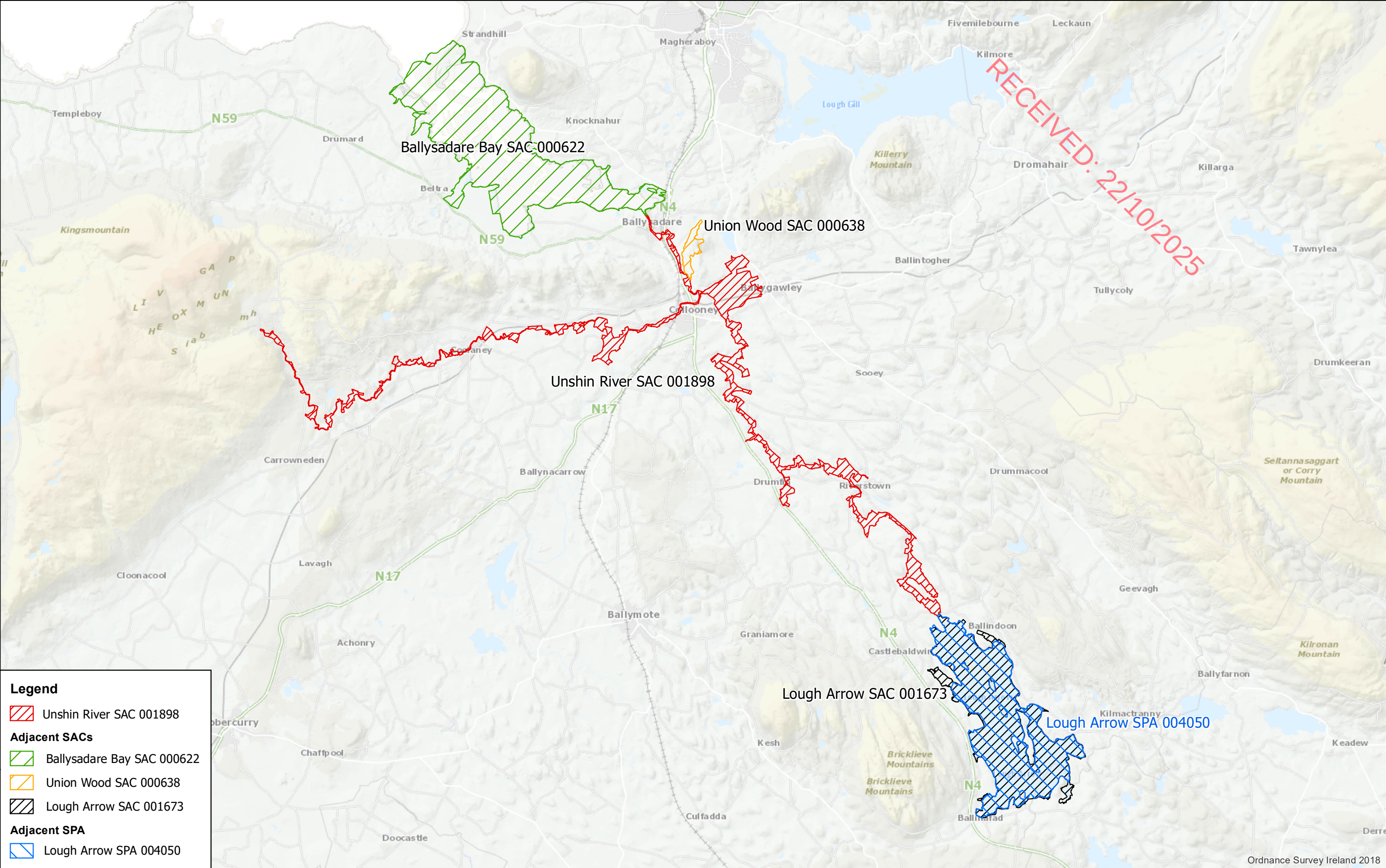
Attribute	Measure	Target	Notes
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmon's upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded	A conservation limit (CL) is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The target is based on the Technical Expert Group on Salmon's (TEGOS) annual model output of CL attainment levels. See Gargan et al. (2021) for further details. Stock estimates are either derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts. The Unshin River is part of the Ballysadare catchment and is currently above its CL for salmon
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	Target is threshold value for rivers currently exceeding their conservation limit (CL)
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (<i>Lepeophtheirus salmonis</i>)
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravels
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)

Conservation Objectives for : Unshin River SAC [001898]**1355****Otter *Lutra lutra***

To maintain the favourable conservation condition of Otter (*Lutra lutra*) in Unshin River SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 124.68ha	No field survey. Areas mapped to include 10m terrestrial buffer along river banks and around water bodies identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 66.55km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m. e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed





Legend

Unshin River SAC 001898

Adjacent SACs

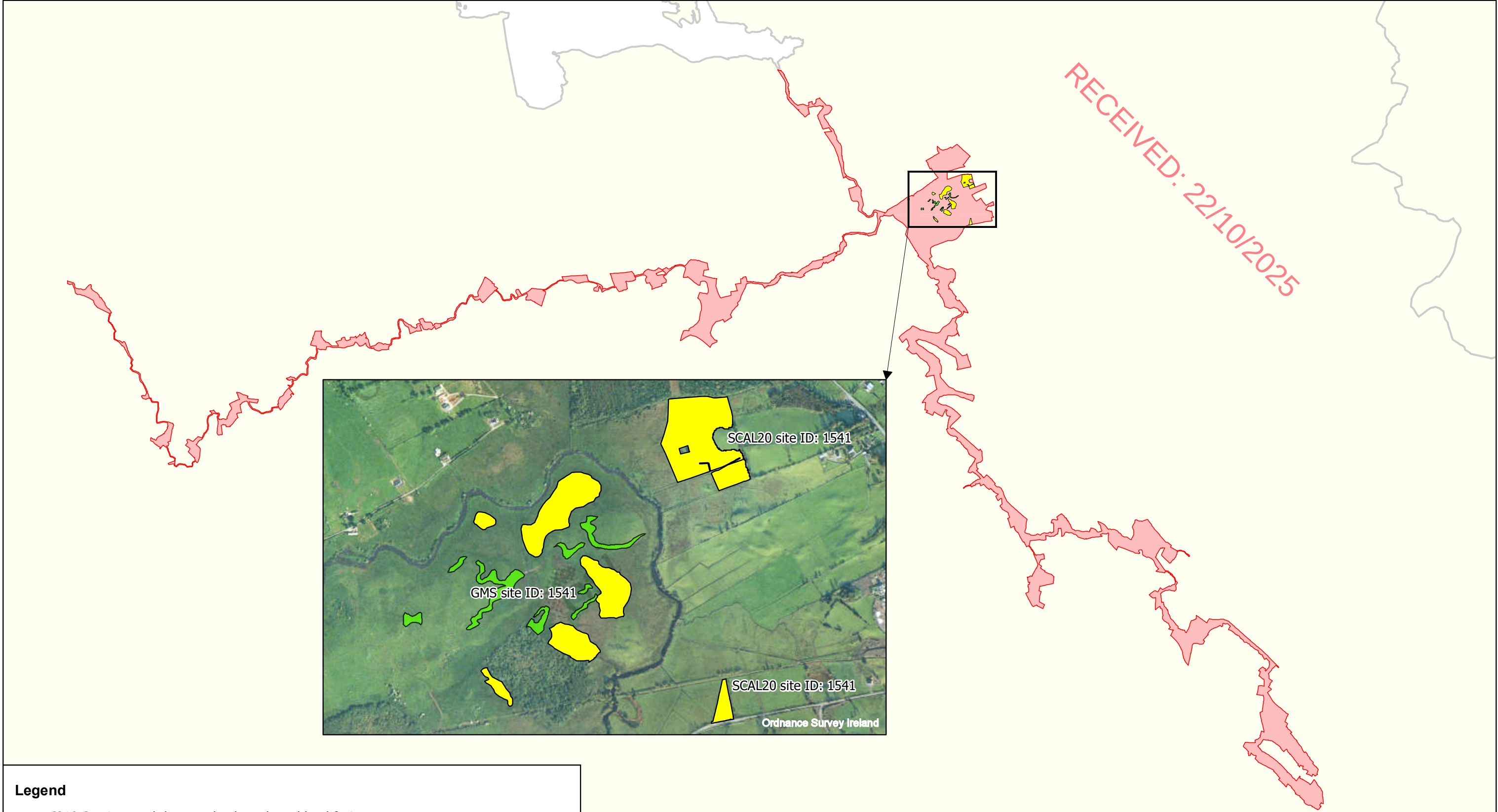
Ballysadare Bay SAC 000622

Union Wood SAC 000638

Lough Arrow SAC 001673

Adjacent SPA

Lough Arrow SPA 004050



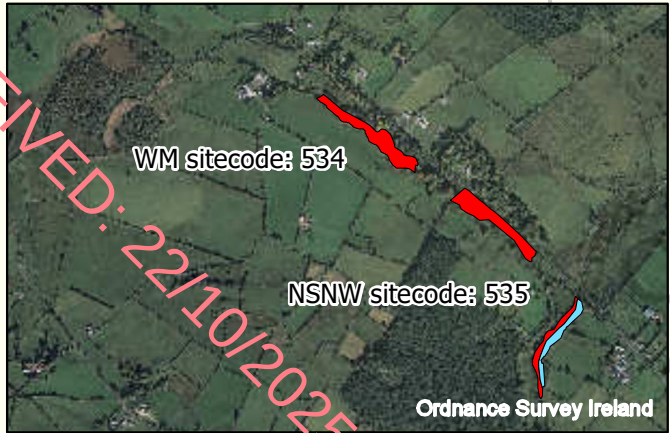
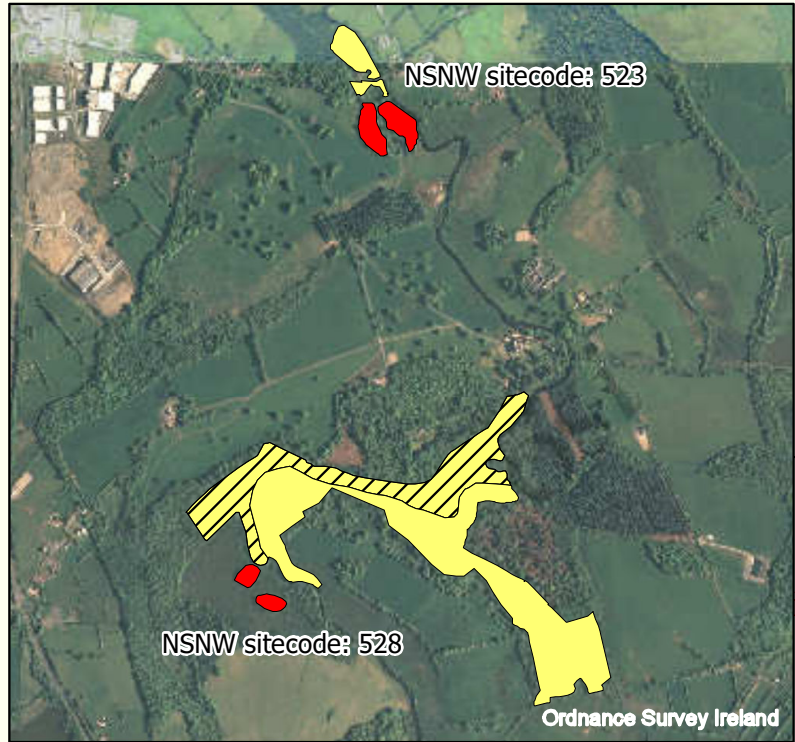
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6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates(*Festuco-Brometalia*) (* important orchid sites)

6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

Unshin River SAC 001898

OSI Discovery Series County Boundary



Legend

Annex woodland habitat
91E0 91E0 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-padion*, *Alnion incanae*, *Salicion albae*)

Non-Annex woodland habitats
WD1 (Mixed) broadleaved woodland
WD1 / WN6 (Mixed) broadleaved woodland / Wet willow-alder-ash woodland
WN2 Oak-ash-hazel woodland

Unshin River SAC 001898
OSI Discovery Series County Boundary