



Grid Implementation Plan
2017-2022
Natura Impact Statement



EIRGRID

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Grid Implementation Plan 2017-2022

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Glossary

Term	Definition
Annex I Habitat	A habitat listed in Annex I of the Habitats Directive.
Appropriate Assessment (AA)	An assessment carried out under Article 6(3) of the Habitats Directive of the implications of a plan or project, either individually or in combination with other plans and projects, on a European site in view of the site's conservation objectives.
Biodiversity	The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (UN Convention on Biological Diversity 1992).
Bird Directive	Council Directive 2009/147/EC on the conservation of wild birds.
Competent Authority	Public body provided for in the relevant legislation, who makes statutory determinations (e.g. in relation to Appropriate Assessment).
Conservation Objectives (CO's)	In the context of this report conservation objectives are discussed in relation to European sites. Some European sites have site specific conservation objectives (SSCOs) other European sites have generic conservation objectives. The National Parks and Wildlife Service (NPWS) are in the process of producing detailed conservation objectives for all European sites and their Qualifying Interests.
European Commission	The Commission of the European Communities.
European site	Any Special Area of Conservation or Special Protection Area. Also referred to as Natura 2000 sites.
Evidence Based Environmental Studies (EBES)	EirGrid produced a number of Evidence-based Environmental Studies (EBES). Based on the content and conclusions of the EBES, EirGrid commissioned and prepared Guidelines setting out a standard approach to environmental assessment of transmission projects.
Habitats Directive	Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive).
Likely Significant Effects (LSEs)	Term adapted from Article 6 (3) of the European Union Habitats Directive ("likely to have a significant effect"), describing the type of effects which, if identified as potentially arising as a result of a project or plan, trigger an Appropriate Assessment.
National Parks and Wildlife Service (NPWS)	The National Parks and Wildlife Service is fully integrated in the Heritage Division of the Department and has responsibility for the protection and conservation of Ireland's natural heritage and biodiversity at national government level.
Natura Impact Statement (NIS)	Term for the statutory report produced to inform the Appropriate Assessment of a plan by the Competent Authority.
Precautionary Principle	Implicit in the Habitats Directive is the application of the precautionary principle, which requires that the conservation objectives of Natura 2000 should prevail where there is uncertainty. This requires objectively demonstrating, with supporting evidence, that there will be no adverse effects on the integrity of the Natura 2000 site. Where this is not the case, adverse effects must be assumed.
Priority Habitat	Natural habitat types on Annex I of the Habitats Directive, and indicated by an asterisk (*), which are in danger of disappearance, and for which the Community has particular responsibility in view of the proportion of their natural range which falls within the territory.

Term	Definition
Priority Species	Species for the conservation of which the Community has particular responsibility in view of the proportion of their natural range which falls within the territory, these priority species are indicated by an asterisk (*) in Annex II of the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. At present, Ireland does not have any priority species.
Qualifying Interest (QI)	One of the features (habitat or species) that are the reasons for designation of a Special Areas of Conservation, identified in the Conservation Objectives for that site.
Special Conservation Interest (SCI)	Is the term used to refer specifically for bird species for which Special Protection Areas have been designated. These are also identified in the Conservation Objectives for the site.
Screening for Appropriate Assessment	The screening of a plan or project to establish if an Appropriate Assessment of the plan or project is required. Unless the screening assessment can establish that there is no potential for Likely Significant Effects on a European site, then an Appropriate Assessment must be carried out.
Special Areas of Conservation (SACs)	Are sites designated under European Communities Directive 92/43/EEC known as the 'Habitats Directive'. This requires the conservation of important, rare or threatened habitats and species (not birds, which are protected by Special Protection Areas) across Europe.
Special Protection Area (SPAs)	Are sites designated under the European Communities Directive 79/409/EEC, known as the 'Birds Directive', to conserve the habitats of certain migratory or rare birds.
Strategic Environmental Assessment (SEA)	A Strategic Environmental Assessment is an environmental assessment of plans and programmes to ensure a high-level consideration of environmental issues in the plan preparation and adoption, and is a requirement provided for under the Strategic Environmental Assessment directive [2001/42/EC]. The Strategic Environmental Assessment and Appropriate Assessment are undertaken in tandem with the drafting of a plan.
Transmission Development Plan (TDP)	The Transmission Development Plan 2016-2026 is the plan for the development of the Irish transmission network and interconnection over the ten years from 2016, this is updated annually.
Zone of Influence (Zoi)	Term used widely in environmental assessments. The Zone of Influence defines the spatial area over which there is potential for Likely Significant Effects, taking account of the sensitivity and mobility of different Qualifying Interest/Special Conservation Interest, on species or habitats from a project or plan.

Executive Summary

The policies, objectives and projects within EirGrid's Grid Implementation Plan (hereafter referred to as the Grid IP) were screened for their potential to have Likely Significant Effects (LSEs) on European sites. All of the policies and objectives were screened out as having potential for LSEs because they either intended to protect the natural environment (including European sites), because they were general policy statements or because the particular policy or objective did not identify any locations for development or detail what that development might be. There were however, projects within the Grid IP that were considered likely to have a significant effect on European sites.

This Natura Impact Statement (NIS) deals with Stage 2 of the AA process which assesses whether the Grid IP (or projects therein) are likely to have adverse effects on the integrity of European sites from those LSEs identified at Stage 1 (Screening). Projects brought forward to Stage 2 include the Regional Solution, the North West project, the North Connacht 110kV Solution and the Celtic Interconnector. It should be noted that the Regional Solution is comprised of a number of projects, only two of which were assessed as having potential for LSEs, namely the Great Island to Kilkenny 110kV circuit uprating project (hereafter referred to as the Great Island to Kilkenny uprate) and the Moneypoint to Kilpaddoge Shannon underwater sea cable (hereafter referred to as the Shannon Crossing). Furthermore, all of the projects are at an early phase of development (with the exception of the existing Great Island to Kilkenny 100Kv line) with either no defined option (underground cable or overhead line) or defined landing point, as is the case for the Celtic Interconnector and the Shannon Crossing. For that reason, a number of European sites were identified within a proposed project boundary or specified area as potentially being affected as a result of the progression of these projects. The Great Island to Kilkenny uprate being an existing line, had a defined project boundary. This project has also been screened previously for Appropriate Assessment (AA) by EirGrid and as such the information contained within the AA screening was used to inform this assessment.

A number of key principles and mitigation measures as set out in **Section 7** of this report have been proposed to ensure that there will be no implications for the conservation objectives of European sites from the Grid IP (or projects therein). With these mitigation measures in place there will be no adverse effects on the integrity of European sites from the Grid IP.

It is a requirement that a project level AA screening and subsequently an NIS (as required) will be undertaken for all five projects which will have to take this plan level NIS into account. The project level AA will incorporate the findings of consultation and field surveys, where appropriate, to inform a detailed assessment and mitigation strategy. In particular, the final route, landing points and technology options for the projects will be informed by detailed environmental assessments and feasibility studies for each project. This will be done in line with EirGrid's new 6-step Framework for Grid Development. It will be a requirement that in particularly sensitive areas a minimum of one year of ornithological investigations to identify flight lines, numbers, local concentrations and evidence of ringed birds (which can be used to identify bird movements) will be conducted, in particular for the North West project and the North Connacht 110kV Solution. Detailed ecological assessment (in particular for cetaceans) will also be required to inform the assessment for the Celtic Interconnector and Shannon Crossing. The identified mitigation will then be incorporated into the final detailed design of the projects to ensure the integrity of European sites in the region are maintained in the long-term.

The conclusion of the NIS for the Grid IP is that there will be no adverse effects on the integrity of any European site(s), either alone or in-combination with other plans or projects. This conclusion is based on adherence to the key principles for protecting European sites as detailed in the Grid IP (e.g. avoidance of impacts in the first instance). Where impacts cannot be avoided, appropriate and effective mitigation will be implemented at the project stage to ensure no adverse effects on the integrity of any European site(s).

1. Introduction

1.1 Background

EirGrid plc (EirGrid) is the national electricity Transmission System Operator (TSO) for Ireland. Electricity supply is essential, and a reliable electricity network is the means by which we move electricity around the country. The transmission system is the backbone of the power system; efficiently delivering large amounts of power from where it is generated to where it is needed, safely and reliably. The development of transmission network infrastructure is therefore, of national strategic importance. Transmission infrastructure is only developed when needed and in consultation with the local communities and stakeholders. All projects are developed with due regard for the environment.

GRID25, published in 2008, was a high-level strategy outlining how EirGrid intended to undertake the development of the electricity transmission grid in the short, medium, and longer terms, to support a long-term sustainable and reliable electricity supply to 2025. The GRID25 Implementation Programme 2011-2016 was a practical strategic overview of how the early stages of the GRID25 strategy were intended to be implemented.

EirGrid has prepared an updated grid development strategy, known as Ireland's Grid Development Strategy: *Your Grid, Your Tomorrow*. Alongside this, EirGrid has prepared a GRID Implementation Plan 2017-2022, hereafter referred to as the Grid IP. The Grid IP details how the strategy will be delivered and will replace the GRID25 Implementation Programme 2011-2016.

This Natura Impact Statement (NIS) has been prepared by Jacobs on behalf of EirGrid and facilitates the Appropriate Assessment (AA) by EirGrid. EirGrid's AA determination, will be on the finalised plan and will be published alongside the adopted and finalised Grid IP and SEA Environmental Report, and will mark the conclusion of the AA process. If material changes were required to the Grid IP it may be necessary to reassess the findings of the Appropriate Assessment.

The Grid IP is a national plan covering all regions of the Republic of Ireland. The Grid IP identifies those parts of the country that require investment in the transmission system and that are likely to be developed over the next six years. The Grid IP identifies the issues, policies and objectives that will be employed in developing the transmission system (the Grid). In this way, it establishes the parameters and criteria for the underlying processes by which subsequent decisions on Grid development will be made.

1.2 Legislative Context for Appropriate Assessment

The preparation of this NIS complies with the requirements of Article 6, and in particular the provisions of Article 6(3), of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (hereafter referred to as the Habitats Directive). The Habitats Directive has been transposed into Irish law by the Planning and Development Act 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011). The Grid IP falls under the governing legislation of the European Communities (Birds and Natural Habitats) Regulations 2011.

The Habitats Directive provides legal protection for habitats and species of European importance. Articles 3 to 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 the Natura 2000 network (hereafter referred to as European sites¹). European sites comprise Special Areas of Conservation (SACs²) and Special Protection Areas (SPAs).

¹ "European site" replaced the term "Natura 2000 site" under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.

1.2.1 Public Authorities and Appropriate Assessment

The duties of public authorities in relation to nature conservation are laid out in the European Communities (Birds and Natural Habitats) Regulations 2011. EirGrid is defined as a “public authority” for the purposes of those Regulations. Under the provisions of Article 42 of the Regulations:

“A screening for Appropriate Assessment of a plan or project...which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site”.

Significantly, the legislation provides that the public authority (i.e. EirGrid) shall carry out the screening for Appropriate Assessment before a decision to undertake or adopt a plan or project is taken: Article 42(6) states in this regard that *“The public authority shall determine that an Appropriate Assessment of a plan or project is required where the plan or project is not directly connected with or necessary to the management of the site as a European site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site”.*

Accordingly, as a matter of law, in the context of Article 42(7) of these Regulations, the issue for consideration by EirGrid is whether or not, in carrying out Screening for AA, and on the basis of objective scientific information, it can be excluded that the plan, individually or in combination with other projects, will have a significant effect on a European site. If screening determines likelihood for significant effects on a European site, then full AA must be carried out for the plan, including the compilation of a NIS to inform the decision making

1.3 Consultation

Consultation is a mandatory requirement in the Strategic Environmental Assessment (SEA) process and responses often make specific reference to the AA process. In line with the SEA Directive, specific environmental authorities, including the Northern Ireland Environment Agency and other relevant stakeholders were notified in November 2016 that a submission or observation in relation to the scope and level of detail of the information to be included in the environmental report may be made to EirGrid. Notifications were accompanied by a covering letter and a hard/soft copy of the SEA Scoping Report provided.

Written submissions were received from the Environmental Protection Agency (EPA), The Department of Communications, Climate Action and Environment on behalf of Inland Fisheries Ireland, Eastern and Midland Regional Assembly, Natural Resources Wales, Department for Communities (NI), the Department of Agriculture, Environment and Rural Affairs (Northern Ireland) (DAERA). Of particular relevance to AA, a submission was made by the Development Applications Unit (DAU) on behalf of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA).

A summary of the submissions is contained in **Appendix A**. The submissions primarily contained information on new or existing data sources and highlighted other plans that could be relevant to the development of the Grid IP. All comments received from the statutory and non-statutory stakeholders have been taken into account in compiling the NIS. Where new baseline data and/or plans have been identified these have been included as required in the assessment. The NIS will be consulted on as part of the overall SEA consultation process.

² There are currently no SACs in Ireland. All remain ‘candidate’ (cSAC) until the European Commission approves and ratifies the final list of cSACs. cSACs are afforded the same protection as SACs. The process of making cSACs SACs by means of Statutory Instrument has begun. While this process is ongoing the term SAC will be used, in conformance with nomenclature used in NPWS databases.

1.4 Work completed to date

Screening for AA of the Grid IP was compiled by Jacobs on behalf of EirGrid. The screening was submitted to the Development Applications Unit (DAU) of DAHRRGA on 2 May 2017, advising that the Grid IP was proceeding to Stage 2 AA and that an NIS for the plan would be published with the SEA Environmental Report and Grid IP. The Screening for AA of the Grid IP is provided in **Appendix B**.

1.5 Structure of this Report

This NIS is the output of Stage 2 AA. There are nine main sections in this report;

- **Section 1 – Introduction:** This section sets out the background to the Grid IP, the purpose of the report, legislative context for AA.
- **Section 2 – the GRID Implementation Plan 2017- 2022:** This section outlines the Grid IP, its objectives, need and geographical and temporal scale.
- **Section 3 – Overview of European Sites:** This section gives an overview of European sites at a national and regional level and an overview of conservation objectives.
- **Section 4 – Assessment Method:** This section outlines the methodology and stages in AA and overlap with SEA, data sources and guidance used in the assessment.
- **Section 5 – Stage 1: AA Screening and NIS Scoping:** This section presents the screening conclusion for those elements of the plan not requiring further assessment, including screening of the objectives, policies and projects within the Grid IP.
- **Section 6 – Stage 2: Assessment of Adverse Effects on Site Integrity:** This section includes the assessment of those elements of the plan that are considered to have potential for likely significant effects on European sites.
- **Section 7 – Mitigation and Avoidance:** This section recommends a range of mitigation measures to prevent impacts on European sites and outlines the biodiversity elements of the SEA monitoring framework.
- **Section 8 – In-Combination Assessment:** This section includes the in-combination assessment for the Grid IP with other plans and projects.
- **Section 9 – Conclusion:** This section provides the conclusion to the assessment.
- **Section 10 – References:** This section provides the list of references used in compiling the report.

2. The Grid Implementation Plan 2017-2022

2.1 Why is the Grid Network Important?

The national electricity transmission grid plays a vital role in the supply of electricity throughout the country. Electricity is essential to our economy and way of life. It powers everything from our household appliances to complex, multi-million euro industries. It is one of the core infrastructures that keeps our society functioning and our economy operating. The electricity industry directly employs thousands of Irish people. At its core is the high-voltage transmission grid, a state-owned asset that is operated by EirGrid (EirGrid, 2017).

EirGrid are obliged to develop a safe, secure, reliable, economical and efficient electricity transmission system in order to ensure continued social and economic growth in Ireland. In addition, it is important to assess the potential for interconnection in order to reinforce the supply of electricity to the national grid, improve competition and support the development of renewable power generation.

2.2 Transmission Development Process

In 2015 EirGrid published a commitment paper – *Reviewing and Improving Our Public Consultation Process*. This paper was a response to feedback received on public consultations and took into consideration the following inputs:

- a review of public feedback;
- a review of international best practice in public consultation, and
- independent external expert reviews.

Three common themes emerged from the examination of the public consultation process;

1. A need to develop a participative approach.
2. Change of culture and processes.
3. Encourage leadership and advocacy.

In response to the stakeholder feedback, EirGrid identified 12 commitments intended to improve the way it engages with the public and stakeholders in the development of network projects. These 12 commitments are at the centre of an enhanced approach to network development.

The new 6-step Framework for Grid Development provides an “end-to-end” structure for all grid projects. It ensures an appropriate balance between technical, economic, environmental, social and community considerations, with significant provision for stakeholder engagement at all stages. A general structure of the 6-step Framework is set out in **Figure 2.1** below.



Figure 2.1: General Structure of the Framework for Grid Development

Going forward each part of the network development process will be subject to the processes involved at each corresponding step of the Framework for Grid Development. Full detail of the six steps can be found in the Grid IP and are summarised as follows;

- **Step 1: How do we identify the future needs of the electricity grid?** – assess the existing system to identify and verify any issues or risks arising for the transmission grid that may result in a grid development project.
- **Step 2: What technologies can meet these needs?** - developing a long list, and subsequent short list, of technology options to meet the identified need.
- **Step 3: What's the best option and what area may be affected?** - identifying a preferred technology solution (and corresponding study area) from the short list of options. This includes identifying environmental and other constraints occurring in the study area. (It should be noted that, depending on the selection process results utilising multi-criteria analysis, more than one option may be brought forward to step 4).
- **Step 4: Where exactly should we build?** - identifying the specific nature, extent and location of the proposed development.
- **Step 5: The planning process** – obtaining statutory consent for the proposed development, or confirming that the proposed development is exempted development not requiring consent.
- **Step 6: Construction, energisation and benefit sharing** – building the project on the ground in liaison with ESB Networks (ESBN), and administering our community gain fund to affected communities.

2.3 Overview and need for the Grid IP

The Grid IP is a high-level plan which outlines how EirGrid envisages undertaking the development of the electricity transmission grid in the short, medium, and longer-terms, to support long-term sustainable and reliable electricity supply. The Grid IP comes from Ireland's Grid Strategy and from EirGrid's *Transmission Development Plan* (TDP) which together seek to support and implement the provisions of the 2015 Government White Paper on Energy – Ireland's Transition to a Low Carbon Energy Future Delivering a Sustainable Energy Future for Ireland in terms of development of electricity transmission infrastructure.

The Grid IP identifies those parts of the country that require investment in the transmission system and that are likely to be developed over the next five years. The Grid IP identifies the issues, policies and objectives that will be addressed and implemented in developing the Grid. In this way, it establishes the parameters and criteria for the underlying processes by which subsequent decisions will be made.

The Grid IP consists of three parts comprising:

- Part A: Vision and Strategy;
- Part B: Implementation (policy and objectives); and
- Part C: Grid Projects

Part C of the Grid IP captures the key provisions of the adopted TDP 2016-2026³ which provides details on projects that may be developed over a ten year timeframe. The projects contained in the Grid IP are driven by the requirements to maintain a safe, secure and reliable transmission system for the island of Ireland. This includes the requirement for upgrading of existing infrastructure and maximising the efficiency of the network and also includes requirements for new transmission infrastructure such as substations, overhead lines and underground cables (see **Section 2.8**).

2.4 Influencing the Grid IP through SEA and AA

The Grid IP sets out how Ireland's Grid Strategy (*Your Grid, Your Tomorrow*) for the planning and sustainable development of the Grid, will be implemented across Ireland. As part of this, the Grid IP presents a number of policies and objectives for the sustainable implementation of the strategy across the following areas:

- Environmental Matters;
- Technical Matters;
- Project Development;
- Planning and Consenting;
- Consultation; and
- Social Impact Assessment.

The environmental assessments (SEA and AA) have influenced the development of these policies and objectives confirming compliance with legislative requirements and ensuring that key issues identified through the SEA scoping and assessment phase are addressed.

2.5 Overarching Objectives of the Grid IP

The overarching objectives of the Grid IP are to:

- deliver a safe secure, reliable supply of electricity for Ireland;
- realise the vision for grid development set out in EirGrid's Grid Development Strategy;
- review the IP prepared in 2011 and to update it in the context of the new Grid Development Strategy and policies, processes and approaches that have been developed in the interim;
- examine the successes and challenges encountered of the previous IP and to integrate the lessons learned into the new Grid IP;
- identify and discuss the strategic environmental, social, technical, project development, planning and consenting matters, as well as consultation/engagement opportunities, pertinent to the implementation of the new Grid Development Strategy, and to draft policies and objectives that will ensure their appropriate consideration in grid development activities undertaken during the IP period, and
- articulate a strategy for regional grid development based on the new Grid Development Strategy and separately to list transmission infrastructure projects that are envisaged as likely to be developed during the

³ http://www.eirgridgroup.com/site-files/library/EirGrid/TDP-2016_Final_for_Publication.pdf

plan period, as set out in EirGrid's TDP 2016-2026. The approved TDP 2016-2026 has been published on EirGrid's website prior to finalisation of the Grid IP and SEA.

2.6 The Grid IP Geographical Scale

The Grid IP covers the entirety of the Republic of Ireland, being the area for which EirGrid has responsibility as National TSO. Three broad regions have been delineated that best reflect the conditions and power flows of the transmission system as reflected in the adopted TDP 2016-2026. These are:

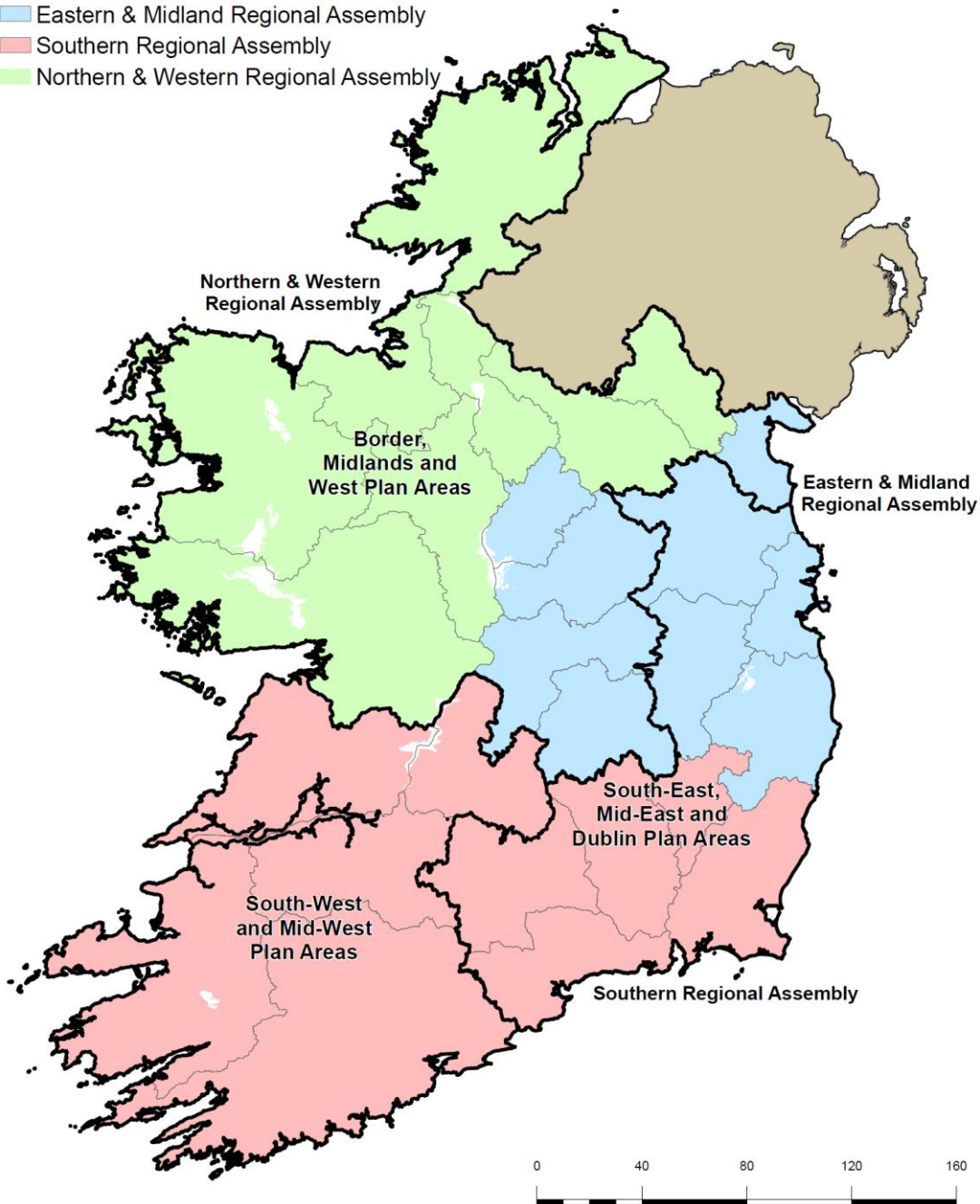
- Border, Midlands and West Areas (B-M-W);
- South-East, Mid-East and Dublin Areas (SE-ME-D), and
- South-West and Mid-West Areas (SW-MW).

These three regions align with the former eight statutory planning regions in Ireland as outlined in the National Spatial Strategy (NSS) 2002-2020. The TDP 2016-2026 regions are illustrated in **Figure 2.2**.



Legend

- Planning Area Boundary
- Eastern & Midland Regional Assembly
- Southern Regional Assembly
- Northern & Western Regional Assembly



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Figure 2.2: Grid IP Plan Area and Regional Assemblies

It is noted that as part of the Government’s reform of local government as set out in *Putting People First - Action Programme for Effective Local Government* (2012), the Local Government Reform Act 2014 provided for the existing eight regional authorities and two regional assemblies to be replaced by three regional assemblies. The assemblies were established with effect from 1 January 2015 by the Local Government Act 1991 (Regional Assemblies) (Establishment) Order 2014 (S.I. No 573 of 2014) and are as follows:

- The Northern and Western Regional Assembly;
- The Southern Regional Assembly, and
- The Eastern and Midland Regional Assembly.

Table 2.1 outlines how these regional assemblies correspond to the Grid IP regions on a county basis. **Figure 2.2** compares the boundaries for the regional assemblies against the TDP 2016-2026 regions.

While the Grid IP is for the Republic of Ireland, the Grid network is operated on an all island grid system and market as detailed in EirGrid’s *All-Island Generation Capacity Statement 2017 - 2026*⁴. There are existing interconnectors with the UK through both Northern Ireland and Wales. There is also a potential future interconnector that will connect Ireland and France, the Celtic Interconnector. Therefore, the Grid IP will have regard where relevant and or appropriate to the transmission network in the UK and France.

Table 2.1: Regional Assembly Boundaries and association with the Grid IP Regions

Relevant Regional Assembly	County (other local authorities)	Grid IP Regions
Eastern and Midland	Louth	B-M-W
	Meath	SE-ME-D
	Dublin (Fingal, Dublin City, South Dublin and Dun Laoghaire-Rathdown)	SE-ME-D
	Wicklow	SE-ME-D
	Kildare	SE-ME-D
	Laois	B-M-W
	Offaly	B-M-W
	Westmeath	B-M-W
	Longford	B-M-W
Southern	Wexford	SE-ME-D
	Carlow	SE-ME-D
	Kilkenny	SE-ME-D
	Waterford	SE-ME-D
	Tipperary	SE-ME-D
	Clare	SW-MW
	Limerick	SW-MW

⁴ http://www.eirgridgroup.com/site-files/library/EirGrid/4289_EirGrid_GenCapStatement_v9_web.pdf

Relevant Regional Assembly	County (other local authorities)	Grid IP Regions
	Cork (Cork City)	SW-MW
	Kerry	SW-MW
Northern and Western	Galway (Galway City)	B-M-W
	Mayo	B-M-W
	Roscommon	B-M-W
	Leitrim	B-M-W
	Cavan	B-M-W
	Sligo	B-M-W
	Monaghan	B-M-W
	Donegal	B-M-W

2.6.1.1 Transboundary Effects

The SEA Directive requires that where the Grid IP has potential for transboundary environmental effects these must be addressed within the SEA.

EirGrid is the TSO in the Republic of Ireland (ROI) but the Grid IP also relates to grid development in Northern Ireland as the transmission system is being developed as an all-island system. As such, the Grid IP (and SEA/AA) has assessed potential transboundary effects in Northern Ireland. The EirGrid Group own the electricity transmission System Operator in Northern Ireland (SONI) and it should be noted that SONI will develop a separate SEA for Northern Ireland.

The potential for interconnection with France has been included in the EirGrid TDPs since 2012 and is also included in EirGrid's Grid Development Strategy 2017.

Consultation was undertaken via the SEA Scoping Report with the Northern Ireland Environment Agency (NIEA), the Ministry of the Environment (ministère de l'environnement, de l'énergie et de la mer) in France and the Welsh Government.

2.7 Policies and Objectives of the Grid IP

The Grid IP includes proposed policies and objectives to ensure appropriate protection of the natural, built and human environment in all aspects of Grid development. The proposed policies and objectives contained within the plan are outlined in **Section 5** of this report. Policies and objectives are proposed for six categories as follows:

- Environment;
- Technology;
- Project Development;
- Planning and Consenting of Projects;
- Consultation and Engagement; and
- Human Beings and Society.

The environmental assessments (SEA and AA) influenced the development of these policies and objectives as the plan progressed. The policies and objectives of the Grid IP were screened for their implications for AA (see **Section 5.1.1**).

2.8 Projects within the Grid IP

Projects contained within the Grid IP are based on those outlined in the adopted Transmission Development Plan (TDP) 2016 – 2026 (hereafter referred to as the TDP). This ten year plan presents projects that are needed for the operation of the transmission network. The TDP is updated yearly. The projects detailed in the TDP 2016-2026 are at various stages of development, from concept to construction and to fully operational (energisation). Ireland's Grid Development Strategy highlights Major and Notable projects in each region of the country. Although not included in the project listing in the TDP 2016-2026 the Celtic Interconnector is discussed as a potential project within the main body of the TDP 2016-2026.

An overview of the types of transmission projects within the TDP 2016-2026 is provided in **Section 2.8.1** below. It should be noted that depending on the needs of the transmission system, the requirements for these projects can change. Similarly, it is likely, given the continuously changing nature of electricity requirements, that new developments will emerge that could impact the plan as presented. These changes will be identified in future studies and accommodated in future TDPs. As such, the long-term development of the network is under review on an on-going basis.

2.8.1 Projects in the TDP

The TDP 2016-2026 outlines a total of 117 projects. A total of 15 new projects have been included since TDP 2015-2025 was published. The projects detailed in the Grid IP comprise the following categories;

- **New Build (NB)** - Projects that involve the construction of new infrastructure. This can include new substations, transmission lines or underground cable. This category also includes projects that involve the installation of new equipment in existing substations.
- **Uprate (U)** - Projects that involve upgrading existing infrastructure to higher technical specifications. For overhead lines, this involves replacing the conductors with higher performing conductors. It generally involves the replacement of a significant number of support structures comprising wooden pole sets and or steel towers. For substations, this involves replacement of infrastructure to support the higher capacity needs of the uprate.
- **Modify (M)** - involves the modification of existing assets. An example of a modification project is the installation of new bays in an existing station. Reconfiguration of existing stations is also included in this category.
- **Refurbish/Replace (RR)** - Projects that involve the maintenance of existing stations or existing circuits. This category also includes projects that involve some limited replacement of existing assets.
- **Redevelopment (RD)** – Projects that consider the redevelopment of assets due to the condition and age of the assets. For example, these works could involve the development of a new station to replace an existing one.

Projects within the adopted TDP 2016-2026 can be categorised as follows:

- 34 - new builds;
- 60 - uprating/modification of existing network;
- 21 - refurbishment/replacement of existing network; and
- 2 – other.

3. Overview of European Sites

3.1 Natura 2000 Network in Ireland

Sites within the Natura 2000 Network are referred to as European sites and comprise SACs and SPAs. SACs are designated for the conservation of Qualifying Interests (QI) Annex I habitats (including priority habitats which are in danger of disappearance) and Annex II species (other than birds). SPAs are designated for the conservation of Special Conservation Interest (SCI) Annex I birds and other regularly occurring migratory birds and their habitats.

There are 433 SACs in the ROI covering an area 13,500sq.km. Approximately 53% is land, the remainder being marine or large lakes (NPWS, n.d.)⁵. There are also 165 SPAs designated for the protection of bird species and their habitats encompassing over 570,000 hectares of marine and terrestrial habitats. Given the potential for transboundary impacts to SACs and SPAs in Northern Ireland these sites are also considered. **Table 3.1** provides a breakdown of European sites in Ireland⁶.

Table 3.1: Number of European Sites in Republic of Ireland and Northern Ireland

Republic of Ireland	Northern Ireland
433 SACs + 6 offshore SACs	57 SACs
165 SPAs	16 SPAs

3.1.1 SACs

SACs have been designated covering a variety of habitat types recognised in Annex I of the Directive, with 16 habitats designated as “priority” habitats owing to their ecological vulnerability (NPWS, 2013a). In addition, the Directive, recognises 26 Annex II species. Habitats for which SACs are designated include raised bogs, blanket bogs, turloughs, sand dunes, machair (flat sandy plains on the north and west coasts), heaths, lakes, rivers, woodlands, estuaries and sea inlets. Some of the species for which SACs have been designated include but are not limited to Atlantic salmon (*Salmo salar*), otter (*Lutra lutra*), bottlenose dolphin (*Tursiops truncatus*), lesser horseshoe bat (*Rhinolophus hipposideros*), freshwater pearl mussel (*Margaritifera margaritifera*) and Killarney fern (*Trichomanes speciosum*).

3.1.2 SPAs

The majority of the wintering water birds and breeding seabirds are considered to be regularly occurring migratory birds. Over 60% of 25 Annex I listed species that occur in Ireland on a regular basis belong to these groups. As a result, the majority (> 80%) of Ireland’s SPAs are designated for these two bird groups (NPWS, n.d.)⁷.

Some of the productive marine intertidal zones of bays and estuaries are included within SPAs that provide vital food resources for several wintering wader species including knot (*Calidris canutus*), dunlin (*Calidris alpina*) and bar-tailed godwit (*Limosa lapponica*). Also included in the SPA network are marine waters adjacent to the breeding seabird colonies and other important areas for divers, seaducks and grebes.

The remaining SPAs include inland wetland sites important for wintering water birds and extensive areas of blanket bog and upland habitats that provide breeding and foraging resources for species including merlin (*Falco columbarius*) and golden plover (*Pluvialis apricaria*). Agricultural land represents a share of the SPA

⁵ <https://www.npws.ie/protected-sites> (accessed May 2017).

⁶ Based on most recent data from NPWS downloaded April 2018 <https://www.npws.ie/maps-and-data/designated-site-data/download-boundary-data>

⁷ <https://www.npws.ie/protected-sites> (accessed May 2017).

network ranging from the extensive farmland of upland areas where hedgerows, wet grassland and scrub offer feeding and/or breeding opportunities for hen harrier (*Circus cyaneus*) to the intensively farmed coastal polderland where internationally important numbers of swans and geese occur.

3.1.3 Existing Grid Infrastructure, future Grid Development and European Sites

The Grid IP identifies those parts of the country that require investment in the transmission system. A key element of the new Grid Strategy and the policies promoted in the Grid IP is the utilisation and upgrading of existing transmission infrastructure where possible (e.g. policy TP2), and where this can avoid the requirement for new build infrastructure thus reducing the potential for impacts on a number of receptors including European sites.

Some 10% of the existing transmission network crosses European sites. The existing transmission network and the locations of European sites across the island of Ireland are shown in **Appendix G, Figure 1** (SACs) and **Figure 2** (SPAs). The QI/SCI features for all SAC and SPA sites can be found on the NPWS website⁸.

Wherever possible, new infrastructure would be routed/built outside of European sites. There are a number of policies and objectives in the Grid IP (e.g. policies ENVP3, ENVP4, ENVP6, ENVP15) which are intended to protect the natural environment through the promotion of development that takes account of impacts on the natural environment. However, some 14% of Ireland is covered by SAC, SPA or both designations and the nature of the transmission system, linking energy generation points to demand centres means that projects can span regions/counties as such linear projects spanning a number of kilometres may be unable to avoid designated sites altogether. This would be particularly true in the west and north-west (corresponds to the Boarder, Midlands and West Areas Region **Figure 2.2**) of Ireland where there is a higher, concentrated number of European sites.

Any future major projects, including the route selection and technology options for same will be informed by detailed ecological assessment to ensure sensitive areas are avoided. Where avoidance is not feasible likely significant effects will be mitigated to ensure there are no adverse effects on the integrity of any European sites.

3.2 Conservation Objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of annexed habitats and annexed species (QIs/SCIs) of community interest for which an SAC or SPA has been designated. The Conservation Objectives (COs) for a European site are set out to ensure that the QIs/SCIs of that site are maintained or restored to a favourable conservation condition. Maintenance of favourable conservation condition of habitats and species at a site level in turn contributes to maintaining or restoring favourable conservation status of habitats and species at a national level and ultimately at the Natura 2000 network level.

Detailed site synopses for each European site are also available from the NPWS website⁹. In Ireland 'generic' COs have been prepared for all European sites, while 'site specific' COs have been prepared for a number of individual sites to take account of the specific QIs/SCIs of that site. Both the generic and the site specific COs aim to define the requirements for favourable conservation condition for habitats and species at the site level¹⁰. Generic COs which have been developed by NPWS¹¹ encompass the spirit of site specific COs in the context of maintaining and restoring favourable conservation condition as follows;

- For SACs: 'To maintain or restore the favourable conservation condition of the Annex I habitats and/or Annex II species for which the SAC has been selected'.

⁸ <https://www.npws.ie/protected-sites> (accessed May 2017)

⁹ <https://www.npws.ie/protected-sites>

¹⁰ <http://www.irishstatutebook.ie/eli/2011/si/477/made/en/pdf> (access May 2017).

¹¹ <https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives> (accessed various dates 2017, 2018)

- For SPAs: 'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA'.

Following from this, favourable conservation status (or condition, at a site level) of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing;
- the specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is "favourable".

The favourable conservation status (or condition, at a site level) 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.

A full list of the COs and QIs/SCIs that each European site is designated for, as well as the attributes and targets to maintain or restore the QIs/SCIs to a favourable conservation condition are available from the NPWS website.

4. Assessment Methodology

4.1 Guidance

The preparation of the NIS has taken account of guidance contained in the following documents;

- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG (2009, revised 11/02/10).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 and PSSP 2/10. NPWS (2010).
- Assessment of plans and projects significantly affecting Natura 2000 sites Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission (2001)
- Communication from the Commission on the Precautionary Principle. European Commission, (2000).
- Compliance Conditions in respect of Developments requiring (1) Environmental Impact Assessment (EIA); or (2) having potential impacts on Natura 2000 sites. Circular Letter PD 2/07 and NPWS 1/07 (not dated, accessed April, 2017)
- EPA Integrated Biodiversity Impact Assessment (EPA, 2013).
- Guidance on Compliance with Regulation 23 of the Habitats Directive. Circular Letter NPWS 2/07. NPWS, (2007).
- Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission. European Commission (2007).
- Habitats Regulations Appraisal of Plans, Guidance for Plan-making Bodies in Scotland. Version 3.0, January 2015. David Tyldesley and Associates (2015).
- Marine Natura Impacts Statements in Irish Special Areas of Conservation. A working Document. DAHG (2012).
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission (2018).
- Wind energy developments and Natura 2000. European Commission (2011).

4.2 Purpose of the AA Process

This NIS has been prepared in support of the AA process having regard for the legislative requirements of EU and national law as outlined in **Section 1.2**. Plans such as the Grid IP must be prepared and examined to ensure that there will not be any adverse effect on the integrity of European sites. The overall purpose of the AA process is to ensure that the Grid IP, when implemented, does not result in any adverse effects on the integrity of any European sites(s) in view of its COs.

4.3 Stages of AA

The AA process can potentially progress through four stages. If at any stage in the process it is determined that there will be no implications for the European site in view of the site's COs, the process is effectively completed. The four stages are as follows:

- Stage 1 – Screening of the proposed plan or project for AA;
- Stage 2 – An AA of the proposed plan or project;

- Stage 3 – Assessment of alternative solutions; and
- Stage 4 – Imperative Reasons of Overriding Public Interest (IROPI)/Derogation.

4.3.1 Stage 1: Screening for AA

The aim of screening is to assess firstly if the plan or project is directly connected with or necessary to the management of European site(s); or in view of best scientific knowledge, if the plan or project, individually or in combination with other plans or projects, is likely to have a significant effect on a European site. This is done by examining the proposed plan or project and the COs of any European sites that might potentially be affected. If screening determines that there is potential for significant effects or there is uncertainty regarding the significance of effects, then it will be recommended that the plan is brought forward to the next stage of the AA process. Screening of the Grid IP was undertaken in April 2017 and it was determined that AA was required.

4.3.2 Stage 2: Appropriate Assessment

If the Screening has determined that AA is required, the competent authority then considers the effect of the project or plan on the integrity of the European site(s). The AA considers the structure and function of European sites and their conservation objectives, and effects from the project/plan both alone and in combination with other projects or plans on these. Where there are adverse effects on site integrity identified, mitigation measures are proposed as appropriate to avoid adverse effects. This stage of the process is documented within a Natura Impact Statement (NIS) which is provided to the competent authority to inform their AA determination.

4.3.3 Stage 3: Alternative Solutions

If it is not possible during Stage 2 of the AA process to conclude that there will be no adverse effects on site integrity, Stage 3 of the process must be undertaken which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. Explicitly, this means alternative solutions that do not have adverse impacts on the integrity of a European site. It should also be noted that EU guidance on this stage of the process states that, 'other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria' (EC, 2001). In other words, if alternative solutions exist that do not have adverse effects on the integrity of European sites; they should be adopted regardless of economic considerations. This stage of the AA process should result in the identification of the least damaging options for the plan or project.

4.3.4 Stage 4: Imperative Reasons of Overriding Public Interest (IROPI)

This stage of the AA process is undertaken under the provisions of Article 6(4) of the Habitats Directive, when it has been determined that a plan or project will have adverse effects on the integrity of a European site, but that no alternatives exist. At this stage of the AA process, it is the characteristics of the plan or project itself that will determine whether or not the competent authority can allow it to progress. This is the determination of 'overriding public interest'. In some cases, the competent authority can consider imperative reasons of overriding public interest including those relating to: social or economic benefit; human health, public safety, or beneficial consequences of primary importance to the environment. This would include cases where priority habitats and species are present on a European site but they would not be affected by the proposal. However, it is important to note that the protection mechanism is stricter in the case of priority habitats (and priority species¹²). In such cases, projects with implications for priority habitats, the competent authority can normally only consider reasons relating to human health, public safety or beneficial consequences of primary importance to the environment when ascertaining IROPI. Other imperative reasons of overriding public interest can only be considered having obtained and had regard to the opinion of the European Commission (by way of a request made through the Minister, before finalisation of the AA). Where plans or projects meet these criteria, they can be allowed, provided adequate compensatory measures are proposed. Stage 4 of the process defines and describes these compensation measures.

¹² Ireland does not at present host any priority species (Department of Environmental Heritage and Local Government (2010). Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities)

4.4 Overlap with SEA

A Strategic Environmental Assessment (SEA) of the Grid IP is being carried out concurrently with the preparation of this NIS. SEA is required under the EU Council Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive) and transposing Irish Regulations. The purpose of SEA is to enable plan-making authorities to incorporate environmental considerations into decision-making at an early stage. For the Grid IP, this means integrating environmental issues in to the plan making process and to:

- identify, evaluate and describe the likely significant effects on the environment of implementing the IP;
- ensure that any identified adverse effects are communicated, mitigated and that the effectiveness of mitigation is monitored;
- identify beneficial (and neutral) effects, and to ensure these are communicated; and
- provide opportunity for stakeholder and public involvement.

There is a degree of overlap between the requirements of the SEA and AA and in accordance with best practice, an integrated process has been carried out between the development of the Grid IP, the SEA and the AA, such as sharing of baseline data, cohesive assessment of the potential ecological effects of the Grid IP on European sites and clarification on more technical aspects of the Grid IP. These processes together have informed and shaped the development of the Grid IP.

It is also noted that there are other aspects relevant to the Habitats Directive that are not strictly related to AA, such as Article 10 of the Directive. Such aspects have been discussed in the biodiversity, flora and fauna section of the SEA and have been addressed in that context as part of the wider environmental assessments informing the Grid IP. **Figure 4** below outlines the SEA and AA Stages and key deliverables throughout the process.

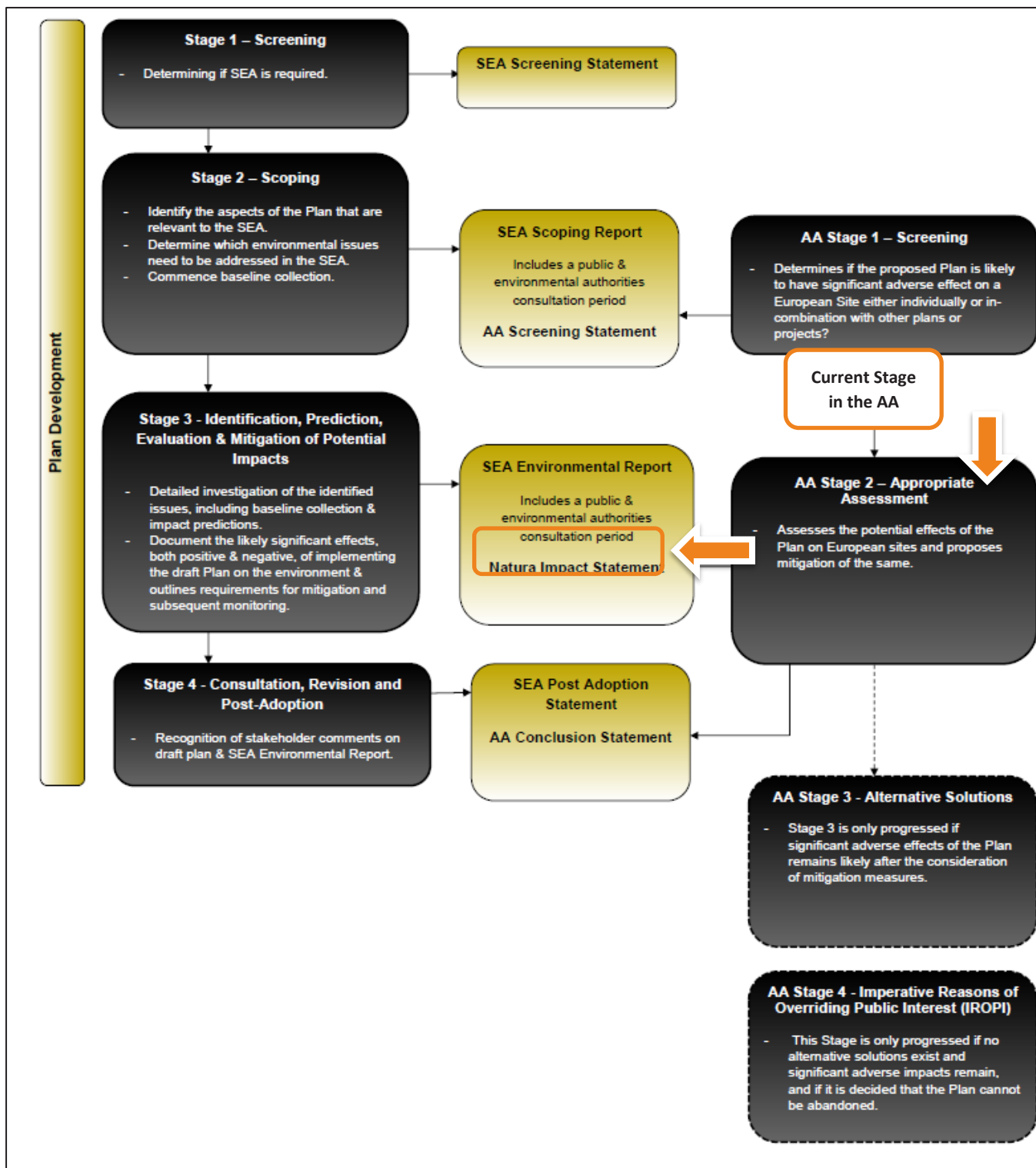


Figure 4: SEA and AA Stages and Key Deliverables

4.5 Assessment Methodology

4.5.1 “Source-pathway-receptor” model

The “source-pathway-receptor” model was used in this assessment. The various parts of the Grid IP including Part A: Vision and Strategy, Part B: Implementation (including policies and objectives) and Part C: Projects – were analysed and assessed to determine which if any had the potential to adversely affect the integrity of any European site(s). This assessment was undertaken in consideration of all potential impacts pathways connecting elements of the Grid IP to European sites in view of their COs supporting the conservation condition of the sites QI/SCIs. Possible effect pathways arising from the Grid IP are discussed in more detail in **Section 5.3.1**.

4.5.2 Identification of European sites

Current Irish departmental guidance on the zone of influence (Zol) to be considered during the AA process states the following:

“A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al., 2006). For 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”.

The Grid IP is a national plan which outlines major and notable projects at a regional level within the ROI. Therefore, all European sites within the ROI were initially considered to be potentially within the Zol of the Grid IP, while transboundary impacts to SACs and SPAs in Northern Ireland are also considered.

It is acknowledged that QIs/SCIs of European sites have different ranges and sensitivities and therefore a set distance of 15km may not be appropriate to assess the potential effects on all QIs/SCI. For example, in the case of Atlantic salmon, the release of polluting substances into a watercourse upstream of an SAC designated for this QI could have impacts more than 15km away. While protected habitats and SCI birds might be most significantly affected by disturbance within 1km of a proposed development.

AA considers the sensitivities to European sites in light of their COs (which encompass the spirit of the site specific COs in the context of maintaining and/or restoring favourable conservation condition). For that reason, sensitivities of European sites outside of 15km are considered and a source-pathway-receptor approach used for the AA.

Where site-specific COs have been prepared for a given European site, these include a series of specific attributes and targets against which effects on conservation condition, or integrity, can be measured. In the case of many SACs/SPAs, site specific conservation objectives (SSCOs) are not available or have not been published. Where that is the case, sample site specific attributes and targets for a given QI/SCI have been compiled, based on those from other European sites, as a guide in assessing how conservation condition could potentially be affected by elements of the Grid IP.

Having established at screening stage that certain aspects of the Grid IP is either likely to have a significant effect on a European site(s) or that such likelihood is uncertain or cannot be ruled out, AA considers whether or not that significant effect would adversely affect the integrity of any European site(s), either alone or in combination with other plans or projects, in consideration of mitigation measures (i.e. with the implementation of mitigation measures could a significant adverse effect still occur).

Where the assessment found that elements of the Grid IP had potential to adversely affect the integrity of a European site, mitigation measures have been included within the NIS to ensure that the finalised Grid IP poses no risk to the integrity of any European site.

4.5.3 Application of the AA process at Plan versus Project level

The AA process can encompass several phases of a project's development. The Grid IP is a high level strategy and plan for grid development and management over the next six years. Some projects outlined within the plan relate to upgrading/uprating works within an existing station, such projects may not require planning permission. Other projects in the plan are at an early phase in the project development process or only a concept with options still to be decided. As projects arising from the plan are developed, there will be a requirement for individual environmental assessments for all projects (all EirGrid projects are screened for AA). These will also be in support of planning applications (where a project requires planning). The following aspects of a project are refined and detailed through this process;

- Geographic specificity (i.e. from generally described regions from the plan to a defined and fixed location/route for the project).
- Duration and timing of impacts (usually not known at the plan level).

Therefore, the scale and nature of the assessment is based on the best available information meeting the provisions and requirements of the Directive. At the plan level, the scale and nature of the assessment will necessarily be undertaken at a higher level than would be the case for projects, noting the Grid IP does not provide consent for any of the projects outlined within the plan, likewise the NIS for the plan does not provide consent for any projects. All individual projects arising from the Grid IP will go through the appropriate consents process and project level screening for AA. The EirGrid process for screening of projects is outlined in **Section 4.5.4**.

In order to address this hierarchy in level of detail, the current AA of the Grid IP has ensured that where project information is lacking, assessment using a precautionary approach was carried out utilising potential generic construction/operational impacts associated with a project type for those projects which may pose a risk to the European site(s). This is highlighted in the AA process and appropriate safeguards are identified that can be implemented to protect European sites and the overall Natura 2000 network when projects are developed.

4.5.4 EirGrid Process for AA Screening of Projects

The process by which Screening for AA is applied by EirGrid has been developed within the Programme Management Office (PMO) which includes a planning and environment unit and full time Ecologist.

This process also has links to the process for determining if development is exempt, having regard to the provisions of the Planning and Development Act 2000, and the Planning and Development Regulations 2001 (both as amended). Such development would normally include line uprates/modifications and associated development, and minor works within substations. It can also include the laying of underground cables or other apparatus. It can be summarised as follows;

- The PMO Ecologist shall identify the location of the proposed development against designated European (Natura 2000) sites.
- The PMO Ecologist shall undertake (or instruct appropriately qualified consultants to undertake) Screening for AA of the proposals to establish whether such works could have a potential likely significant effect (i.e. in the absence of any mitigation measures) on a designated European site. This exercise must comply with the provisions of regulation 42 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011). In the case where the proposed exempted development comprises part of a larger development for which Statutory consent will be sought, the Stage 1 Screening for AA will most likely be carried out by the Lead Consultant engaged by EirGrid in respect of that project development. This should occur in consultation with the PMO Ecologist.
- The PMO Ecologist should consider whether the undertaking of the Screening for AA may benefit from consultation with the NPWS.

- All Screening for AA is in the form of a written report setting out considerations, methodology for screening and conclusions. It should be noted that the report for Screening for AA is required both where an application for Statutory consent is being submitted to a Planning Authority or An Bord Pleanála, or in respect of normally exempted development (where EirGrid has the Statutory function to carry out Screening for AA).
- The outcome of the Screening for AA is recorded and filed and the planning team takes the conclusion into account in the drafting of the planning report.
- Where it is determined by EirGrid that an (Stage 2) AA is required, any normal exemption from the obligation to obtain development consent is lost, and an application for development consent will be required.

4.6 Key Desktop Data

4.6.1 Data sources

The following sources of information have been reviewed for background environmental information and informed the assessment. A detailed (not exhaustive) reference list can be found in **Section 10**.

The following sources of information have been reviewed;

- Online data available on European sites as held by the NPWS from www.npws.ie – including site synopsis, conservation objectives and other relevant supporting documentation (accessed September 2017).
- GIS data for European site boundaries obtained in digital format online from the NPWS (downloaded May, 2017).
- Freshwater pearl mussel (FWPM) 'Habitat' and 'Population' GIS Data from the NPWS research branch.
- Favourable reference ranges and tabulated threats and pressures for QI species/habitats in the NPWS latest national conservation status assessments (NPWS, 2013a).
- Ordnance Survey Ireland mapping and aerial photography available from www.osi.ie.
- GeoHive online mapping <http://map.geohive.ie/mapviewer.html>.
- Northern Ireland Environment Agency – online European site information www.doeni.gov.uk.

4.6.2 EirGrid's Ecology Guidelines and Evidence Based Environmental Studies

In 2012 EirGrid produced ecology guidelines for electricity transmission projects (EirGrid, 2012). EirGrid also produced a number of Evidence Based Environmental Studies (EBES). Based on the content and conclusions of the EBES, EirGrid commissioned and prepared Guidelines for Cultural Heritage and are in the process of updating their Ecology Guidelines. The Ecology Guidelines and EBES aim to set out a standard approach to environmental impact assessment of transmission projects. The evidence based studies provide supporting evidence which can inform environmental assessments including, for example identifying potential significant impacts associated with grid development at the initial screening stage. In particular, the studies identified the importance of identifying other potential landuse pressures to ensure a through in-combination assessment is undertaken at the project level. The findings of these EBES were reviewed and informed this plan level NIS.

EirGrid completed a number of EBES of relevance to Biodiversity, Flora and Fauna. These are summarised below and include the following:

- **EBES 3: Bats** - Literature review and evidence based field study on the effects of high voltage transmission lines on bats in Ireland (EirGrid, 2015);

- **EBES 4: Habitats** - Literature review and evidence based field study on the effects of high voltage transmission lines on natural and semi-natural habitats in Ireland (EirGrid, 2016a);
- **EBES 5: Birds** - Literature review and evidence based field study on the effects of high voltage transmission lines on birds (EirGrid, 2016b);
- **EBES 6: Water Quality & Aquatic Ecology** - Literature review and evidence based field studies on the effects of high voltage transmission lines on water quality and aquatic ecology in Ireland (EirGrid, 2016c); and
- **EBES 7: Soils & Geology** - Literature review and evidence based field study on the effects of high voltage transmission development on soils and geology (EirGrid, 2016d).

4.6.3 EBES 3: Bats

EBES 3: Bats examined the effects of the construction and operation of high voltage electricity transmission projects on bat activity in Ireland.

The study showed that the presence of high voltage power lines did not act as a deterrent to bats at the sites examined. There is also no evidence in literature to suggest that electro-magnetic fields (EMF) generated by Overhead Lines (OHLs) disrupts bat magnetoreception. Evidence of bat activity was recorded at all OHL sites sampled. In addition, distance from the OHL did not have a significant effect on the occurrence of bats, as activity was recorded at all distances from 0-500m from the OHLs.

The primary issue identified was not the physical presence of transmission network infrastructure and EMF but the removal of habitats and the possible fragmentation and disturbance associated with the construction or operation of transmission lines. The presence or absence of suitable commuting and/or foraging habitat is the strongest determinant for bat activity, around and adjacent to OHLs. This study recommended that;

- Given the relatively small foundation footprint of towers, the length/volume of woody vegetation clearance should be minimised.
- Where complete clearance and significant disturbance is required, hedgerows should be replanted around the towers or at other suitable locations nearby in order to retain the integrity of the impacted hedgerow.

This study identified that it is important to utilise best practice and habitat/species sensitive construction methodologies for new transmission line projects and to retain existing high quality linear features, where possible. In instances where construction necessitates removal, re-instatement of linear features should be prioritised to offset any potential adverse effects.

4.6.4 EBES 4: Habitats

EBES 4: Habitats examined the impacts of high voltage transmission infrastructure on natural and semi natural habitats in Ireland and provided a factual basis for the update of Ecology guidelines for transmissions projects in Ireland.

The study and review of literature found that construction and maintenance of electricity transmission infrastructure can affect natural and semi natural habitats in a number of ways, including habitat loss, habitat change, fragmentation and hydrological change. The implementation of certain measures during route planning, construction and maintenance allows for significant impacts to be avoided or reduced. Peatlands were determined to be the most sensitive habitats to construction works and grassland habitats were determined to recover rapidly following construction.

The field based study showed that plant composition and richness can vary between areas with transmission infrastructure and control sites, particularly in the case of peatland habitats. However, changes in overall habitat

classification were not identified. Peatland species at control sites displayed differences in composition related to distance from sample sites at transmission infrastructure. The data showed that abundance of *Sphagnum spp.*, cottongrass, deergrass and lichen decreased close to the structures whereas species including sedges, purple moor-grass and rush increased closer to the structures. There was no statistically significant difference determined for grassland species between control sites and at transmission infrastructure sample sites.

4.6.5 EBES 5: Birds

EBES 5: Examined the effects of existing high voltage transmission infrastructure on bird activity in Ireland and provides for the development of bird-specific recommendations for updating of the Ecology the guidelines for transmission projects.

Risks identified for birds include mortality through collision, and disturbance due to construction. The study recognised that collisions with the earth wire at the top of powerlines is widely reported as the main cause of bird deaths. The challenges associated with determining collision rates are outlined in terms of the bias of observer detection and scavenging and crippling bias. The risk of bird collision is dependent on many factors including the size of birds, species, behaviour and the local environment/conditions. Pylon height, in terms of the height of the earth wire, is also considered to influence the flight height of crossing birds.

The study examined five high risk sites for birds, and 54 low risk or control sites on the existing transmission system. Searches for dead birds were carried out at all sites. A further detailed and targeted survey was also carried out at three high risk sites, for target species including swans, geese, ducks, gulls, herons, raptors, waders and cormorant. Results from these field surveys suggested broadly similar, collision rates of birds as published in scientific literature. However, the study noted that caution must be applied due to the sensitivity of estimates to the number of bird remains found.

The study confirmed that measures to reduce collisions include line route assessment which is based on detailed multi-annual bird surveys and line marking at specific locations to increase line visibility to birds.

4.6.6 EBES 6: Water Quality & Aquatic Ecology

EBES 6: Water Quality & Aquatic Ecology examined the potential impacts of electricity transmission infrastructure on water quality and riparian habitats and aquatic faunal species.

The study assessed the impacts of the construction, maintenance and operation of overhead lines (OHLs), underground cables (UGCs), substations and associated infrastructure. Potential impacts were identified as being associated with works taking place near drains, streams, rivers and lakes and the majority of potential impacts were found to be associated with the construction phase. The study outlined that most significant risk to water quality and aquatic ecology is the release of sediments, particularly following land clearance for construction. This can result in increased erosion and surface run-off. Additional pollutants can come from concrete/cement and hydrocarbons which are materials used in tower foundations and culverts.

A combination of biological, physical and chemical data was obtained from watercourses, both upstream and downstream of construction sites as part of the study. A number of sites showed that construction works impacted on downstream indicators with a low number of sites displaying higher sediment, oxygen and nutrient values downstream, post-construction. A number of sites showed no change before or after construction indicating effective implementation of mitigation. The study found that the cause of increased levels varied from construction works taking place near watercourses with limited/no buffer zone, site clearance, damage/alteration to river banks/riparian zones and site flooding. Construction impacts were assessed as temporary and follow-up surveys found that any post-construction impacts had been reduced significantly.

The results of the field studies emphasised that other land uses and pressures including forestry, natural bank erosion, agricultural drainage and animal poaching can affect water quality. It is therefore important to consider

these pressures when assessing in-combination effects at project level. The study found that the implementation of mitigation measures such as silt barriers and buffer zones are essential for reducing the risk of sediments and contaminants entering watercourses where works are required at these sites. Full restoration of any physical changes to river banks were recommended to avoid long-term impacts due to erosion and the release of sediments.

4.6.7 EBES 7: Soils & Geology

EBES 7: Soils & Geology examined the effects of high voltage transmission infrastructure on soils and geology at a number of sites.

Impacts were considered to be mainly associated with the construction phase. The main negative impact was determined to be soil movement which could lead to sedimentation and siltation, which can affect watercourses. Additional potential impacts identified in the study included the contamination of soils or geological features by cement or fuel/oil spills during construction. Soil compaction and ground disruption can also occur but are considered to be temporary.

The study compiled details of previous site assessments on a number of transmission line projects and evaluated the impacts and mitigation at pre, during, and post-construction stages. Field surveys were completed for five site categories, covering standard, non-standard and worst case conditions and for a range of different soil types. Minor, localised impacts were evident in some sites during construction. However, no significant impacts on soils or geology were found during site visits, and this can be attributed to the careful planning and avoidance of sensitive areas.

The study indicated that the implementation of adequate mitigation measures should ensure that no long-term impacts occur. This includes implementing a 50m buffer between a watercourse and structures and the avoidance of soft/fine soils, where possible. In the event that a natural buffer is not suitable, or routes through soft/fine soils cannot be avoided, construction measures such as silt curtains were recommended.

The study found that effective route planning can protect the environment as more sensitive and weaker areas of ground can be identified and avoided.

5. Stage 1: AA Screening and NIS Scoping

In order to comply with the requirements of Article 6(3) of the EU Habitats Directive, the process of Screening for AA was undertaken at an early stage in the drafting of the Grid IP. The AA Screening assessed the potential for the Grid IP to result in likely significant effects (LSEs) on European sites, either alone or in combination with other plans and projects. Given that the Grid IP is of national scale, which could give rise to development in multiple regions of Ireland, it was not possible to screen out the potential for LSEs on European sites based on the information that was available at the time of writing the AA Screening. As such the AA Screening was undertaken in a strategic manner and it was considered appropriate to invoke the precautionary approach in the absence of detailed information. The screening concluded that AA of the Grid IP was required.

Screening for AA is an iterative process that continues throughout the development of a plan. Scoping follows a screening decision that AA is required, and is an extension of that process in that it identifies more precisely what AA must cover, including the data, information and level of detail required in the NIS (DEHLG, 2010).

The initial AA Screening was undertaken very early on in the development of the Grid IP. At the time there was limited information on the policies, objectives and finalised list of projects in the TDP 2016-2026. The Grid IP has developed considerably, following the completion of the AA Screening with further detailed information on the policies, objectives and grid development contained within the plan. It was therefore considered appropriate to re-screen elements of the plan before progressing to AA (Stage 2), see **Section 5.1**.

5.1 Screening the Plan for Likely Significant Effects (LSEs)

5.1.1 Screening of the Grid IP Policies and Objectives

Irish departmental guidance on AA does not provide detailed guidance on screening policies and objectives within a plan. Therefore, guidance from Scotland (Tyldesley, 2015) has been relied upon and referenced in this assessment. The aforementioned guidance document outlines two screening steps which are relevant to the screening of policies and objectives including:

- identification of and screening out of **general policy statements**; and
- screening out **elements of the plan which could have no LSEs** on a European site.

5.1.1.1 General Policy Statements

It is appropriate to screen out general policy statements, including “general criteria based policies” (Tyldesley 2015). As indicated in **Section 2.6**, the Grid IP includes proposed policies and objectives developed to ensure appropriate protection of the natural, built and human environment in all aspects of Grid development.

5.1.1.2 Elements of the Plan which could have no LSEs

Elements of the plan that could have no LSEs will be screened out. The reasons for this may include, but are not limited to (Tyldesley, 2015):

- policies and objectives intended to protect the natural environment;
- policies and objectives which will not themselves lead to development or other change;
- policies and objectives which make provision for change but which could have no conceivable effect (for instance where there is no conceivable effects pathway);
- policies and objectives which make provision for change but which could have no significant effect, but would therefore have a minor residual effect, because any potential effects would be insignificant; and

- policies and objectives for which effects on any particular European site cannot be identified, because the policy or objective is too general (for example, it is not possible to identify where, when or how the policy may be implemented).

5.1.2 Assessment

Each of the policies and objectives has been assessed for their potential to result in LSEs. A number of the policies and objectives outlined are intended to protect the natural environment including European sites, for example policy ENVP4 and ENVP3 states that in implementing Grid development EirGrid will:

- Protect flora, fauna and habitats which have been identified in accordance with Articles 12 of the Habitats Directive, the Birds Directive, Wildlife Act 1976 (as amended), the Flora Protection Order (S.I. No. 356 of 2015), and the European Communities (Birds and Natural Habitats) Regulations (ENVP4).
- Require that any transmission development project, either individually or in combination with other projects, that has the potential to give rise to likely significant effects on any European (Natura) site(s) shall be subject to Appropriate Assessment (AA) in accordance with Article 6 of the EU Habitats Directives (ENVP3).

Screening of the policies and objectives and the outcome of the process is detailed in **Table 5.1 - Table 5.** below.

Table 5.1: Screening of Policies and Objectives for the Environment

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
General			
ENVP1	To apply best environmental practice in the design and appraisal of transmission development projects.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP2	To continue to develop EirGrid's approach to the protection of the environment in transmission planning and development, and fully integrate this approach throughout the procedures for transmission development and make this framework publicly available.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVO1	To ensure that transmission development projects follow the standard approach to environmental assessment of transmission projects set out in its topic specific guidelines: <i>EMF & You</i> , <i>Cultural Heritage Guidelines</i> , <i>Ecology Guidelines</i> .	This objective is intended to protect the natural environment. Such policies would not be likely to have a significant effect on a European site. As a result, this policy can be Screened Out .	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
General			
ENVO2	To continue to prepare and/or update EirGrid evidence-based environmental guidelines, particularly in the context of new or updated evidence-based environmental information.	This objective is intended to protect the natural environment. Such policies would not be likely to have a significant effect on a European site. As a result, this policy can be Screened Out .	x
ENVO3	To develop the environment space on the EirGrid website as a tool for sharing information on the environment in transmission development.	This is a general objective. This objective in itself will not lead to grid development. Such general objectives would not be likely to have a significant effect on a European site. As a result, this objective can be Screened Out .	x
Biodiversity			
ENVP3	That any transmission development project, either individually or in combination with other projects, that has the potential to give rise to likely significant effects on any European (Natura) site(s) shall be subject to Appropriate Assessment (AA) in accordance with Article 6 of the EU Habitats Directives.	This policy is intended to protect the natural environment, the Natura 2000 network in particular. This policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP4	To protect flora, fauna and habitats (terrestrial and aquatic) which have been identified in accordance with Articles 12 of the Habitats Directive, the Birds Directive, Wildlife Act 1976 (as amended), the Flora Protection Order (S.I. No. 356 of 2015) and the European Communities (Birds and Natural Habitats) Regulations and the Alien Species Regulation (EU) No 1143/2014. This protection will be afforded at the earliest opportunity in the project development process i.e. option selection.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP5	To promote a pro-active good practice approach to tree and hedgerow management in grid development, with the aim of avoiding in the first instance and minimising the impact of transmission development on existing trees and hedgerows.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
ENVP6	To protect and restore (where possible) habitats which function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x
Climate Change			
ENVP7	To integrate measures to address climate change into grid development, by way of effective mitigation and adaptation responses, in accordance with current guidance and best practice.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP8	To support the Government's target of having 40% of electricity consumption generated from renewable energy sources by the year 2020.	Effects on a European site from this policy are conceivable, but it is not possible to ascertain what or where these effects might be, or when they may occur. No specific location for development or detail on what the development might be is mentioned in the policy and therefore it is possible to conclude no LSEs on a European site. As a result, this policy can be Screened Out .	x
ENVO4	To assist towards meeting national and EU targets, in particular by means of having regard to EirGrid's Climate Change Adaptation Plan in undertaking grid development projects.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVO5	To mitigate the impacts of climate change through the implementation of policies and processes that reduce energy consumption, reduce energy loss/wastage, and facilitate the supply of energy from renewable sources.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
Noise			
ENVP9	To facilitate new technologies on transmission infrastructure which minimise/mitigate significant noise emissions.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP10	To seek to preserve and maintain noise quality in accordance with good practice and relevant legislation.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
ENVO6	To give careful consideration to the siting of transmission infrastructure so as to ensure that noise-sensitive receptors are avoided where possible and protected from potential noise emissions.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
Landscape			
ENVP11	To have regard to the objectives and actions of the National Landscape Strategy in its transmission development projects.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP12	To continue to protect and enhance landscapes and visual amenity through the sustainable planning and design of transmission infrastructure development.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP13	To seek to avoid and reduce visual impact on residential receptors in the development of transmission projects.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVO7	To have regard to any future National Landscape and/or Seascape Character Assessment in the development of its transmission projects.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
Cultural Heritage			
ENVP14	To ensure that the special interest of protected structures, including their curtilages and settings, are avoided where possible/protected to the greatest extent possible when considering site or route options for transmission infrastructure development.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP15	To protect known and unknown (potential) archaeological material in transmission infrastructure development, by avoidance or by best practice mitigation measures.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
Water			
ENVP16	To have regard to the Guidelines for Planning Authorities on the Planning System and Flood Risk Management, and Technical Appendices, November 2009, published by the Department of the Environment, Community and Local Government as may be revised/updated when devising grid development projects, and in the preparation of grid development strategies and plans to ensure that there is no increase in flood risk as a result of transmission development, and to ensure any flood risk to the development is appropriately managed.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP17	To protect the water environment, water quality and aquatic ecology in accordance with the EU Water Framework Directive, in the development of its transmission projects.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVO8	That all grid development proposals, and in particular, substation developments, shall carry out, to an appropriate level of detail, a site-specific Flood Risk Assessment that shall demonstrate compliance with all current Guidelines, standards and best practice. The Flood Risk Assessment shall pay particular emphasis to residual flood risks, site-specific mitigation measures, flood-resilient design and construction, and any necessary management measures.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
Air Quality			
ENVP18	That development of transmission substations will not occur on sites which are below estimated flood levels for Zone A or Zone B.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
Marine Environment			
ENVP20	To promote a pro-active good practice approach to marine management in grid development, with the aim of minimising the impact of transmission development on the marine environment.	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVP21	To protect the marine environment, in accordance with any plans made under the EU Directive 2014/89/EU (Marine Spatial Planning).	This policy is intended to protect the natural environment. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x
Geology and Soils			
ENVP22	To ensure that geological heritage features are protected to the greatest extent possible when considering site or route options for transmission infrastructure development.	This policy is intended to protect geological heritage. Such policies would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Table 5.2: Screening of Policies and Objectives for Tourism

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
ENVP19	To consider the potential impact upon tourism in the development of transmission projects and to protect tourism resources through the appropriate and sustainable planning and design of transmission infrastructure development.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
ENVO9	To identify the nature of tourism in a project area; to consider the cumulative / in combination impact on tourism of a project and to consider short term and long term impacts of grid development projects on tourism as appropriate.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	

Table 5.3 : Screening of Policies and Objectives for Technology

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
TP1	To promote and facilitate the sustainable development of a high-quality transmission grid to serve the existing and future needs of the country, in accordance with <i>Ireland's Grid Development Strategy</i> , legislative requirements, relevant guidance and best practice.	By its very nature the provision of development (new grid infrastructure) has the potential to give rise to LSEs on European sites. However, it is not possible to ascertain what or where these effects might be, or when they may occur. No specific location for development or detail on what the development might be is mentioned in the policy and therefore it is possible to conclude no LSEs on a European site. As a result, this policy can be Screened Out .	x
TP2	To consider all practical technology alternatives and their associated environmental effects in the in the development of its projects, including maximising use of the existing transmission grid.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
TP3	To continue to be proactive in the development of emerging or innovative technical solutions for the development of the transmission grid with regard to the environment.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
TO1	To provide opportunities for public participation as we develop technical innovation in transmission infrastructure, both in project-specific, and in non-project-specific contexts.	This is a general objective in relation to public participation in transmission infrastructure. This objective in itself will not lead to grid development. Such an objective would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Table 5.4 : Screening of Policies and Objectives for Project Development

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
PDP1	To have regard to EirGrid's approach to developing the grid, and any associated guidelines, policies and processes, to ensure the structured, consistent development of all its transmission projects.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
PDP2	To promote sustainable grid development by balancing complex and/or competing technical, economic, environmental, social and deliverability goals and priorities in decision-making.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x
PDO1	To undertake a timely and appropriate managed transition of our transmission projects to the new approach to grid development.	This is a general objective. This objective in itself will not lead to grid development. Such an objective would not give rise to LSEs. As a result, this policy can be Screened Out .	x
PDO2	To undertake periodic reviews, as appropriate, of the approach and associated guidelines, policies and processes, to ensure that the approach remains a suitable and sustainable structured approach to the development of transmission projects.	This is a general objective. This objective in itself will not lead to grid development. Such an objective would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Table 5.5: Screening of Policies and Objectives for Planning and Consenting of Projects

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
PCP1	To comply with relevant legislation and have regard to guidelines in respect of planning and consenting of transmission infrastructure development projects, and make provision for any policies for the provision of transmission infrastructure set out in these documents. In particular, to have regard to the National Planning Framework and future Regional Spatial and Economic Strategies.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out .	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
PCP2	To have regard to precedent arising from decisions of the Competent Authorities, and of the High Court in Judicial Review of decisions, relating to the planning and consenting of transmission infrastructure development projects, including matters of EIA and AA.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x
PCP3	To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x
PCO1	To prepare and/or update internal policies and processes related to the planning and consenting of transmission infrastructure development projects, including the existing internal process for Screening of Exempted Development.	This is a general objective. It is noted that all development exempted or not will be subject to AA screening. This objective in itself will not lead to development. Such an objective would not give rise to LSEs. As a result, this policy can be Screened Out.	x

Table 5.6: Screening of Policies and Objectives for Consultation and Engagement

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
CEP1	To consult and engage with statutory and non-statutory stakeholders, including communities, landowners and the general public, at the earliest meaningful stage of a project's development.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x
CEP2	To recognise and develop the essential role that communities, landowners and other stakeholders play in transmission infrastructure development, and to engage with different stakeholders as appropriate at all stages of a grid development project.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
CEP3	To ensure consultation and engagement feedback is appropriately considered in decision making and that this process is documented.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x
CEP4	To facilitate a formal complaints system and to resolve such complaints in a timely manner.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x
CEO1	To engage with statutory and non-statutory stakeholders in a meaningful manner as set out in the EirGrid Engagement Handbook and Toolkit and via EirGrid's Agricultural Liaison Officers and Community Liaison Officers.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x
CEO2	To maintain and update as required EirGrid's Complaints procedure.	This is a general objective. This objective in itself will not lead to grid development. Such general objectives would not give rise to LSEs on a European site. As a result, this objective can be Screened Out.	x

Table 5.7: Screening of Policies and Objectives for Society and the Community

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
HBSP1	To consider and address social impact and the impact on human beings in the development of transmission infrastructure projects as appropriate.	This is a general policy. This policy in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x
HBSO1	To examine the social impact of transmission infrastructure developments on the receiving environment as appropriate and in accordance with EirGrid's methodology for Social Impact Assessment.	This is a general objective. This objective in itself will not lead to grid development. Such general objectives would not give rise to LSEs on a European site. As a result, this objective can be Screened Out.	x
HBSO2	To ensure that all grid development projects are screened for the requirement for a Social	This is a general objective. This objective in itself will not lead to grid development. Such general objectives would not give rise to LSEs on a	x

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
	Impact Assessment, and where so required, that such Assessment will accompany an application for statutory consent.	European site. As a result, this objective can be Screened Out.	
HBSO3	To promote and deliver Community Funds and Proximity Payments for certain categories of transmission infrastructure projects, in accordance with established terms of reference.	This is a general objective. This objective in itself will not lead to grid development. Such general objectives would not give rise to LSEs on a European site. As a result, this objective can be Screened Out.	x

Table 5.8: Screening of Policies and Objectives for Human Health

Number	Detail	Screening Commentary	Outcome (take forward to AA stage) x = no ✓ = yes
Policies and Objectives			
ENVO1	To ensure that transmission development projects follow the standard approach to environmental assessment of transmission projects set out in the EirGrid topic specific guidelines: <i>EMF & You, Power Lines and Your Health - Answering Your Questions</i> and any future EirGrid guideline documents.	This is a general objective. This objective in itself will not lead to development. Such a policy would not give rise to LSEs. As a result, this policy can be Screened Out.	x

5.1.3 Screening of projects arising from the Grid IP

Figure 5 overleaf outlines how AA screening was undertaken for the projects contained within the Grid IP. The TDP 2016-2026 outlines 117 projects which need to be undertaken in the lifetime of the Grid IP. This list was taken forward for initial screening. For the purpose of the plan level NIS, only those projects not already moving through the appropriate planning process are considered as projects for assessment under this Grid IP. Projects that have gone through the necessary planning process or approval, as required are not included as they are being / have been assessed individually as projects. Although these projects are not assessed individually under the AA they are, where appropriate, considered as part of the in-combination assessment (see **Section 8**). After review of the TDP 2016-2026 and in consultation with EirGrid, 73 projects were deemed to have gone through the appropriate planning channels, thereby excluding them from the plan level assessment. This ranges from projects already constructed, under construction, with planning consent or deemed exempt development. These are all considered *approved* projects in the screening table provided in **Appendix C**.

The remaining 46 projects in the Grid IP have not yet passed into the project consenting phase and have been included as part of the plan to be assessed for their potential to result in LSEs. This assessment is based on the identified effects pathways (see **Table 6.1**). The complete list of projects and screening outcomes are included in **Appendix C** and summarised in **Table 5.7** below. It should be noted that a number of these projects had already been screened for AA by EirGrid as part of their internal processes; therefore, such information was used in the assessment. In summary, the screening of projects that are part of the Grid IP concluded that five projects potentially arising from the Grid IP had the potential to give rise to LSEs.

Since the development of the TDP 2016-2026 project list, the Celtic Interconnector and the Regional Solution have progressed and are therefore have been included in the AA screening process. Both projects are at an early stage currently in the initial design and consultation phase but due to their potential scale they are also considered in the assessment. These projects were also considered to have potential to result in LSEs and as such were taken forward to (Stage 2) AA.

In addition, the Grid West project which is listed in the TDP 2016-2026 has been cancelled in response to a reduction in anticipated wind generation in North Connacht. There is still a need to connect generators but this can be met through the development of 110kV electricity infrastructure; not the 220kV nor 400kV infrastructure that was proposed under the TDP 2016-2026. The North Connacht 110kV Solution is included in this assessment and is now at Step 2 of the EirGrid six step framework.

As noted in **Section 4.5.3** the Grid IP is a high level strategy and plan for grid development over the next six years, it does not provide consent for any of the projects outlined within the plan, likewise the NIS for the plan does not provide consent for any projects. This plan level NIS identifies potential AA issues that could arise or that have already been identified for projects or potential future projects in the Grid IP. This information will feed into project level assessments, if and when the projects are progressed.

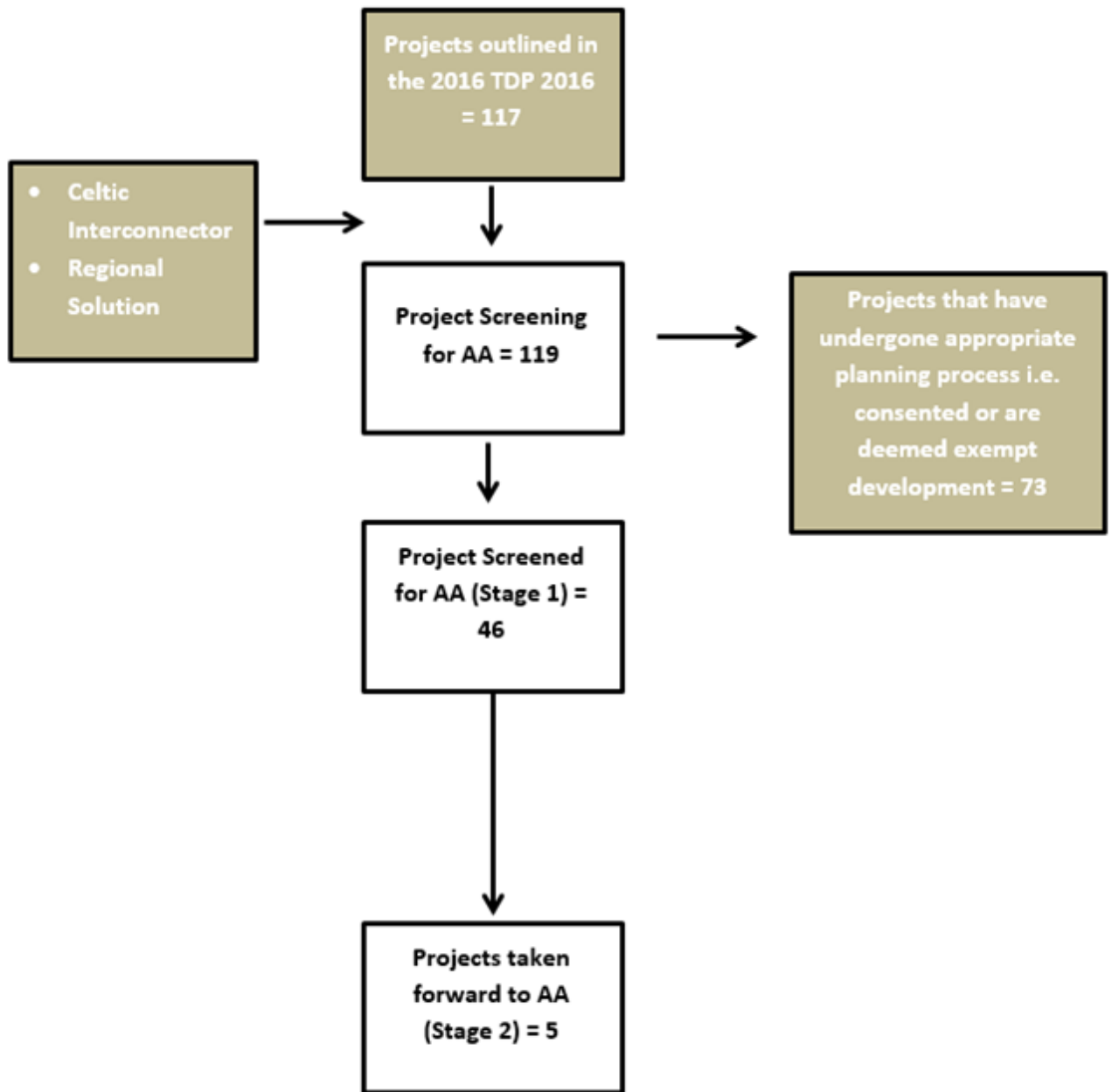


Figure 5. AA screening of projects in the Grid IP

Table 5.2 : Summary of AA Screening for Projects in the Grid IP

Project Type	No. of Projects Assessed	Summary of Screening	No of Grid IP projects taken forward to Stage 2 of AA process
New Build - Celtic Interconnector	1	This project is at the early stages of development, this project is moving through EirGrids 6 step development framework and it is currently at Step 2. This phase includes in-depth economic assessment of the project; technical studies and initial technical design specifications; environmental studies; and pre-consultation Potential landing points for the subsea cable and connection points to the electricity transmission grids in France and Ireland are being investigated. This project was considered to have potential for LSEs.	1
New Build - Shannon Crossing (part of the Regional Solution)	Regional Solution comprises a number of elements/ projects	This project is at the early stages of development. It is one of four projects forming the Regional Solution and will comprise a new underwater cable across the Shannon estuary. This will run from Moneypoint on the northern bank of the estuary to an existing station at Kilpaddoge. This project was considered to have potential for LSEs.	1
New Build (Other)	10	Of the ten projects within this category (see Appendix C), five comprise of new build within existing stations, all of which are outside of European sites. Given the minor nature of the works proposed and the lack of a potential impact pathways, no potential for LSEs were identified. Three of the new builds are new stations requiring land take, all outside of European sites and with no potential for LSEs. The remaining two new builds which may comprise potential major projects were identified as requiring further assessment due to their potential for LSEs on European sites. These two projects are the North Connacht 110kV Solution and the North West project.	2
Refurbish/ Replace	5	Of the five projects in this category, two comprised redevelopment of existing stations out with any European site. These are for minimal work within the footprint of existing stations. No potential for LSEs were identified. The remaining three projects which comprised line refurbishments with operationally minimal change. And although two of these projects cross or are located in SACs the likelihood of significant effects on the conservation interests of these European sites from these projects was ruled out (see Appendix C).	0
Uprate/Modify (existing station)	27	These uprate/modify projects comprise minimal work undertaken within footprint of existing stations. All are out with European sites and all were screened out. No source-pathway-receptor linkages with the potential to give rise to LSEs were identified.	0
Uprate/Modify	3	These uprate/modify projects comprise minimal works along existing lines. Both projects were located at least 3km from a European site. No potential impact pathways with the potential to give rise to LSEs were identified.	0
Uprate/Modify - Great Island to Kilkenny 110kV circuit (part of the Regional Solution)	Regional Solution comprises a number of elements/ projects	Uprating the Great Island to Kilkenny 110kV circuit. As part of the uprate works the existing line will be replaced, this will require replacement of a number of the support structures including angle masts and wooden pole sets. The existing line runs parallel to, and over sails an SAC. Given the close proximity to a European site and the type of works proposed this project was considered to	1

Project Type	No. of Projects Assessed	Summary of Screening	No of Grid IP projects taken forward to Stage 2 of AA process
		have potential for LSEs.	
Other	1	This project comprised installation of fencing in an existing station. No potential impact pathways with the potential to give rise to LSEs.	0

6. Stage 2: Assessment of Adverse Effects on Site Integrity

This section describes the likely activities arising from the Grid IP. It also describes the potential effects that these activities might have on European site(s) within the Grid IP area.

The policies and objectives outlined within the Grid IP have been designed to facilitate suitable development and to protect the environment during development. These high level policies and objectives will be fundamental in guiding future Grid development, the policies and objectives themselves were not considered to give rise to LSEs, they are therefore not considered further in the assessment.

6.1.1 Assessment of Effects of Projects Contained within the Grid IP on the integrity of European sites in Ireland

Activities arising from a plan may give rise to a variety of effects on species and habitats for which a European site has been designated. To determine whether these activities could have an adverse effect on a European site, it is necessary to determine what effects pathways there might be to a QI/SCI. These could result in LSEs on the QI/SCI of European sites and could therefore have implications for the conservation objectives of the sites and leading to adverse effects on site integrity¹³ (AESI). It should be noted that potential effects pathways have been identified in the absence of mitigation and/or other control measures. These are discussed in more detail in **Table 6.1**.

The Grid IP may lead to Grid infrastructure development for instance, that could result in a variety of possible effect pathways through, but not limited to:

- species mortality;
- habitat loss and/or fragmentation;
- disturbance (noise, vibration, movement, lighting);
- changes in water quality; and
- changes in hydrology.

Table 6.1: Potential Effects Pathways resulting from Potential Projects Arising from the Grid IP

Impact to Species/ Habitat	Effects Pathways
Mortality	<ul style="list-style-type: none"> • Mortality of some species could occur through an increase in wildlife casualty incidents, in particular from bird collisions with overhead lines during operation. • Mortality may also occur as a result of pollution events through chronic run-off to habitats that support QI animal or plant species during construction, in particular aquatic QI species.

¹³ Adverse effects on site integrity are considered with respect to the conservation objectives of the European site supporting the Qualifying Interests (Qis)/Special Conservation Interests (SCIs) conservation condition.

Impact to Species/ Habitat	Effects Pathways
Habitat loss/ fragmentation	<ul style="list-style-type: none"> • Direct loss of QI habitat (terrestrial or freshwater) may occur in a European site; habitat fragmentation is directly linked with habitat loss. • Loss of habitat which supports a QI species, either within or out with a European site (e.g. supporting habitat). • Habitat fragmentation may lead to the isolation of QI habitats/species resulting in deterioration of their populations or, in the case of species, an increase in mortality.
Habitat degradation	<ul style="list-style-type: none"> • Habitat degradation during construction (e.g. from tunnelling or deep excavations). • Habitat degradation through the introduction or spreading of non-native invasive species affecting habitats (e.g. vegetation composition and structure).
Habitat degradation - Changes in water quality (pollution)	<ul style="list-style-type: none"> • Water quality can be affected by oil, chemical, heavy metals etc. or through chronic runoff of such materials. • Water quality can also be affected by sedimentation through runoff from construction sites. Construction of new infrastructure could result in a chronic runoff of sediments. • Changes in water quality could directly affect QI species or habitats, or affect them indirectly through loss of aquatic prey species, or through changes in their habitat.
Habitat degradation - Hydrological/Hydrogeological changes	<ul style="list-style-type: none"> • Construction impacts related to tunnelling and deep excavations affecting ground water quality and/or quantity and thereby the exiting hydrological regime. • Changes in hydrology can alter geomorphological processes which can affect the deposition of shingle or other material potentially impacting on QI fish species amongst others. • Changes in these processes can impact aquatic habitats and species either directly or indirectly.
Disturbance	<ul style="list-style-type: none"> • Development arising from the Grid IP could result in disturbance of QI/SCI species or habitats. • This disturbance may include, but not be limited to, noise, vibration, movement (of people and/or vehicles) and lighting. • Disturbance may lead to the abandonment of habitats or resting sites by QI/SCI species, which could include designated or supporting habitats, this should include consideration of ex-situ sites¹⁴.

6.2 Projects related to the Grid IP taken forward to Stage 2 AA

Following screening five potential projects contained within the Grid IP were brought forward to Stage 2 AA including:

- North West Project – a new build project located in the border region;

¹⁴ The need to consider use of habitat areas outside of an SPA by SCI bird species is set out in the Conservation Objectives Supporting Documents for a number of SPAs. For example, the Cummen Strand SPA Conservation Objectives Supporting Documents Version 1 (NPWS, 2013b) states: *Ex-situ factors: several of the listed waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it. The reliance on these habitats will vary from species to species and from site to site. Where SPAs do not have site specific conservation objectives this is the approach taken.*

- The North Connacht 110kV Solution – a new build project located in the west region;
- Celtic Interconnector - a new build project located on the southeast coast connecting to the northwest coast of France; and
- Regional Solution – a number of elements including new build, series compensation and uprates; of these two projects were screened in for further assessment (Shannon Crossing and the Great Island to Kilkenny 100kV line uprate).

Further information on the projects is provided in **Sections 6.2.1** below and in the Grid IP.

6.2.1 Projects related to the Grid IP

North West Project	
No	CP0800
Figure 6.1: General Location/study area	
Project Type	New Build – No details at present
Project Description	<p>The North West project is listed as a major project in the TDP 2016-2026. However, the need for this project is currently being examined and the project solution, technology (for example under or over ground cables), location and timing of this project have yet to be developed.</p> <p>The North West project area is being investigated to provide for the need for reinforcement of the grid in the northwest. This region has significant renewable energy resources which may be constrained by the existing grid network. Demand in the region, including the main urban centers, is expected to grow up to 2025 and beyond. The existing transmission network is composed of both 110kV and 220kV circuits. The existing local transmission network facilitates limited inter area power flows</p>

between Northern Ireland and Ireland via the existing 275kV Tandragee – Louth interconnector. The major project to facilitate power flows in this region is the proposed North South Interconnector between Turleenan and Woodland substations. Planning permission for this project was approved in late 2016.

If progressed this project will be subject to the EirGrid six step project development framework. Figures 6.2 and 6.3 below show SACs and SPAs in the vicinity of the proposed project area.

Figure 6.2: SACs

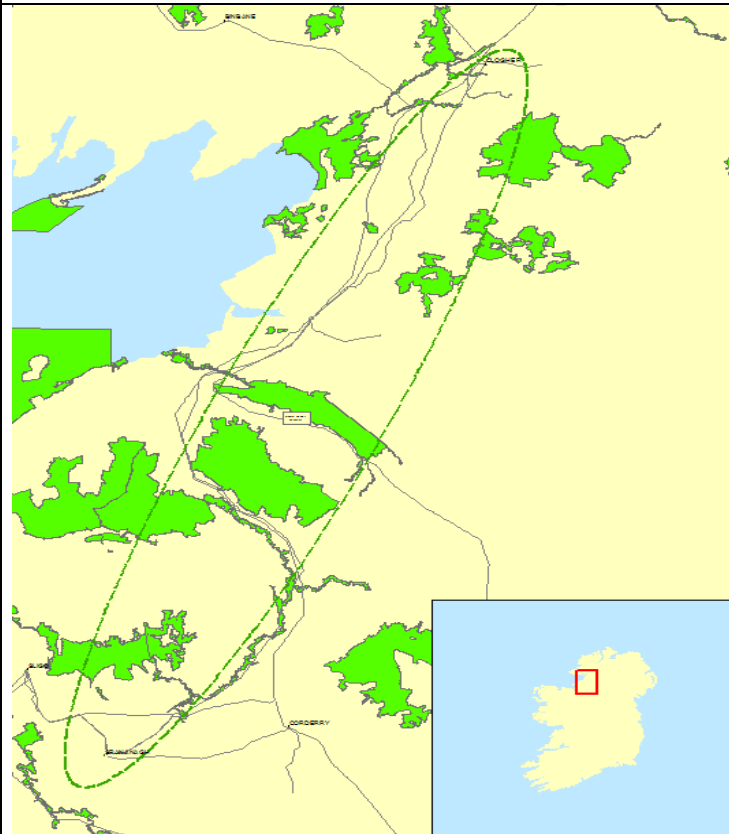
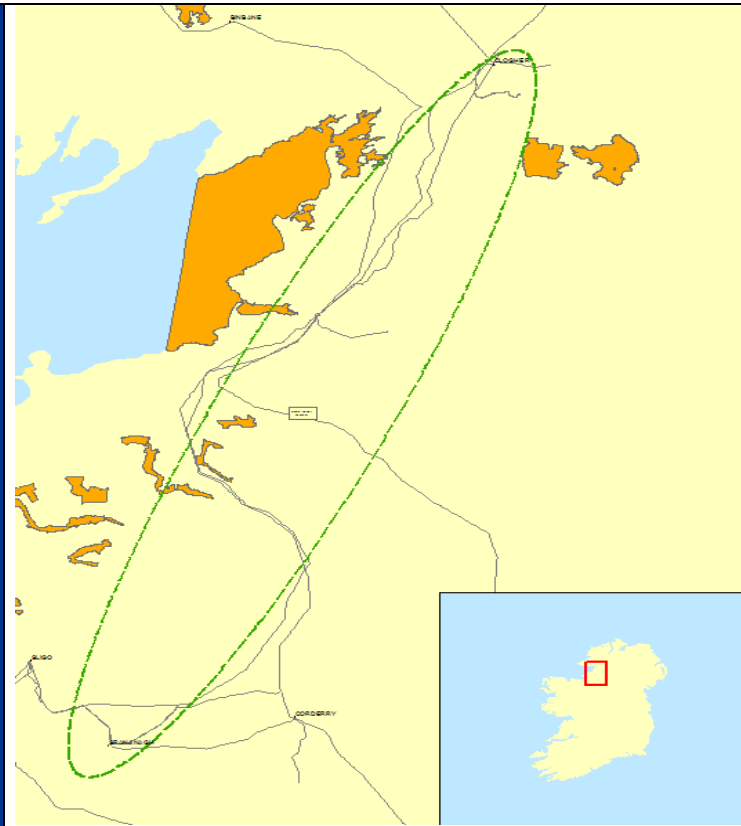


Figure 6.3: SPAs



The North Connacht 110kV Solution

No

CP0816

Figure 6.4: General Location/study area



Project Type

New Build 110kV circuit

The North Connacht will replace the Grid West project as a solution to network needs in this area. The North Connacht project will be a 110kV circuit however, the exact solution (for example overhead line or underground cables), location and timing of this project is currently in the very early stages of project development. What is known at this stage is that the new line will connect already existing substations in this area, If UGC is the technology option chosen for the project then this would be constructed within existing public roads.

If progressed, this project will be subject to the EirGrid six step project development framework. Figures 6.5 and 6.6 below show SACs and SPAs in the vicinity of the proposed project area.

Figure 6.5: SACs

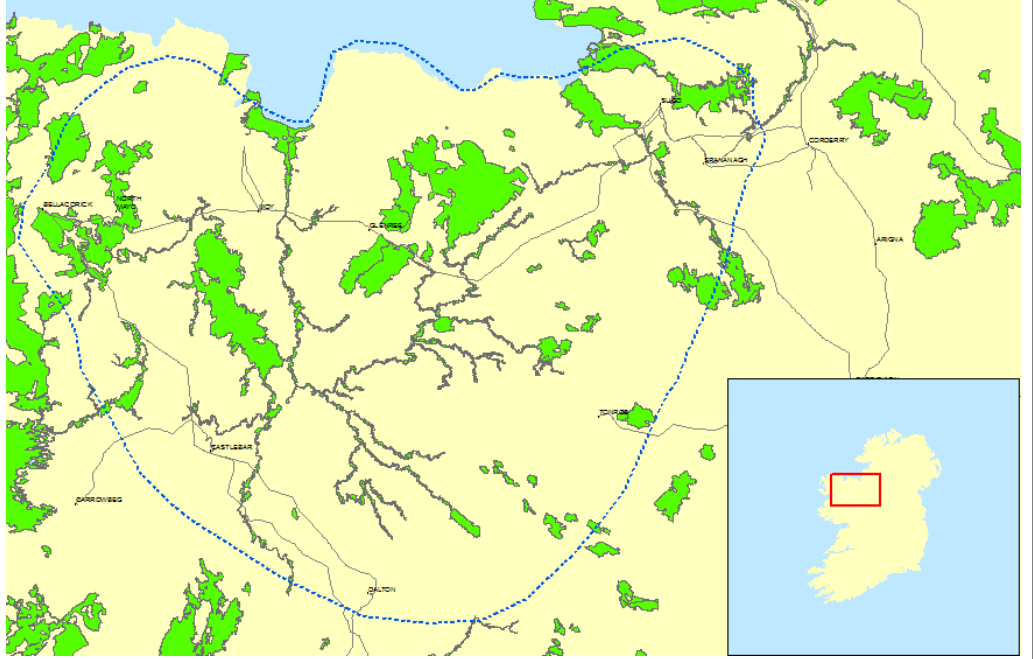
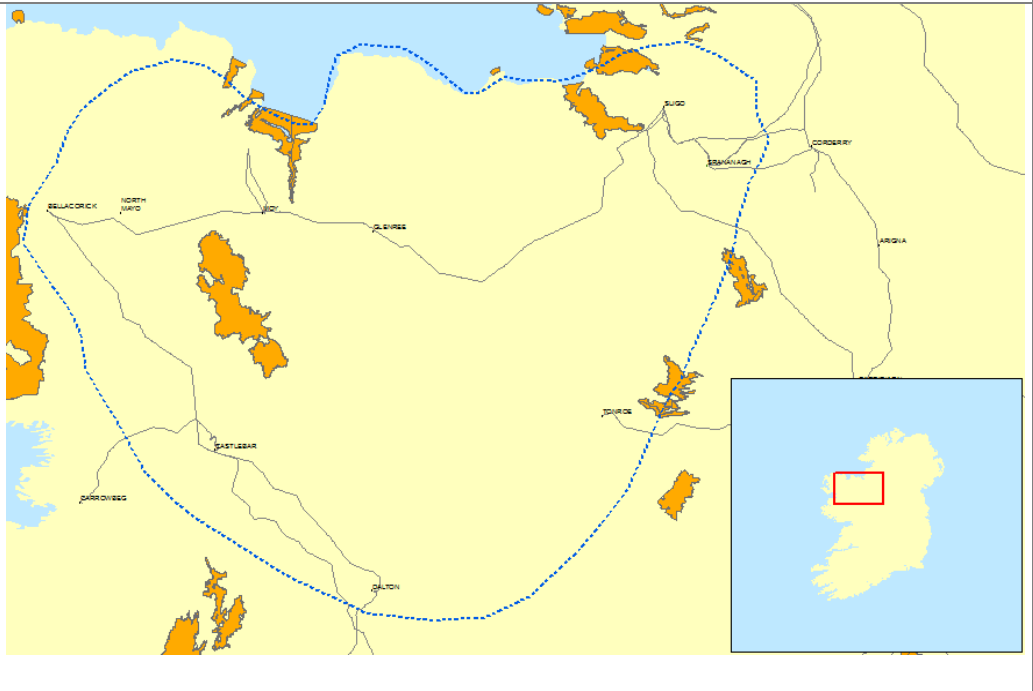


Figure 6.6: SPAs



Celtic Interconnector	
No	n/a
Figure 6.7: Possible landfall Location	<p>The map shows the East Cork coast of Ireland with several locations marked: BARRYMORE, KNOCKRAHA, MIDLETON, KILBARRY, LIBERTY STREET, CASTLEVIEW, COOLROE, TRABEG, OLDCOURT, COW CROSS, RINGASKIDDY, 110KV, RAFFEEEN, WHITEGATE, BRINNY, and BANDON. A dashed blue line indicates a possible landfall location along the coast between Ringaskiddy and Whitegate.</p>
Project Type	New Build Interconnector: sub-sea cable and land cable
Project Description	<p>Potential new Build and a Project of Common Interest (PCI). The project would consist of the following elements:</p> <ul style="list-style-type: none"> • a submarine circuit, approximately 500km in length placed on or beneath the seabed; • landfall point where the submarine circuit will come onshore; • a HVDC land circuit between landfall and a converter station (proposed to use UGC); • a converter station to convert HVDC to HVAC; • a HVAC land circuit between the converter station and the connection point to the Irish grid (UGC or OHL); and • a connection point to an existing substation on the transmission grid. <p>To date a number of studies have been undertaken including a high level Marine Route Investigation and Land Study Reports to determine the feasibility of the proposed project. From the studies undertaken to date, if progressed, the Celtic Interconnector would be located on the southeast coast of Ireland and will travel across the Celtic Sea to tie into the northwest coast of France. The location of the landfall point where the submarine circuit will come onshore has not been determined, as of yet. Feasibility studies examined the East Cork coast and West Wexford coast as possible landfall locations. However, following feasibility studies, it was determined that the East Cork coast is the emerging preferred option. This project is moving through EirGrids 6 step development framework and it is currently at Step 2. Figures 6.8 and 6.9 below show SACs and SPAs in the vicinity of the proposed project area.</p>

Figure 6.8: SACs

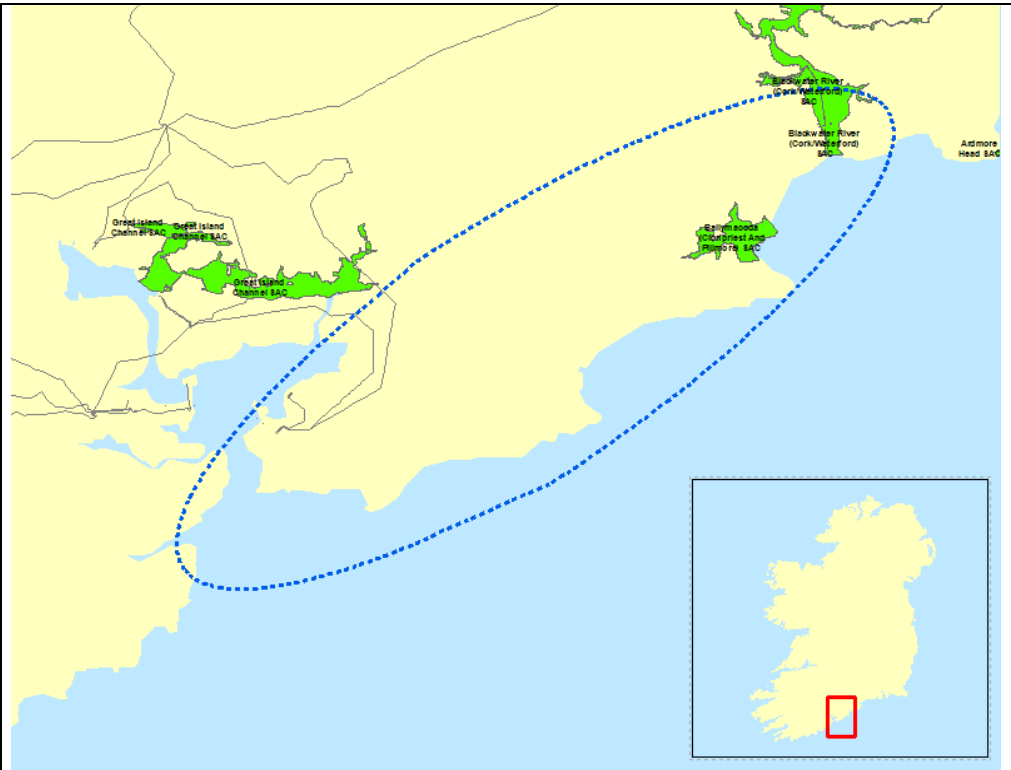


Figure 6.9: SPAs



Regional Solution – Shannon Crossing	
No	CP970
Figure 6.10: General Location/study area	
Project Type	400kV subsea cable
Project Description	<p>This project is a proposal for a new underwater cable across the Shannon estuary linking existing substations at Moneypoint and Kilpaddoge. Studies examining the feasibility of this project will be developed including a geotechnical and geophysical survey of the estuary to assist in identifying possible cable routes.</p> <p>The project will be subject to the EirGrid six step project development framework and the statutory processes. Figures 6.11 and 6.12 below show SACs and SPAs in the vicinity of the proposed project area.</p>

Figure 6.11: SACs

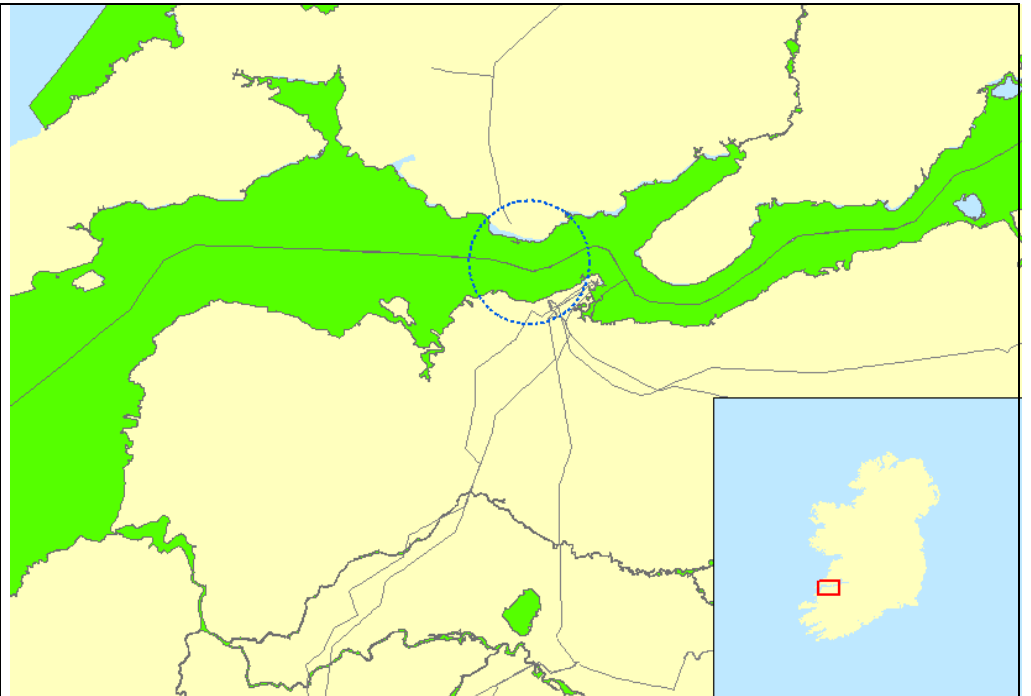
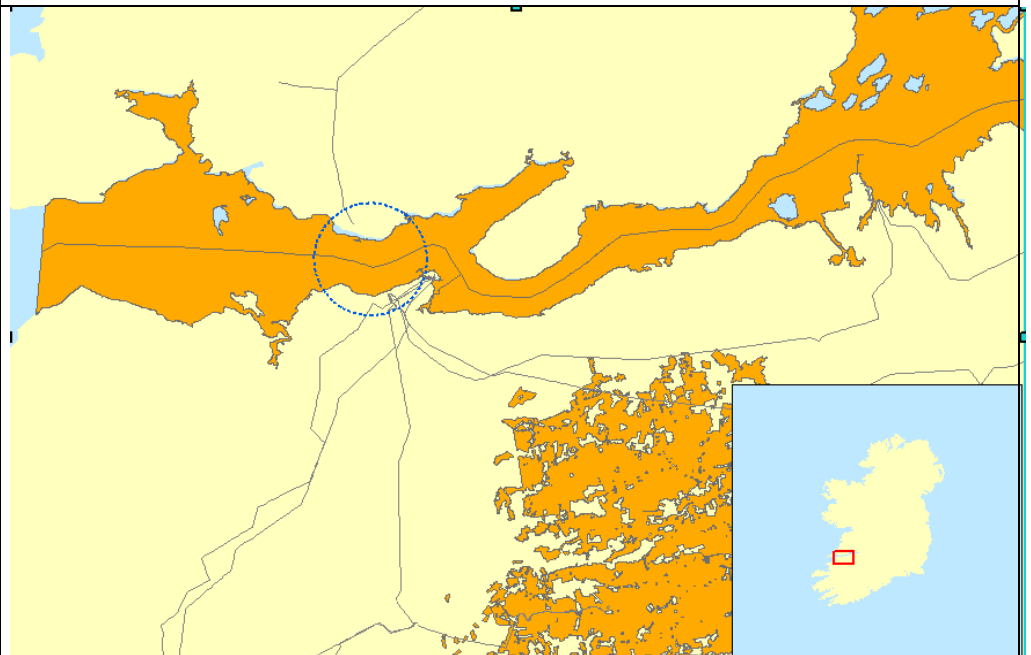
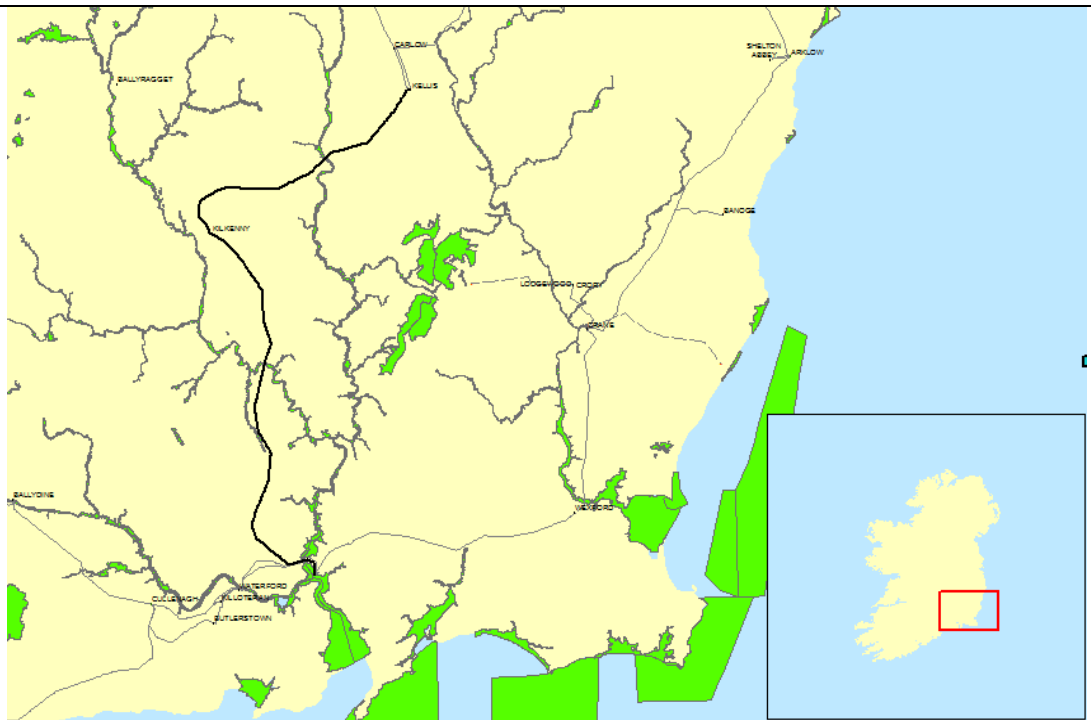


Figure 6.12: SPAs

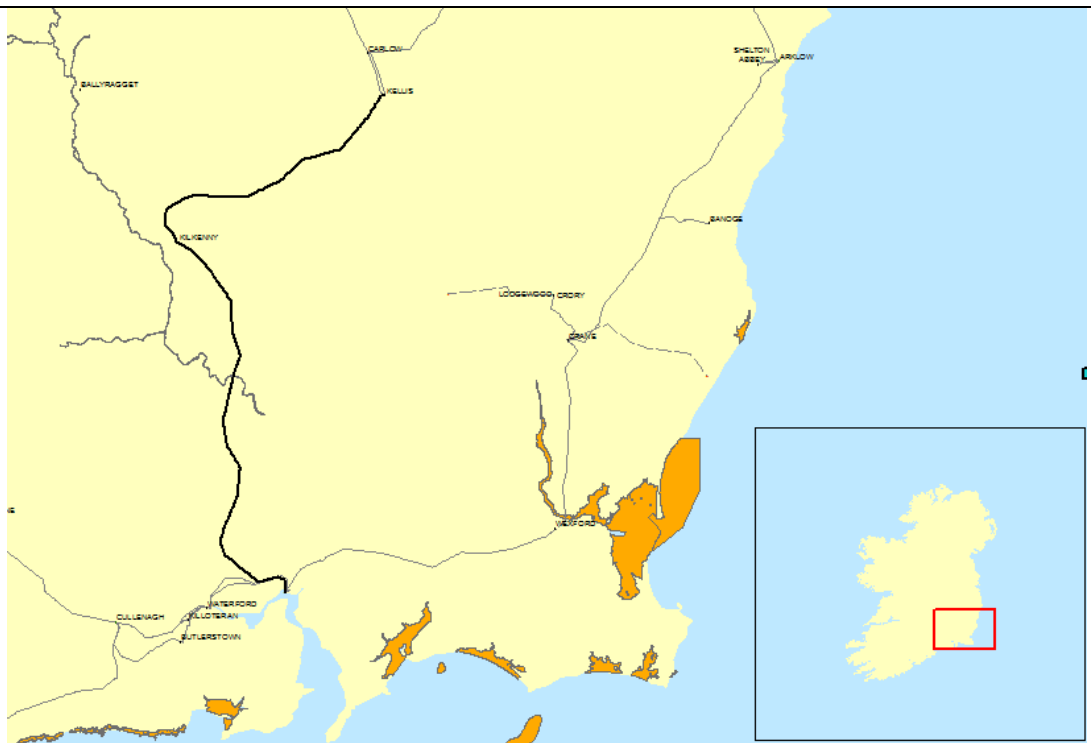


Regional Solution – Great Island to Kilkenny 100kV line uprate	
No	CP0945
Figure 6.13: Location	<p>The map displays a yellow-shaded area representing the project region. A thick black line indicates the proposed 110kV circuit line uprate route. The route starts at Waterford in the south, travels north through Kilkenny, and then continues north towards Carlow. Specific locations marked on the map include Ballyragget, Kilkenny, Carlow, and Kellis. The River Suir is shown flowing through the region, and the IRE border is indicated on the left side.</p>
Project Type	110kV circuit line uprate
Project Description	<p>Uprating the Great Island to Kilkenny 110kV line. This would involve the replacement of the existing conductor (overhead line) with a new, higher rated conductor. The proposed uprate works on the Great Island-Kilkenny 110kV Line will likely include the replacement of a number of angle masts and polesets in order to accommodate the new higher rating conductor.</p> <p>Figures 6.14 and 6.15 below show SACs and SPAs in the vicinity of the existing 100kV line.</p>

**Figure 6.14:
SACs**



**Figure 6.15:
SPAs**



6.4 The projects and their Zol

All of the projects brought forward to stage 2 AA (with the exception of the existing Great Island to Kilkenny 110kV line uprate) are in the very early stages of development or progressing through the EirGrid 6 step framework for grid development. A number of the projects have no technology options or timescales defined to at this stage. Projects and their Zol were identified as per **Section 4.5.2**.

Appendix D examines and identifies which European sites the various projects could affect by examining potential impact pathways connecting the projects to European sites as follows:

- North West Project - **Tables D1.1** and **D1.2**;
- North Connacht Project - **Tables D1.3** and **D1.4**;
- Celtic Interconnector - **Tables D1.5** and **D1.6**;
- Regional Solution projects including the:
 - Shannon Crossing - **Tables D1.7** and **D1.8**; and
 - Great Island to Kilkenny - **Tables D1.9** and **D1.10**.

For a number of the projects the final technology options have not yet been identified for example for the North West project and the North Connacht project, therefore potential impact pathways from both construction and operation of OHLs and UGCs were assessed. Also included in **Appendix D** are the corresponding mitigation measures to ensure any potential adverse effects on site integrity are fully addressed as a result of implementing the Grid IP and any projects arising there from. Mitigation measures are referred to in **Appendix D** but detailed in **Section 7** of this report.

6.4.1 Identifying European Sites within the Zol

In order to determine which European sites may be within the Zol of the proposed projects, the nature and scale of the various projects proposed, the potential impact pathways and their relationship to European sites were considered. In the absence of mitigation measures and considering absence of detailed information for some of the projects, the projects were assessed as having potential for LSEs which could lead to adverse effects on the European sites outlined in **Tables 6.2 – 6.6** below.

Following the identification of the above sites and the identification of potential impact pathways (**Appendix D**), a further high level examination of how the projects could affect the QI/SCIs conservation objectives via the identified pathways was undertaken, the findings of which are provided in **Appendix E**. Identifying these potential impact pathways and assessing how they could affect a given European site has informed the mitigation measures required to ensure that any of the projects proposed in the Grid IP do not adversely affect the integrity of any European sites. At the project level the assessment would follow the same steps but would be refined based on detailed project information (e.g. defined routes and technology options) the detail of which is not available at this stage.

In assessing the links between the various potential impact pathways and the conservation objectives of the qualifying interest (QI) and special conservation interests (SCIs) of European sites within the potential Zol of the proposed project boundaries all QIs/SCIs were initially considered. This is a precautionary approach as the details, and in many cases the precise locations, scope and extent of projects works, are not yet defined. In the absence of this information the potential for any given project to impact upon specific QIs/SCIs within a given European site via a given impact pathway could potentially affect the specific attributes, measures and targets defining the conservation objectives which support the conservation condition of the sites' QI or SCI.

Where site specific conservation objectives (SSCOs) were available they were included in the assessment (**Appendix E**). However, a number of European sites do not have SSCO. Where this was the case detailed

SSCOs from other European sites with the same SCIs/QIs were used¹⁵. For each QI/SCI identified the tables show a potential worst case scenario in terms of the various general construction or operational impacts depending on the technology option (e.g. OHL or UGC) taken forward. For example, at one European site two potential impact pathways may be identified for a given QI (e.g. disturbance and mortality risk), while the same QI may only be impacted by one impact pathway at another European site. As such the conservation objective tables for any given QI identify all potential impact pathways for all of the various European sites in which it occurs.

All of the projects arising from the Grid IP will be subject to AA screening at detailed design stage. This NIS provides a reference point for the general issues any future AA screening or AA of the projects that may be implemented through the timeframe of the Grid IP should consider, including how a given project and specific technology options (OHL/UGC) could potentially affect any European sites.

Table 6.2: European sites within a potential Zol of the North West project – potential for adverse effects on site integrity (in the absence of more detail)

North West Project – SACs	North West Project - SPAs
<ul style="list-style-type: none"> • Arroo Mountain SAC • Ballintra SAC • Ben Bulben, Gleniff and Glenade Complex SAC • Dunmuckrum Turloughs SAC • Dunragh Loughs/Pettigo Plateau SAC (ROI/UK site) • Glenade Lough SAC • Lough Eske and Ardnamona Wood SAC • Lough Gill SAC • Lough Golagh and Breesy Hill SAC • Lough Melvin SAC (ROI/UK site) • Tamur Bog SAC • Durnesh Lough SAC Unshin River SAC • Unshin River SAC • Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC 	<ul style="list-style-type: none"> • Donegal Bay SPA • Pettigo Plateau Nature Reserve SPA • Sligo/Leitrim Uplands SPA • Durnesh Lough SPA • Cummeen Strand SPA • Ballysadare Bay SPA • Ballintemple and Ballygilgan SPA • Lough Nillan Bog SPA

Table 6.3: European sites within a potential Zol of the North Connacht project - potential for adverse effects on site integrity (in the absence of more detail)

North Connacht Project – SACs		North Connacht Project - SPAs
<ul style="list-style-type: none"> • Killala Bay/Moy Estuary SAC • Balla Turlough SAC • Callow Bog SAC • Derrinea Bog SAC • Lough Hoe Bog SAC • Urlaur Lakes SAC • Bellacorick Bog Complex SAC • Lough Corrib SAC 	<ul style="list-style-type: none"> • River Moy SAC • Tullaghanrock Bog SAC • Newport River SAC • Ballinafad SAC • Lough Dahybaun SAC • Errit Lough SAC • Cloonakillina Lough SAC • Ox Mountains Bogs SAC 	<ul style="list-style-type: none"> • Lough Conn and Lough Cullin SPA • Killala Bay/Moy Estuary SPA • Lough Gara SPA • Bellanagare Bog SPA • Ardboline Island and Horse Island SPA • Blacksod Bay/Broadhaven SPA

¹⁵ Site-specific conservation objectives (SSCOs), and associated backing documents, are available for some European sites on the NPWS website⁵. For all other European sites, generic conservation objectives are available and the most up-to-date versions should be used and referenced in any relevant documents. The full scope of conservation objectives should be used, as appropriate, to guide and inform the scope of the scientific assessment and analysis in an NIS. The most recent version of the conservation objectives should be used and referenced in relevant documentation, and each of the individual conservation objectives of relevance should be addressed separately (Scoping response from DAHRRGA, 21st March 2017).

North Connacht Project – SACs		North Connacht Project - SPAs
<ul style="list-style-type: none"> • Doocastle Turlough SAC • Flughany Bog SAC • Glenamoy Bog Complex SAC • Lough Nabrickkeagh Bog SAC • Turloughmore (Sligo) SAC • Union Wood SAC • Bricklieve Mountains and Keishcorran SAC • Lough Gill SAC 	<ul style="list-style-type: none"> • Towerhill House SAC • Lough Carra/Mask Complex SAC • Ballysadare Bay SAC • Templehouse and Cloonacleigha Loughs SAC • Lough Arrow SAC • Unshin River SAC 	<ul style="list-style-type: none"> • Lough Mask SPA • Cummeen Strand SPA • Ballysadare Bay SPA • Sligo/Leitrim Uplands SPA • Drumcliff Bay SPA • Ballintemple and Ballygilgan SPA • Lough Mask SPA • Derryveagh and Glendowan Mountains SPA • Blacksod Bay/Broadhaven SPA

Table 6.4: European sites within a potential Zol of the Celtic Interconnector - potential for adverse effects on site integrity (in the absence of more detail)

Celtic Interconnector Project – SACs	Celtic Interconnector Project - SPAs
<ul style="list-style-type: none"> • Blackwater River (Cork/Waterford) SAC 	<ul style="list-style-type: none"> • Ballycotton Bay SPA • Blackwater Estuary SPA • Cork Harbour SPA

Table 6.5: European sites within a potential Zol of the Regional Solution (Shannon Crossing) - potential for adverse effects on site integrity (in the absence of more detail)

Shannon Crossing Project – SACs	Shannon Crossing Project - SPAs
<ul style="list-style-type: none"> • Lower River Shannon SAC 	<ul style="list-style-type: none"> • River Shannon and River Fergus Estuaries SPA

Table 6.6: European sites within a potential Zol of the Regional Solution (Great Island to Kilkenny 100kV uprate) - potential for adverse effects on site integrity (in the absence of more detail)

Great Island to Kilkenny 100kV Uprate Project - SACs	Great Island to Kilkenny 100kV Uprate Project - SPAs
<ul style="list-style-type: none"> • River Barrow and River Nore SAC 	

6.5 Interaction between the projects related to the Grid IP and European Sites

Appendix D details the source-pathway-receptor analysis identifying the potential effects pathways connecting the various elements of the Grid IP to European sites. Section 6.5.1 – 6.5.4 below provides an overview of the potential effects pathways applicable to each European site for each project, it should be noted that these potential effects pathways have been identified in the absence of mitigation, and in many cases limited information on the technology options to be progressed. A number of the potential effects pathways would likely be excluded from the project level assessment where more detailed information on final design options is available. High level mitigation measures to address potential adverse effects on site integrity are outlined in Section 7 of the report. Finally, no effect pathways are predicted from the operation of underground cables (UGCs).

6.5.1 The North West Project

Tables 6.7 – 6.10 below provide an overview of the source-pathway-receptor types with potential for likely significant effects (LSEs) that could lead to adverse effects on site integrity (AESI) on European sites from the North West Project. Further discussion on each source-pathway-receptor type is provided below.

Table 6.7: Summary of potential source-pathway-receptor types from the construction or operation of OHLs on SACs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North West Project

North West Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourse /bodies and aquatic QI species	Mortality Risk	Disturbance
Arroo Mountain SAC	✓	✓				
Ballintra SAC	✓	✓				
Ben Bulbin, Gleniff and Glenade Complex SAC	✓	✓	✓	✓	✓	✓
Dunmuckrum Turloughs SAC	✓	✓				
Dunragh Loughs/Pettigo Plateau SAC (ROI/UK site)	✓	✓	✓			
Glenade Lough SAC	✓	✓		✓		
Lough Eske and Ardnamona Wood SAC	✓	✓		✓	✓	
Lough Gill SAC	✓	✓		✓	✓	✓
Lough Golagh and Breesy Hill SAC	✓	✓	✓			
Lough Melvin SAC (ROI/UK site)	✓	✓		✓	✓	✓
Tamur Bog SAC	✓	✓	✓			
Durnesh Lough SAC	✓	✓				
Unshin River SAC		✓		✓	✓	✓
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC				✓		

Table 6.8: Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SACs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North West Project

North West Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourse/ bodies and aquatic QI species	Mortality Risk	Disturbance
Arroo Mountain SAC	✓	✓		✓		
Ballintra SAC	✓	✓				
Ben Bulbin, Gleniff And Glenade Complex SAC	✓	✓	✓	✓	✓	✓
Dunmuckrum Turloughs SAC	✓	✓	✓			
Dunragh Loughs/Pettigo Plateau SAC (ROI/UK site)	✓	✓	✓			
Glenade Lough SAC	✓	✓		✓	✓	
Lough Eske And Ardnamona Wood SAC	✓	✓	✓	✓	✓	
Lough Gill SAC	✓	✓		✓	✓	✓
Lough Golagh and Breesy Hill SAC	✓	✓	✓			
Lough Melvin SAC (ROI/UK site)	✓	✓		✓	✓	✓
Tamur Bog SAC	✓	✓	✓			
Durnesh Lough SAC	✓	✓				
Unshin River SAC		✓		✓	✓	✓
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC				✓		

Habitat loss

A specific route or the technology option (OHL or UGC) for the North West project has not yet been identified and therefore this project has the potential to result in direct habitat loss in a European site. **Tables 6.7 and 6.8** identifies SACs which could potentially be impacted within the proposed study area. The project also has the potential to result in loss of potential supporting habitat outwith a European site. However, given the Key Principles outlined in **Section 7.1** (see **Box 7A**) habitat loss (specifically in relation to Annex I habitats and QI species) within a European or loss of supporting habitat will not occur as a result of the construction and operation of this project. Therefore, there are no implications from habitat loss (or supporting habitat) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Habitat degradation – spread of non-native invasive species

There is potential for non-native invasive species to be spread during construction and/or operation of many development types this is no different for the development/construction and/or operation (e.g. OHL line uprate, modification works etc.) of grid infrastructure. There is therefore potential to affect habitats and associated species within European sites in the vicinity of these works. However, given the Key Principles and mitigation measures outlined in **Section 7.1, Box 7A** the spread of invasive species as a result of the construction and/or operation the proposed project will not occur. Therefore, there are no implications from the spread of invasive species on the conservation objectives of European sites and therefore no potential adverse effects on site integrity are identified.

Habitat degradation – hydrogeology – potential impacts on QI habitats (and associated species)

Tunnelling and/or deep excavation works associated with the placement of UGCs (should this be the option taken forward) has the potential to affect the existing hydrogeological regime in the vicinity of the works which in turn has the potential to affect groundwater dependant/groundwater fed habitats (e.g. Petrifying springs, Turloughs and their associated species). Impacts on these habitats can occur from outside the European sites with which these QI habitats are associated. For example, Scottish guidance (SEPA, 2014) estimates that the area over which impacts on groundwater dependant habitats can occur is up to 250m from the area of intrusive works, this will also be influenced by the underlying geology in the area. Changes to groundwater levels could also impact on QI species such as whorl snails (*Vertigo spp.*) (discussed further below) which are known to occur within the Zol of the proposed project study area. Excavation works associated with the construction of OHLs would be considered only minimally invasive and are considered to pose little risk in terms of interacting with groundwater sources.

Mitigation measures in relation to habitat degradation (hydrogeology) are outlined in **Section 7.2, Box 7B**. With the implementation of mitigation measures there are no implications from habitat degradation (hydrogeology) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Habitat degradation – water quality – potential impacts on watercourses/bodies and aquatic QI species

There are a number of freshwater, wetland European sites and QIs that rely on these habitats in the potential zone of influence of the Grid IP. If the North West project route was to be located adjacent/intersecting a watercourses and/or lakes or there was a requirement for the route to cross water courses there would be potential for construction works, in particular excavation works in the vicinity of watercourses, to affect both surface and groundwater quality. Impacts associated with construction in the vicinity of aquatic habitats would be considered to have a higher impact (if unmitigated). In particular sediment pollution from construction run-off could impact on surface waters and a number of aquatic QI species within the potential Zol of the proposed project study area including but not limited to slender naiad (*Najas flexilis*), white-clawed crayfish (*Austropotamobius pallipes*), freshwater pearl mussel (*Margaritifera margaritifera*), Atlantic salmon and lamprey species (*Lampetra spp.*). Impacts on water quality could also lead to indirect impacts on otter (e.g. resulting in a reduction of prey resources).

Mitigation measures in relation to prevention of habitat degradation and protection of water quality are outlined in **Section 7.2, Box 7B**. With the implementation of mitigation measures there are no implications from habitat degradation (water quality) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Mortality risk to QI species (excluding SCI bird species)

It should be noted that although no loss of Annex I habitat from an SAC is anticipated, terrestrial QI species such as whorl snails (*Vertigo spp.*) can occasional occur in areas of non-annexed/QI habitats or on the fringes of such habitats within SACs (e.g. lakeshores in the case of *Vertigo geyeri*). Although in some cases they will be

associated with other QI habitats such as petrifying springs¹⁶. These species can also be impacted by changes in groundwater levels. Clearance of non-Annex I/QI habitats for access or construction works for UGCs or OHLs could therefore result in the mortality of whorl snails (*Vertigo spp.*) while construction of UGCs could have the potential to alter groundwater conditions outwith an SAC potentially impacting on these groundwater dependant species. Other construction related impacts such as pollution impacts affecting water quality could result in mortality risk for aquatic QI species, while excavation works in the vicinity of an otter holt could result in a holt collapsing, potentially entombing otter.

Impacts on marsh fritillary (*Euphydryas aurinia*) have been ruled out, as although this is a mobile species that could be present outside the confines of the SAC the closest site is over 9km from the proposed project study area boundary which would be well outside the core range for the SAC population.

Mitigation measures in relation to mortality risk are outlined in **Sections 7.1, Box 7A** (habitat loss) and **Section 7.2, Box 7B** (aquatic and groundwater dependant habitats and species). With the implementation of mitigation measures there are no implications from mortality risk on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Table 6.9: Summary of potential source-pathway-receptor types from the construction or operation of OHLs on SPAs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North West Project

North West Project - SPAs	Mortality Risk	Disturbance/Displacement
Donegal Bay SPA	✓	✓
Pettigo Plateau Nature Reserve SPA	✓	✓
Sligo/Leitrim Uplands SPA	✓	✓
Durnesh Lough SPA	✓	✓
Cummeen Strand SPA	✓	
Ballysadare Bay SPA	✓	
Ballintemple and Ballygilgan SPA	✓	
Lough Nillan Bog SPA	✓	

Table 6.10: Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SPAs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North West Project

North West Project - SPAs	Mortality Risk	Disturbance/Displacement**
Donegal Bay SPA		✓
Pettigo Plateau Nature Reserve SPA		✓
Sligo/Leitrim Uplands SPA		✓

¹⁶ *Vertigo geyeri* is stringent in its requirement of saturated water conditions in calcareous, groundwater-fed flushes that are often limited in size to a few metres square. Their habitats often occur in mosaics of suitable patches within wider fen macrohabitats, that in Ireland can themselves fall within habitats as diverse as raised bog laggs, transition mires, lake shores, hill or mountain slopes, and wetlands associated with coastal dunes and machair. Within these macrohabitats, however, the snail is consistent in where it lives, within the saturated and decaying roots of small calcareous sedges (particularly *Carex viridula ssp. brachyrrhyncha*), associated fenmosses (particularly *Drepanocladus revolvens* and *Campyllum stellatum*). The greatest indicator of optimum *V. geyeri* habitat is the presence of a tufa-forming spring (Moorkens 2003 cited in Moorkens & Killeen, 2011).

North West Project - SPAs	Mortality Risk	Disturbance/Displacement**
Durnesh Lough SPA		✓

**disturbance only predicted for the construction phase. No operational phase impacts.

Mortality risk from the operation of OHLs (SCI bird species)

OHLs in particular can impact negatively on SCI birds. Migrating birds flying at heights of 20m to 50m are at considerable risk of collision, especially at night, when flying in flocks, and for large and heavy birds of limited manoeuvrability. Birds moving from roosting to feeding areas potentially outside of designated sites are also particularly vulnerable (EirGrid, 2012). A number of other factors can increase collision risk including weather conditions, larger species such as swans and geese are more vulnerable to collision. Collision risk may also affect birds flying between feeding and overwintering habitats outside of designated SPAs, leading to significant indirect impacts on SPA integrity. Mitigation measures in relation to mortality risk SCI bird species are outlined in **Section 7.2, Box 7C**. With the implementation of mitigation measures there are no implications from mortality risk on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Mortality risk from the operation of UGCs (SCI bird species)

There is no potential for mortality risk to SCI bird species from the operation of UGCs.

Disturbance/Displacement (including from areas of supporting habitat outside European sites)

There is potential for the construction works associated with either the construction of OHLs or UGCs to result in levels of disturbance that could potentially displace QI/SCI species from important habitat areas (e.g. breeding/resting places or key foraging areas for overwintering birds).

Mitigation measures in relation to disturbance (SCI birds and QI species) are outlined in **Section 7.2, Box 7D**, while mitigation measures in relation to supporting habitat are outlined in **Section 7.1, Box 7A**. With the implementation of mitigation measures there are no implications from disturbance on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

6.5.2 North Connacht Project

Tables 6.11 – 6.14 below provide an overview of the source-pathway-receptor types with potential for LSEs that could lead to AESI on European sites from the North Connacht Project. Further discussion on each source-pathway-receptor type is provided below.

Table 6.11: Summary of potential source-pathway-receptor types from the construction or operation of OHLs on SACs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North Connacht Project

North Connacht Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourse/ bodies and aquatic QI species	Mortality Risk	Disturbance
Killala Bay/Moy Estuary SAC	✓	✓		✓	✓	✓
Balla Turlough SAC	✓	✓		✓		
Callow Bog SAC	✓	✓		✓		
Derrinea Bog SAC	✓	✓		✓		
Lough Hoe Bog SAC	✓	✓		✓		
Urlaur Lakes SAC		✓		✓		
Bellacorick Bog Complex SAC	✓	✓		✓		
River Moy SAC	✓	✓		✓	✓	✓
Tullaghanrock Bog SAC	✓	✓		✓		
Lough Corrib	✓	✓		✓		
Bellacorick Iron Flush SAC	✓	✓				
Doocastle Turlough SAC	✓	✓		✓		
Glennamoy Bog Complex SAC	✓	✓		✓	✓	
Lough Nabrickkeagh Bog SAC	✓	✓				
Turloughmore (Sligo) SAC	✓	✓		✓		
Cloonakilla Lough SAC	✓	✓				
Ox Mountains Bogs SAC	✓	✓		✓		
Newport River SAC		✓		✓		
Ballinafad SAC	✓	✓			✓	
Lough Dahybaun SAC	✓	✓				
Ballysadare Bay SAC	✓			✓		
Templehouse And Cloonacleigh Loughs SAC				✓		
Errit Lough SAC		✓		✓		
Union Wood SAC	✓	✓				
Bricklieve Mountains &	✓	✓		✓	✓	✓

North Connacht Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourse/ bodies and aquatic QI species	Mortality Risk	Disturbance
Keishcorran SAC						
Lough Arrow SAC		✓		✓		
Unshin River SAC	✓	✓		✓	✓	✓
Lough Gill SAC	✓	✓		✓	✓	✓
Towerhill House SAC	✓					
Lough Carra/Mask Complex SAC	✓				✓	✓

Table 6.12 : Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SACs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North Connacht Project

North Connacht Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourse/ bodies and aquatic QI species	Mortality Risk	Disturbance
Killala Bay/Moy Estuary SAC		✓	✓			✓
Balla Turlough SAC		✓	✓			
Callow Bog SAC		✓	✓	✓		
Derrinea Bog SAC		✓	✓	✓		
Lough Hoe Bog SAC		✓	✓	✓		
Urlaur Lakes SAC		✓	✓	✓		
Bellacorick Bog Complex SAC		✓	✓	✓		
River Moy SAC		✓	✓	✓	✓	✓
Tullaghanrock Bog SAC		✓	✓	✓		
Lough Corrib SAC	✓	✓	✓	✓	✓	✓
Doocastle Turlough SAC		✓	✓	✓		
Flughany Bog SAC		✓	✓			

North Connacht Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourse/ bodies and aquatic QI species	Mortality Risk	Disturbance
Glenamoy Bog Complex SAC		✓	✓	✓	✓	
Turloughmore (Sligo) SAC			✓	✓		
Cloonakillina Lough SAC			✓	✓		
Ox Mountains Bogs SAC			✓			
Newport River SAC		✓	✓	✓		
Ballinafad SAC	✓					
Lough Dahybaun SAC		✓	✓			
Ballysadare Bay SAC			✓			
Bricklieve Mountains & Keishcorran SAC			✓		✓	
Unshin River SAC			✓	✓		✓
Lough Gill		✓	✓	✓	✓	✓
Towerhill House SAC	✓					
Lough Carra/Mask Complex SAC	✓					✓

Habitat loss

A defined route or the technology option (OHL or UGC) for the North Connacht project has not yet been identified. However, it is understood that the new 100kVcircuit (whether OHL or UGC) will connect already existing sub stations in this study area. If an UGC was the chosen technology option for this project it would be constructed in existing public roads, ruling out the potential for loss of Annex I/QI habitats within an SAC. However, there are a number of SACs potentially located between stations in this wide study area (as shown in **Table 6.11** above) and therefore direct loss of Annex I/QI habitats associated with the construction of an OHL (given that supporting structures are likely to be placed at 100m intervals) for the project cannot be ruled out at this stage. While the project regardless of the technology option used also has the potential to result in loss of potential supporting habitat outwith but connected to a European site. For example, there is potential for the proposed project to result in the loss of important supporting habitat (hedgerows, treelines used for commuting) for the lesser horseshoe bat (*Rhinolophus hipposideros*). There are four SACs for which this species is a QI located within the proposed study area or within 4km of project study area boundary which is likely to be within the core sustenance zone¹⁷ of this species (BCT, 2016).

¹⁷ A core sustenance zone (CSZ), as applied to bats, refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. With reference to planning and development the core sustenance zone could be used to indicate 1. The area surrounding the roost within which development work can be assumed to impact the commuting and foraging habitat of bats using the roost, in the absence of information on local foraging behaviour. This will highlight the need

Given the Key Principles outlined in **Section 7.1, Box 7A** and **Section 7.3, Box 7E** habitat loss (specifically in relation to QI/Annex I habitats, Annex II plant species) within a European site or loss of supporting habitat outwith a European site will not occur as a result of the construction and operation of this project. Therefore, there are no implications from habitat loss (or supporting habitat) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Habitat degradation – spread of non-native invasive species

Potential impacts on European sites from the spread of non-native species would be the same as those identified for the North West project (see **Section 6.4.1**). The same Key Principles and mitigation measures outlined in **Section 7.1 (Box 7A)** would apply to this project. Therefore, there are no implications from the spread of invasive species on the conservation objectives of European sites and therefore no potential adverse effects on site integrity are identified.

Habitat degradation – hydrogeology – potential impacts on QI habitats (and associated species)

As outlined above for the North West project tunnelling and/or deep excavation works associated with the placement of UGCs (should this be the option taken forward) has the potential to affect the existing hydrogeological regime in the vicinity of the works which in turn has the potential to affect groundwater dependant/groundwater fed habitats (e.g. petrifying springs, turloughs and their associated species). Changes to groundwater levels could also impact on QI species such as whorl snails (including *Vertigo geyeri* and *V. angustior*) and QI plant species such as marsh saxifrage (*Saxifraga hirculus*) (discussed further below) both of which are known to occur within the Zol of the proposed project study area. Although UGCs are likely to be constructed in existing roads outside of a European site, impacts on these habitats could occur from outside the European sites if an UGC was laid within 250m of these sensitive habitats. As noted previously excavation works associated with the construction of OHLs would be considered only minimally invasive and are considered to pose little risk in terms of interacting with groundwater sources.

Mitigation measures in relation to habitat degradation (hydrogeology) are outlined in **Section 7.3, Box 7F**. With the implementation of mitigation measures there are no implications from habitat degradation on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Habitat degradation – water quality – potential impacts on watercourses/bodies and aquatic QI species

There are a number of freshwater, wetland European sites and QIs that rely on these habitats in the potential Zol of the Grid IP (see **Appendix D, Table D1.3**). If the new line was located next to watercourses and/or lakes or there was a requirement for the route to cross water courses there would be potential for construction works, in particular excavation works in the vicinity of watercourses, to affect surface and groundwater quality. Construction in the vicinity of aquatic habitats has the potential to give rise to adverse effects on site integrity (if unmitigated). In particular sediment pollution from construction run-off could impact on surface waters and a number of aquatic QI species. Impacts on water quality could also lead to indirect impacts on otter (e.g. resulting in a reduction of prey resources). The River Moy SAC in particular covers a large part of the proposed project study area and therefore, the proposed project is likely to intersect or run adjacent to this SAC at some point. In the absence of mitigation potential impacts on aquatic QI species potentially leading to adverse effects on site integrity could not be ruled out.

Mitigation measures in relation to prevention of habitat degradation and protection of water quality are outlined in **Section 7.3, Box 7F**. With the implementation of mitigation measures there are no implications from habitat degradation (water quality) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

for species-specific survey techniques where necessary. 2. The area within which mitigation measures should ensure no net reduction in the quality and availability of foraging habitat for the colony, in addition to mitigation measures shown to be necessary following ecological survey work (BCT, 2016).

Mortality risk to QI species (excluding SCI bird species)

The same potential impact pathways (loss of supporting habitat, pollution of water courses during construction) and QIs (*Vertigo spp.*, otter, aquatic QI species) as identified for the North West project (see **Section 6.4.1**) are applicable to the North Connacht project from the construction of either an UGC or OHL for this project.

Following the Key Principles set out in **Section 7.1, Box 7A** (supporting habitat loss) and implementation of the mitigation measures in relation to mortality risk outlined in **Section 7.3, Box 7E** and **Section 7.3, Box 7F** there are no implications from mortality risk on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Table 6.13 : Summary of potential source-pathway-receptor types from the construction or operation of OHLs on SPAs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North Connacht Project

North Connacht Project - SPAs	Mortality Risk	Disturbance/Displacement
Cummeen Strand SPA	✓	✓
Ballysadare Bay SPA	✓	✓
Lough Conn and Lough Cullin SPA	✓	✓
Killala Bay/Moy Estuary SPA	✓	✓
Lough Gara SPA	✓	✓
Sligo/Leitrim Uplands SPA	✓	
Drumcliff Bay SPA	✓	
Ballintemple and Ballygilgan SPA	✓	
Bellanagare Bog SPA	✓	
Ardboline Island and Horse Island SPA	✓	
Lough Mask SPA	✓	
Derryveagh and Glendowan Mountains SPA	✓	
Blacksod Bay/Broadhaven SPA	✓	

Table 6.14 : Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SPAs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – North Connacht Project

North Connacht Project - SPAs	Mortality Risk	Disturbance/Displacement
Cummeen Strand SPA		✓
Ballysadare Bay SPA		✓
Lough Conn and Lough Cullin SPA		✓
Killala Bay/Moy Estuary SPA		✓
Lough Gara SPA		✓

Mortality risk from the operation of OHLs (SCI bird species)

The final technology option (OHL or UGC) for this project is undecided as yet. As noted above for the North West project (see **Section 6.4.1**) OHLs in particular can impact negatively on SCI birds. The high level assessment identified five SPAs potentially at risk given their location within the proposed project study area or within the zone of influence of same. Therefore, impacts on SCI bird species from collision risk with OHLs cannot be ruled out at this stage.

Mitigation measures in relation to mortality risk to SCI bird species are outlined in **Section 7.3, Box 7H**. With the implementation of mitigation measures there are no implications from mortality risk on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Mortality risk from the operation of UGCs (SCI bird species)

There is no potential for mortality risk to SCI bird species from the operation of UGCs.

Disturbance/Displacement (including from areas of supporting habitat outside European sites)

There is potential for the construction works associated with either the construction of OHLs or UGCs to result in levels of disturbance that could potentially displace QI/SCI species from important habitat areas (e.g. breeding/resting places or key foraging areas for overwintering birds).

Mitigation measures in relation to disturbance (SCI birds and QI species) are outlined in **Section 7.3, Box 7G**, while mitigation measures in relation to supporting habitat are outline in **Section 7.1, Box 7A**. With the implementation of mitigation measures there are no implications from disturbance on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

6.5.3 Celtic Interconnector

Tables 6.15 – 6.18 below provide an overview of the source-pathway-receptor types with potential for LSEs that could lead to AESI on European sites from the Celtic Interconnector Project (Cork Option). Further discussion on each source-pathway-receptor type is provided below.

Table 6.15: Summary of potential source-pathway-receptor types from the construction or operation of OHLs on SACs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – Celtic Interconnector

Celtic Interconnector (Cork Option) Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourses/ bodies and aquatic QI species	Mortality Risk	Disturbance
Blackwater River (Cork/Waterford) SAC		✓		✓	✓	✓

Table 6.16: Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SACs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – Celtic Interconnector

Celtic Interconnector (Cork Option) Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourses/bodies and aquatic QI species	Mortality Risk	Disturbance
Blackwater River (Cork/Waterford) SAC		✓		✓	✓	✓

Habitat loss

No loss of Annex I/QI habitat is anticipated as the landfall point where the submarine circuit will come onshore, the converter station and on land cable connections can easily avoid going directly through any European site. However, the project regardless of the technology options used on land (various options proposed to connect into the existing grid) has the potential to result in loss of potential supporting habitat outwith but connected to a European site.

Given the Key Principles outlined in **Section 7.1, Box 7A** habitat loss (specifically in relation to loss of supporting habitat) outwith a European site will not occur as a result of the construction and operation of this project. Therefore, there are no implications from habitat loss (or supporting habitat) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Habitat degradation – spread of non-native invasive species

Potential impacts on European sites from the spread of non-native species would be the same as those identified for the North West project (see **Section 6.4.1**). The same Key Principles and mitigation measures outlined in **Section 7.1 (Box 7A)** would apply to this project. Therefore, there are no implications from the spread of invasive species on the conservation objectives of European sites and therefore no potential adverse effects on site integrity are identified.

Habitat degradation – water quality – potential impacts on watercourses/bodies and aquatic QI species

The Blackwater River (Cork/Waterford) SAC is the only SAC within the potential ZoI of the proposed project. If the OHL or UGC was to be located next to watercourses hydrologically linked to the site there is potential for impacts from construction works. In particular sediment pollution from construction run-off could impact on surface waters and a number of aquatic QI species including but not limited to freshwater pearl mussel, Atlantic salmon and lamprey species. Impacts on water quality could also lead to indirect impacts on otter (e.g. resulting in a reduction of prey resources).

Mitigation measures in relation to prevention of habitat degradation and protection of water quality are outlined in **Section 7.4.1, Box 7I**. With the implementation of mitigation measures there are no implications from habitat degradation (water quality) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Mortality risk to QI species (excluding SCI bird species)

Other construction related impacts (whether OHL or UGC) such as pollution impacts affecting water quality could result in mortality risk for aquatic QI species, while excavation works in the vicinity of an otter holt could result in a holt collapsing, potentially entombing otter.

Mitigation measures in relation to mortality risk (QI species) are outlined in **Section 7.4.1, Box 7I and Box K**. With the implementation of mitigation measures there are no implications from mortality risk on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Table 6.16: Summary of potential source-pathway-receptor types from the construction or operation of OHLs on SPAs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – Celtic Interconnector

Celtic Interconnector (Cork Option) Project - SPAs	Mortality Risk	Disturbance/Displacement
Ballycotton Bay SPA	✓	✓
Blackwater Estuary SPA	✓	✓
Cork Harbour SPA	✓	✓

Table 6.17: Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SPAs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – Celtic Interconnector

Celtic Interconnector (Cork Option) Project - SPAs	Mortality Risk	Disturbance/Displacement
Ballycotton Bay SPA		✓
Blackwater Estuary SPA		✓
Cork Harbour SPA		✓

Mortality risk from the operation of OHLs (SCI bird species)

The final technology option (OHL or UGC) for the HVAC land circuit between the converter station and the connection point to the Irish grid has not been confirmed as yet. As noted above for the North West project (see **Section 6.4.1**) OHLs in particular can impact negatively on SCI birds. The high level assessment identified three SPAs potentially at risk given their location within the proposed project study area. Therefore, impacts on SCI bird species from collision risk with OHLs cannot be ruled out at this stage.

Mitigation measures in relation to mortality risk to SCI bird species are outlined in **Section 7.4.1, Box 7K**. With the implementation of mitigation measures there are no implications from mortality risk on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Mortality risk from the operation of UGCs (SCI bird species)

There is no potential for mortality risk to SCI bird species from the operation of UGCs.

Disturbance/Displacement

There is potential for the construction works associated with either the construction of OHLs or UGCs to result in levels of disturbance that could potentially displace QI/SCI species from important habitat areas (e.g. breeding/resting places or key foraging areas for overwintering birds).

Mitigation measures in relation to disturbance (SCI bird and QI species) are outlined in **Section 7.4.1, Box 7J and Box 7K**. With the implementation of mitigation measures there are no implications from disturbance on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

6.5.4 Regional Solution

6.5.4.1 Regional Solution – Shannon Crossing

Tables 6.19 – 6.20 below provide an overview of the source-pathway-receptor types with potential for LSEs that could lead to AESI on European sites from the Regional Solution – Shannon Crossing. Further discussion on each source-pathway-receptor type is provided below.

Table 6.19: Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SACs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – Regional Solution - Shannon Crossing

Shannon Crossing Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourses/ bodies and aquatic QI species	Mortality Risk	Disturbance
Lower River Shannon SAC	✓	✓		✓	✓	✓

Habitat loss

As shown in **Table 6.19** above only one SAC is within the potential Zol of the proposed project. The submarine cable will be laid on the inter-tidal area, there is a risk of potential loss of QI/Annex I habitat loss along the cable route. However, measures would be put in place to avoid key areas of sensitive intertidal habitat.

Given the Key Principles outlined in **Section 7.1, Box 7A** and the mitigation measures set out in **Section 7.5.1, Box 7L** habitat loss (specifically in relation to QI/Annex will be avoided). Therefore, there are no implications from habitat loss on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Habitat degradation – spread of non-native invasive species

Potential impacts on European sites from the spread of non-native species would be the same as those identified for the North West project (see **Section 6.4.1**). The same Key Principles and mitigation measures outlined in **Section 7.1 (Box 7A)** would apply to this project. Therefore, there are no implications from the spread of invasive species on the conservation objectives of European sites and therefore no potential adverse effects on site integrity are identified.

Disturbance/Displacement

There is potential for the construction works associated with construction of the sea cable to result in levels of disturbance that could potentially displace QI species (marine mammals in particular) from important habitat areas (e.g. breeding/resting places or key foraging areas)

Mitigation measures in relation to disturbance to QI species are outlined in **Section 7.5.1, Box 7L**. With the implementation of mitigation measures there are no implications from disturbance on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Mortality risk to QI species (excluding SCI bird species)

Other construction related impacts such as pollution impacts affecting water quality could result in mortality risk for aquatic QI species, while excavation works in the vicinity of an otter holt could result in a holt collapsing, potentially entombing otter.

Mitigation measures in relation to mortality risk (QI species) are outlined in **Section 7.5.1, Box 7M**. With the implementation of mitigation measures there are no implications from mortality risk on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Table 6.20: Summary of potential source-pathway-receptor types from the construction or operation of UGCs on SPAs with the potential to give rise to adverse effects on site integrity (in the absence of more detail) – Shannon Crossing

Shannon Crossing Project - SPAs	Mortality Risk	Disturbance/Displacement	Habitat Loss
River Shannon and River Fergus Estuaries SPA		✓	✓

Habitat loss

As shown in **Table 6.20** above only one SPA is within the potential Zol of the proposed project. The submarine cable will be laid on land on the estuary shore and in the inter-tidal area, there is a risk of supporting habitat loss (wetland and estuarine) along the cable route. However, measures would be put in place to avoid key areas of sensitive supporting habitat for SCI bird species.

Given the Key Principles outlined in **Section 7.1, Box 7A** and the mitigation measures set out in **Section 7.5.1, Box 7L** habitat loss (specifically in relation to QI/Annex will be avoided). Therefore, there are no implications from habitat loss on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

Mortality risk from the operation of UGCs (SCI bird species)

There is no potential for mortality risk to SCI bird species from the operation of UGCs.

Disturbance/Displacement

There is potential for the construction works associated with laying of the cable to result in levels of disturbance that could potentially displace QI/SCI species from important habitat areas (e.g. breeding/resting places or key foraging areas for overwintering birds).

Mitigation measures in relation to disturbance (SCI birds and QI species) are outlined in **Section 7.5.1, Box 7Q**. With the implementation of mitigation measures there are no implications from disturbance on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

6.5.4.2 Regional Solution – Great Island to Kilkenny 110kV Uprate

Table 6.21 below provide an overview of the source-pathway-receptor types with potential for LSEs that could lead to AESI on European sites from the Regional Solution – Great Island to Kilkenny 110kV Uprate. Further discussion on each source-pathway-receptor type is provided below.

Table 6.21 : Summary of potential source-pathway-receptor types from Uprate works on SACs with the potential to give rise to adverse effects on site integrity (in the absence of mitigation) – Great Island to Kilkenny 110kV Uprate

Great Island to Kilkenny 100Kv Uprate Project - SACs	Habitat Loss	Habitat degradation – spread of non-native invasive species	Habitat degradation (hydrogeology) – potential impacts on QI habitats	Habitat degradation – water quality – potential impacts on watercourses/bodies and aquatic QI species	Mortality Risk	Disturbance
River Barrow and River Nore SAC		✓		✓	✓	✓

Habitat loss

No works will be located within the SAC (with the exception of overhead line over-sail). The existing line does not cross any areas where woodland qualifying interests are present (EirGrid, 2017). There is no potential for loss of Annex I/QI habitat from works associated with the uprate of this transmission line.

Habitat degradation – spread of non-native invasive species

Potential impacts on European sites from the spread of non-native species would be the same as those identified for the North West project (see **Section 6.4.1**). The same Key Principles and mitigation measures outlined in **Section 7.1 (Box 7A)** would apply to this project. Therefore, there are no implications from the spread of invasive species on the conservation objectives of European sites and therefore no potential adverse effects on site integrity are identified.

Habitat degradation – water quality – potential impacts on watercourses/bodies and aquatic QI species

While none of the proposed works are located within the SAC boundary (with exception of overhead line oversail), there is potential for pathways of impact to receiving habitats freshwater habitats and species in particular. Due to the location of the structures at Great Island and the Estuary crossing, there is potential for pathways of impact to the estuarine habitats for which the SAC is designated (mudflats, Salicornia) from run off during construction. No habitat loss is predicted. A number of other predominantly freshwater aquatic species could be impacted. The status of the freshwater pearl mussel as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review. The status of this species in the Arrigle River (tributary of the SAC) is uncertain.

The Nore freshwater pearl mussel (*Margaritifera durrovensis*) remains a qualifying species for this SAC. The Great Island-Kilkenny transmission line is outside of any ZoI for this species as the population is located

upstream of Kilkenny on stretches from Poorman's Bridge to Lismaine Bridge with most of the population found between Poorman's Bridge and the Avonmore Creamery above Ballyragget.

Mitigation measures in relation to prevention of habitat degradation and protection of water quality are outlined in **Section 7.5.2 Box 7R** with the implementation of mitigation measures there are no implications from habitat degradation (water quality) on the conservation objectives of European sites and therefore no adverse effects on site integrity are identified.

SCI bird species

The transmission line oversails the River Nore at point where it is a designated SPA for kingfisher (*Alcedo atthis*). The SPA follows the river channel and its banks. Examination of the crossing point at this location showed clearly that the pole sets to be replaced are outside of the SPA and the replacement of these structures would be unlikely to cause any potential impact on the habitat requirements of kingfisher or their nest sites. While the overhead line oversails the river, it is at an elevated position, and does not pose any treat to individual kingfisher birds through collision or displacement. There is no requirement for bankside works, instream works or vegetation clearance at this point.

7. Mitigation and Avoidance

This section details the mitigation measures required to ensure that elements of the Grid IP do not affect the conservation objectives of the QIs/SCIs of any European sites either alone or in combination with other plans or projects, and therefore will not result in adverse effects on site integrity as a result of the potential impact pathways described in **Section 6.5** above.

All of the projects within the Grid IP will be subject to project level assessments (EIA/AA). Updated surveys and finalised technology and route options will help refine the high level mitigation measures outlined in this plan level NIS. Detailed mitigation measures will be developed for each project that is progressed and will be set out in specific Construction Management Plan (CMP) for the project. It should also be noted that the mitigation measures outlined below are likely to be applicable to other future Grid development. **Box 7A, Section 7.1** below identifies a number of Key Principles for future Grid development including projects arising from the plan, such high level assumptions were used when identifying potential impact pathways (see **Appendix D**).

It should be noted that if the project level assessment (at Stage 2 of the AA process) identified that adverse effects on site integrity cannot be avoided Stage 3 of the AA process (Assessment of Alternative Solutions) would be undertaken to objectively assess whether alternative solutions exist by which the project could be achieved.

7.1 Key Principles for Protecting European sites

Box 7A. Key Principles for Protecting European Sites

Avoidance: In developing any future major projects EirGrid will always seek to find options that avoid impacts on European sites (for example, by assessing alternative route options). Any future projects developed as a result of the Grid IP will be subject to examination of constraints, route selection and project level AA. All of which will be informed by detailed ecological assessment, so that sensitive receptors are avoided. Avoidance of European sites, including SACs and SPAs, will always be a key consideration informing route options.

Mitigation: Where avoidance is not possible adverse effects on site integrity will be avoided through project specific mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation. Mitigation measures should ensure that no significant residual impacts remain thus preserving site integrity.



Figure 7: Key Principles for Future Grid Development

Box 7A. Key Principles for Protecting European Sites

- ❖ **Habitat Loss:** Underground cables are usually (where practicable) constructed within existing public roads therefore limiting or avoiding the potential for habitat loss within SACs. The construction of towers or other supporting structures for OHLs may be required to pass through SACs. In such instances towers or supporting structures would be erected outwith sensitive areas informed by detailed surveys. In undertaking this assessment and screening potential impact pathways (see **Appendix D**) an assumption has been made that where European sites cannot be avoided altogether detailed surveys of habitats within the affected area of an SAC will be undertaken to locate and avoid sensitive habitats to ensure there is no loss of QI Annex I habitats or QI species (in particular habitat surveys would also seek to identify any QI plant species, where present, associated with the European site).
- ❖ **Supporting Habitat Loss:** Surveys focusing on mobile QI/SCI species (which can move outside the confines of a European site) would ensure any significant areas of supporting habitat (e.g. foraging areas for SCI birds in close proximity to, but outwith the SPA, other holts outwith an SAC etc.) would be identified and avoided or appropriate mitigation measure put in place.
- ❖ **Invasive Species:** There is the potential for non-native invasive species to be present within the various study areas. If present, these could potentially be spread to habitats within SACs/SPAs during construction works/ operation (e.g. maintenance works for OHL line uprate, modification works). The introduction of invasive species into a European site can affect the conservation objectives for QI habitats or species, potentially adversely affecting the integrity of the European site (e.g. affecting vegetation composition of an Annex I QI habitat, affecting species distribution and abundance and/or out competing native species). Invasive species survey (for species listed on Schedule 3 of the Birds and Habitats regs, 2011) will be undertaken for all projects arising from the Grid IP. If invasive species are found to be present an invasive species management plan will be prepared to outline control and or removal measures to ensure such species are not spread during construction or operation of any future projects.
- ❖ **Preconstruction Surveys/Seasonal Restrictions/ECoW:** To ensure appropriate protection of QI/SCI habitats and species preconstruction surveys will be undertaken for all projects (where required), while the implementation of seasonal working restrictions may be required. Furthermore, works in sensitive areas will be supervised by an experienced ecologist/ecological clerk of works (ECoW).

7.2 Mitigation Measures for the Grid IP – North West Project

Boxes 7B – 7D presents high level mitigation measures in relation to the North West Project should this project progress.

Box 7B. Mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting QI habitats and species in European sites - North West Project**Petrifying springs, Turloughs and other GWDTHs**

Where there is potential for construction related impacts on ground water sources (e.g. tunnelling/excavation works) from the placement of UGCs in the vicinity of sensitive groundwater dependant terrestrial habitats (GWDTHs) a detailed geological and hydrogeological assessment will be undertaken to ensure that impacts on these QI habitats are **avoided**. The surveys must be sufficient to inform a detailed assessment as to whether the predicted effects on ground water would affect the conservation objectives supporting these habitats favourable conservation status within a given site, and thus adversely affect the integrity of a given SAC. Where such impacts are predicted **appropriate mitigation** will be put in place to ensure site integrity is not compromised. Such detail would only be available at the project level.

Groundwater Dependant Terrestrial QI species

Detailed surveys will be undertaken for QI species (*Vertigo spp./other QI plant species*) where works are required within an SAC (supporting this QI) outside of Annex I/QI habitats but in habitats with the potential to support these species or where works outside of the SAC but within close proximity of (250m) the SAC could potentially impact on groundwater sources. If these species are identified within the potential Zol of the works, works will be moved to **avoid** mortality risk effects on these species.

Sensitive Aquatic Species and Habitats

If aquatic habitats within a SAC cannot be avoided, an appropriate level of survey work would be carried out to assess potential impacts and develop the necessary mitigation. A habitats' role in supporting aquatic QI species (e.g. Atlantic salmon, otter, lamprey species, white-clawed crayfish or freshwater pearl mussel) would form a component of the assessment work. Following on from this as part of the design phase potential risks of construction works affecting water quality/aquatic species will be identified. Depending on the nature and scale of the works and the final technology option(s) chosen, **appropriate mitigation** will be put in place.

To minimise the environmental impacts of the works and to ensure best practices and suitable mitigation measures are adopted, the contractor would be required to produce an environmental management plan, including a pollution contingency plan prior to the commencement of activities. Mitigation would be proportionate to the nature and scale of the works and the technology option(s) chosen. In more sensitive locations, an ECoW would be required to regularly inspect all pollution prevention controls.

An Erosion and Sedimentation Control Plan (ESCP) would also be prepared. This would be adapted depending on the nature of the works and the species concerned, for example works being undertaken close to a watercourse within a FWPM catchment is likely to require more stringent mitigation measures in relation to sediment control measures. In such instances action measures, as outlined in the FWPM Sub Basin Management Plans shall be taken into account. Key mitigation measures identified in the recent EBES studies will be implemented where required and appropriate. For example, the EBES on soils and geology recommended implementing a 50m buffer between a watercourse and a structure/construction works and the avoidance areas of soft/fine soils. Where these measures cannot be implemented the use of silt curtains are recommended.

Best practice construction methods will be implemented at all times in relation to the protection of watercourses in accordance with the following non-exhaustive list of guidance;

- Guidelines on the protection of Fisheries during Construction Works in or Adjacent to Waters (Inland Fisheries Ireland, 2016).
- SEPA Pollution Prevention Guidelines (PPG) including 'PPG 1: General Guide to the Prevention of Pollution', 'GPP 5: Works or Maintenance on or Near Water', 'GPP 6: Working at Construction or Demolition Sites'; <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>.
- CIRIA Technical guidance (C648). Control of water pollution from linear construction projects.

Where risks are identified, the ESCP must include sufficient pollution control measures to prevent run-off, silt, hydrocarbons or any other harmful substances or substrates from entering any surrounding water features including rivers or lakes or any other water features (drainage ditches) which drain into same thus preventing any significant impacts to water quality and or aquatic QI species within an SAC, thus maintaining site integrity.

Storage facilities would contain and prevent the release of fuels, oils and chemicals associated with plant, refuelling and construction equipment into the environment. All protective coatings used would be suitable for use in the aquatic environment and used in accordance with best environmental practice. A pollution contingency plan would establish methods and procedures to deal with any spills and the timely reporting of incidents.

Box 7C. Mitigation measures in relation to mortality risk affecting QI/SCI species of European sites - North West Project

Otter

At the outset of the project detailed ecological assessments will be undertaken including detailed surveys for otter. Surveys will be required to identify, if and how, otter are using habitats potentially directly affected by construction works (e.g. an active holt in the vicinity of the works which could be prone to collapse from tunnelling/excavation works). The surveys must be sufficient to inform a detailed assessment as to whether the predicted mortality risk effects would affect the conservation objectives supporting otter favourable conservation status within a given site, and thus adversely affect the integrity of the SAC. In the first instance works should be carried out to **avoid** potential impacts on otter. Where such impacts cannot be avoided **appropriate mitigation** will be put in place.

Mitigation measures to reduced mortality risk on otter may include but are not limited to:

- Avoiding works within 150m of active otter holt.
- Temporary exclusion of an otter holt during works.

SCI bird species at high risk from collision

Detailed ornithological surveys to identify flight lines, numbers, local concentrations and evidence of ringed birds (which can be used to identify bird movements) will be undertaken at the very early stages of this project if it to be progressed, to inform the most appropriate route option and technology options to **avoid** significant impacts. Surveys will identify how SCI birds are utilising the surrounding habitats and therefore the potential for them to be affected by mortality risk associated with the operation of OHLs in particular. The surveys will likely need to be undertaken over at least two wintering seasons and will be used together with data already gathered (for other projects in the area) to inform a detailed assessment as to whether the predicted mortality risks from collisions with OHLs would affect the conservation objectives supporting SCI species favourable conservation status within a given site, and thus adversely affect the integrity of the SPA. Where such impacts are predicted **appropriate mitigation** will be put in place.

Mitigation measures to reduced mortality risk to SCI bird species may include but are not limited to;

- Construction of UGCs over OHLs in particularly sensitive areas (e.g. where important migration routes would be transversed).
- Where the option for UGCs in sensitive areas is not viable and OHLs are required, bird markers/ diverters will be placed on OHLs to increase visibility and reduce collision related impacts.

It is recommended that a system of monitoring is put in place to assess the effectiveness of these mitigation measures should they be required, and contingency for ineffective measures established. With both mitigation and monitoring measures in place significant impacts which could undermine the conservation objectives supporting favourable status of these species will be avoided so that site integrity is maintained.

Box 7D. Mitigation measures in relation to disturbance affecting QI/SCI species of European sites - North West Project

Otter

At the outset of the project detailed ecological assessments will be undertaken including detailed surveys for otter. Surveys will be required to identify, if and how, otter are using habitats potentially affected by disturbance effects associated with construction/operation works. The surveys must be sufficient to inform a detailed assessment as to whether the predicted disturbance effects would affect the conservation objectives supporting otter favourable conservation status within a given site, and thus adversely affect the integrity of the SAC.

Mitigation measures to reduced disturbance effects on otter may include but are not limited to:

- Timing of works (e.g. no construction works in the vicinity of watercourse at night when otter is most active).
- **Avoiding** works in the vicinity of an active otter holt.
- Temporary exclusion of an otter holt or otter shelter locations during disturbing works.
- If breeding is suspected, suspension of works may be required or a larger protection zone of between 100-200m from the breeding holt may be required, to be determined in consultation with the statutory consultation body.

SCI bird species

Detailed ornithological surveys to identify flight lines, numbers, local concentrations and evidence of ringed birds (which can be used to identify bird movements) will be undertaken at the very early stages of this project to inform the most appropriate route and technology options to **avoid** significant impacts. Surveys will identify how SCI birds are utilising the surrounding habitats potentially affected by disturbance effects associated with either construction or operational (maintenance) works. The surveys will likely need to be undertaken over at least two wintering seasons and will be used together with data already gathered (for other projects in the area) to inform a detailed assessment as to whether the predicted disturbance effects would affect the conservation objectives supporting favourable status of these species within a given site, and thus adversely affect the integrity of a given SPA. Where such impacts are predicted appropriate mitigation will be put in place.

Mitigation measures to reduce disturbance effects on SCI birds may include but not limited to:

- Timing of works (e.g. avoiding works in or close to SPAs during the bird breeding season [March to August inclusive] or avoiding works in the vicinity of SPAs with over wintering birds between the months of November and March inclusive), or avoiding works simultaneously with other projects which could also cause disturbance.
- Screening of works to reduced disturbance impacts.

7.3 Mitigation Measures for the Grid IP – North Connacht 100kV

Boxes 7E – 7H presents high level mitigation measures in relation to the North Connacht project, should this project progress.

Box 7E. Mitigation measures in relation to habitat loss (specifically in relation to Annex I habitats and supporting habitat for Annex II species) - North Connacht Project

Annex I habitats

In the event that a European site cannot be avoided altogether, detailed surveys of habitats associated with the site would be undertaken to locate notable occurrences of Annex I habitats view to developing a pre-construction strategy to avoid, or protect any Annex I habitats identified. The contractor would be obliged to submit a detailed mitigation plan, prior to the commencement of activities with respect to sensitive Annex I habitats (saltmarsh, mudflats and bogs etc.), including proposals for reinstatement where appropriate. To minimise ground disturbance and compaction to saltmarsh and mudflat habitat, excavation works within the intertidal zone should be carried out using low ground pressure excavators and bog mats, rolled steel / aluminium sheeting or temporary walkways in accordance with the necessary requirements identified in the mitigation plan. Equipment, temporary structures and debris would be removed from the site upon completion to facilitate reinstatement. Similar mitigation measures could be utilised when having to gain access across bog habitats.

Annex II Species - Groundwater Dependant Terrestrial QI species/plant species

Detailed surveys will be undertaken for QI species (*Vertigo spp./other QI plant species*) where works are required within an SAC (supporting this QI) outside of Annex I/QI habitats but in habitats with the potential to support these species or where works outside of the SAC but within close proximity of (250m) the SAC could potentially impact on groundwater sources. If these species are identified within the potential ZoI of the works, works will be moved to **avoid** mortality risk effects on these species.

Annex II Species - Bats

Construction of either an OHL or UGC and associated infrastructure could result is the loss of supporting habitat for lesser horseshoe bat (*Rhinolophus hipposideros*) outside the confines of the SAC. This species is a qualifying interest species for Ballinacorney SAC, Lough Corrib SAC, Towerhill House SAC and Lough Carra/Mask Complex SACs. This species is known to commute up to 4km from their roost sites to forage at night. Commuting routes are important features of the landscape for lesser horseshoe bats as they generally avoid flying across open spaces. The same tree line, woodland or hedgerow can be used by the same population year on year. If the proposed project was to proceed within the core foraging and commuting range of this species/the SAC. detailed surveys will be undertaken to identify key commuting routes and foraging areas and any other roosts used by the SAC populations within the zone of influence of the works. Any important commuting routes, foraging areas or associated roost would be protected/avoided to ensure the integrity of the SAC populations is not undermined.

Annex II Species – Otter

At the outset of the project detailed ecological assessments will be undertaken including detailed surveys for otter. Surveys will be required to identify, if and how, otter are using habitats potentially directly affected by construction works (e.g. an active holt in the vicinity of the works which could be prone to collapse from tunnelling/excavation works). The surveys must be sufficient to inform a detailed assessment as to whether the predicted mortality risk effects would affect the conservation objectives supporting otter favourable conservation status within a given site, and thus adversely affect the integrity of the SAC. In the first instance works should be carried out to avoid potential impacts on otter. Where such impacts cannot be avoided appropriate mitigation will be put in place.

Mitigation measures to reduced mortality risk on otter may include but are not limited to:

- Avoiding works within 150m of active otter holt.
- Temporary exclusion of an otter holt during works.

Box 7F. Mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting QI habitats and species in European sites - North Connacht Project.

Petrifying springs, Turloughs and other GWDTHs

See mitigation outlined in **Section 7.2, Box 7B.**

Annex I (Bog Habitats)

The location of an UGC route would present direct risks to bog habitats within SAC. The effects on hydrological flows within the bog would need to be assessed in detail. The surveys must be sufficient to inform a detailed assessment as to whether the predicted effects on ground water would affect the conservation objectives supporting these habitats favourable conservation status and thus adversely affect the integrity of the sites. If, after the implementation of mitigation measures, there remains a risk that effects on ground water sources would adversely affect the integrity of a given SAC the project, route or technology option would not be progressed unless an alternative solution could be implemented which avoids or reduces the impact so that no significant residual impacts remain, thus maintaining site integrity.

Sensitive Aquatic Species

See mitigation outlined in **Section 7.2, Box 7B.**

Box 7G. Mitigation measures in relation to disturbance affecting QI species in European sites - North Connacht Project

Otter

See mitigation outlined in **Section 7.2, Box 7D.**

SCI bird species

See mitigation outlined in **Section 7.2, Box 7D.**

Box 7H. Mitigation measures in relation to mortality risk affecting SPA species of European sites – - North Connacht Project

SCI bird species at high risk from collision

See mitigation outlined in **Section 7.2, Box 7C.**

Vertigo spp.

See mitigation outlined in **Section 7.2, Box 7C.**

Marsh Fritillary (*Euphydryas aurinia*)

This species is known to occur within the study area of the North Connacht project within Bricklieve Mountains & Keishcorran SAC. This mobile species may occur outside the confines of the SAC where suitable habitat is present. Where there is potential for the proposed project to occur within the ZOI of this species detailed surveys will be undertaken to avoid any impacts on this species.

7.4 Mitigation Measures for the Grid IP – Celtic Interconnector

Boxes 7I – 7K presents high level mitigation measures in relation to the Celtic Interconnector project, should this project progress.

Box 7I. Mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species – Celtic Interconnector

Annex I habitats

Where there is potential for construction related impacts on water courses that are hydrologically connected to Annex I habitats (e.g. tunnelling/excavation works from the placement of UGCs, sediment run-off following land clearance or contamination from pollutants from construction materials), a geological and hydrogeological assessment would be undertaken to ensure that impacts on Annex I QI habitats are **avoided**. The surveys must be sufficient to inform a detailed assessment as to whether the predicted effects on ground water would affect the conservation objectives supporting these habitats favourable conservation status within a given site, and thus adversely affect the integrity of a given SAC. Where such impacts are predicted **appropriate mitigation** will be put in place to ensure site integrity is not compromised. Such detail would only be available at the project level.

Species mortality (aquatic species)

A habitats' role in supporting aquatic species (e.g. Atlantic salmon, otter, lamprey species, white-clawed crayfish or freshwater pearl mussel) and prey species would form a component of the assessment work. To minimise the environmental impacts of the works and to ensure best practices and suitable mitigation measures are adopted, the contractor would submit an environmental management plan, including a pollution contingency plan, prior to the commencement of activities. Mitigation would be proportionate to the nature and scale of the works. In more sensitive locations, an ECoW would be required to regularly inspect all pollution prevention controls.

An Erosion and Sedimentation Control Plan (ESCP) would also be prepared. This would be adapted depending on the nature of the works and the species concerned, for example works being undertaken close to a watercourse within a FWPM catchment is likely to require more stringent mitigation measures in relation to sediment control measures. In such instances action measures, as outlined in the FWPM Sub Basin Management Plans shall be taken into account. Key mitigation measures identified in the recent EBES studies will be implemented where required and appropriate. For example, the EBES on soils and geology recommended implementing a 50m buffer between a watercourse and a structure/construction works and the avoidance areas of soft/fine soils. Where these measures cannot be implemented the use of silt curtains are recommended.

Best practice construction methods will be implemented at all times in relation to the protection of watercourses in accordance with the following non-exhaustive list of guidance:

- Guidelines on the protection of Fisheries during Construction Works in or Adjacent to Waters (Inland Fisheries Ireland, 2016).
- SEPA Pollution Prevention Guidelines (PPG) including 'PPG 1: General Guide to the Prevention of Pollution', 'GPP 5: Works or Maintenance on or Near Water', 'GPP 6: Working at Construction or Demolition Sites'; <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>.

CIRIA Technical guidance (C648). Control of water pollution from linear construction projects.

Where risks are identified, the ESCP must include sufficient pollution control measures to prevent run-off, silt, hydrocarbons or any other harmful substances or substrates from entering any surrounding water features including rivers or lakes or any other water features (drainage ditches) which drain into same thus preventing any significant impacts to water quality and or aquatic QI species within an SAC, thus maintaining site integrity. Storage facilities would contain and prevent the release of fuels, oils and chemicals associated with

plant, refuelling and construction equipment into the environment. All protective coatings used would be suitable for use in the aquatic environment and used in accordance with best environmental practice. A pollution contingency plan would establish methods and procedures to deal with any spills and the timely reporting of incidents.

Box 7J. Mitigation measures in relation to disturbance affecting species in European sites - Celtic Interconnector (Cork option)

Marine mammals

See mitigation outlined in **Section 7.5.1, Box 7M.**

SCI bird species/Otter

See mitigation outlined in **Section 7.2, Box 7D.**

Box 7K. Mitigation measures in relation to collision mortality risk affecting SPA species of European sites – Celtic Interconnector (Cork option)

SCI bird species at high risk from collision

See mitigation outlined in **Section 7.2, Box 7C.**

Vertigo spp.

See mitigation outlined in **Section 7.2, Box 7C.**

7.5 Mitigation Measures for the Grid IP – Regional Solution

Boxes 7L – 7N presents high level mitigation measures in relation to the Regional Solution projects, should these projects progress.

7.5.1 Regional Solution – Shannon Crossing

Box 7L. Mitigation measures in relation to habitat loss (specifically in relation to Annex I habitats and supporting habitat for Annex II species) – Shannon Crossing.

Annex I habitats (Estuarine habitats)

Works will take place with The Lower River Shannon SAC, presenting a risk of habitat loss / damage to Annex I estuarine habitats on the foreshore, along the cable route. Prior to construction and use of the foreshore, detailed surveys of habitats within the site would be undertaken to locate notable occurrences of Annex I habitats within the site, with a view to developing a pre-construction strategy to avoid, or protect any Annex I habitats identified. For example the cable should be routed as far as possible from sensitive reef communities to avoid smothering of these habitats with sediment during construction (laying of the cable). The contractor will produce a detailed mitigation plan prior to the commencement of activities with respect to sensitive Annex I habitats (saltmarsh, mud and sandflats, sandbanks), including proposals for reinstatement where appropriate. To minimise ground disturbance and compaction to saltmarsh and mudflat habitats, excavation works within the intertidal zone should be carried out using low ground pressure excavators and bog mats, rolled steel / aluminium sheeting and/or temporary walkways, in accordance with the necessary requirements identified in the mitigation plan. To limit habitat loss and use of the foreshore, a works area and access corridor(s) would be demarcated, to prevent the movement of vehicles and plant outside the works area/access corridor on the foreshore habitats that form part of the designated features of the site. Equipment, temporary structures and debris would be removed from the site upon completion to facilitate reinstatement.

Supporting habitat for Annex II Species/ SCI bird species

To avoid the loss of supporting habitat that is within the site, full surveys will be undertaken to identify

commuting routes, foraging, breeding and roosting areas and any other used by SAC and SPA species within the zone of influence of the works. These areas would be avoided to ensure no that habitat loss is negligible and not of any key supporting habitat.

Box 7M. Mitigation measures in relation to disturbance/ mortality affecting species in European sites - Shannon Crossing.

Marine Mammals

Impacts on mobile species such as QI marine mammals associated with a European site may be hard to avoid. Detailed marine surveys are likely to be required in particular to assess the potential construction related impacts on marine mammals. Marine mammals may be at risk from disturbance from underwater noise during the construction of the subsea cable for example.

The project level AA screening will help refine the potential route option and landing point. Should an NIS be required at project stage it should take cognisance of the following NPWS guidance:

- Marine Natura Impact Statements in Irish Special Areas if Conservation.
- Appropriate Assessment of Plans and Projects in Ireland – *Guidance for Planning Authorities*.

Otter

See mitigation outlined in **Section 7.2, Box 7D**.

SCI bird species

See mitigation outlined in **Section 7.2, Box 7D**.

Sensitive Aquatic Species and Habitats/Species Mortality

See mitigation outlined in **Section 7.5.2, Box 7N**.

7.5.2 Regional Solution - Great Island to Kilkenny 110kV Uprating

Box 7N. Mitigation measures in relation to habitat degradation (water quality) affecting habitats and species – Great Island to Kilkenny 110kV Uprating

Sensitive Aquatic Species and Habitats/Species Mortality

To minimise the environmental impacts of the works and to ensure best practices and suitable mitigation measures are adopted, the contractor would be required to produce an environmental management plan, including a pollution contingency plan prior to the commencement of activities. This will be put in place to protect sensitive aquatic QI species during works. In more sensitive locations, an ECoW would be required to regularly inspect all pollution prevention controls.

An Erosion and Sedimentation Control Plan (ESCP) would also be prepared. This would be adapted depending on the nature of the works and the species concerned, for example works being undertaken close to a watercourse within a FWPM catchment is likely to require more stringent mitigation measures in relation to sediment control measures. The status of the freshwater pearl mussel as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review. The status of this species in the Arrigle River (tributary of the SAC) is uncertain.

Key mitigation measures identified in the recent EBES studies will be implemented where required and appropriate. For example, the EBES on soils and geology recommended implementing a 50m buffer between a watercourse and a structure/construction works and the avoidance areas of soft/fine soils. Where these measures cannot be implemented the use of silt curtains are recommended.

Box 7N. Mitigation measures in relation to habitat degradation (water quality) affecting habitats and species – Great Island to Kilkenny 110kV Uprating

Best practice construction methods will be implemented at all times in relation to the protection of watercourses in accordance with the following non-exhaustive list of guidance:

- Guidelines on the protection of Fisheries during Construction Works in or Adjacent to Waters.
- (Inland Fisheries Ireland, 2016).
- SEPA Pollution Prevention Guidelines (PPG) including 'PPG 1: General Guide to the Prevention of Pollution', 'GPP 5: Works or Maintenance on or Near Water', 'GPP 6: Working at Construction or Demolition Sites'; <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppps-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>.
- CIRIA Technical guidance (C648). Control of water pollution from linear construction projects.

Where risks are identified, the ESCP must include sufficient pollution control measures to prevent run-off, silt, hydrocarbons or any other harmful substances or substrates from entering any surrounding water features including rivers or lakes or any other water features (drainage ditches) which drain into same thus preventing any significant impacts to water quality and or aquatic QI species within an SAC, thus maintaining site integrity.

Storage facilities would contain and prevent the release of fuels, oils and chemicals associated with plant, refuelling and construction equipment into the environment. All protective coatings used would be suitable for use in the aquatic environment and used in accordance with best environmental practice. A pollution contingency plan would establish methods and procedures to deal with any spills and the timely reporting of incidents.

Annex I habitats (Estuarine habitats)

Works will take place within close proximity of the River Barrow and River Nore SAC presenting a risk of habitat loss / damage to Annex I estuarine habitats during the replacement of polesets. Prior to construction detailed surveys of habitats within the ZoI to locate notable occurrences of Annex I habitats within the site, with a view to developing a pre-construction strategy to avoid or protect any Annex I habitats identified. The contractor will produce a detailed mitigation plan prior to the commencement of activities with respect to sensitive Annex I habitats. To minimise ground disturbance and compaction to mudflat habitats, excavation works within the intertidal zone (if required) should be carried out using low ground pressure excavators and bog mats, rolled steel / aluminium sheeting and/or temporary walkways, in accordance with the necessary requirements identified in the mitigation plan.

7.6 SEA Monitoring Framework

The SEA provides a monitoring framework that has been developed for the Grid IP using the SEA objectives and indicators, the indicators for Biodiversity, Flora & Fauna are provided in **Table 7.1** below. The purpose of this monitoring is to:

- provide the evidence needed to monitor and manage the predicted significant negative effects and unforeseen effects of the Grid IP prior to and during detailed project development and further environmental assessment; and
- monitor the baseline environmental conditions for all SEA objectives and inform the planned six yearly update of the IP when all available monitoring data will be reviewed.

Given that five years have passed since the publication of the previous Grid IP and SEA a review of the appropriateness and practicality of the previous objectives, indicators, targets and monitoring measures was

undertaken. This exercise examined their suitability as tools in the environmental appraisal of works undertaken as part of the previous Plan.

The monitoring frequency for each source will vary depending on availability however where available these will be recorded and reported on annually. Monitoring using the indicators set out in **Table 7.1** will commence as soon as the final Grid IP is implemented.

Table 7.1: SEA Objectives, Target and Indicators (Biodiversity, Flora and Fauna)

Theme	Objective	Target	Indicator	Source
Biodiversity, Flora & Fauna	B1: Ensure compliance with the Habitats Directive with regard to protection of designated European sites including Article 10.	B1_T1: Maintenance of favourable conservation status for all habitats and species protected under the Habitat Directive potentially affected by the implementation of the Grid IP.	B1_I1: Number of EirGrid projects subject to Imperative Reasons of Overriding Public Interest (IROPI). B1_I2: Number of Adaptive Management requirements post project completion.	Review of: <ul style="list-style-type: none"> • Route/Option Selection Reports. • Environmental reports. • EISs. • AA Screening Statements. • NISs. • Final project documents. • Derogation licences. • Monitoring proposals contained within the above.
		B1_T2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Grid IP.		
	B2: Avoid significant impacts on protected habitats, species, environmental features or other sustaining resources in and outside designated Wildlife Sites (including but not limited to NHAs and pNHAs).	B2_T1: Avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources resulting from development provided for by the Grid IP.	B2_I1: Number of significant impacts post mitigation on relevant habitats, species, environmental features or other sustaining resources resulting from development provided for by the Grid IP.	
			B2_I2: Number of Adaptive Management requirements post project completion.	

8. In-Combination Assessment

8.1 Assessment process

Under Article 6(3) of the Habitats Directive an assessment of in-combination effects of projects and plans contained within the Grid IP with other projects or plans, either alone or in-combination, which have the potential to result in adverse effects to European designated sites is required. The assessment should encompass projects or plans that have been completed, approved but not completed or proposed (but as yet unapproved). The assessment used the best available information available at the time of writing. Effects can include but are not limited to multiple effects of the same or similar type from a number of developments upon the same receptor/resource.

The in-combination assessment was undertaken as follows:

1. description of plan/project where in-combination effects could occur;
2. identification of potential/actual impacts that could occur; and
3. assessment of potential for in-combination effects which will include consideration of location, potential impacts to QI/SCI and mitigation measures (where appropriate).

The detailed in-combination assessment is provided in **Appendix F** and summarised below. The assessment was carried out in a hierarchical manner beginning with assessing all elements of the Grid IP against international, national and regional plans (**Table F1.1, Appendix F**). The assessment was undertaken at a high level given the uncertainties that exist with regard to the location and scale of developments at the strategy level.

Individual projects within the plan were assessed (**Table F1.2, Appendix F**) against other completed, approved but not completed or proposed projects within a 15km buffer, this was extended where appropriate and included other Grid IP projects that have already been progressed through the appropriate planning processes. The in-combination effects of these projects can be undertaken in a more comprehensive manner where more information is available. Where detailed information was lacking, assessment using a precautionary approach, was applied and potential generic construction/operational impacts associated with a project type were identified. For example, noise disturbance associated with constructing a new road. Projects where no source-pathway-receptor linkages have been identified due to minimal works being within an existing station and out with a European site (as identified in **Appendix C**) are not included in the assessment as there is no potential for LSE.

8.2 Assessment conclusions

Twenty-seven plans, including European directives/strategies, with the potential for significant in-combination effects with the Grid IP were identified. Details of the plans and potential in-combination effects are included in (**Table F1.1, Appendix F**). These plans comprised the following:

1. EU Floods Directive (2007/60/EC);
2. Renewable Energy Strategy (2009/28/EC);
3. EU 2020 Climate and Energy Strategy;
4. Project Ireland 2040 National Planning Framework;
5. Offshore Renewable Energy Development Plan (OREDPA); A Framework for the Sustainable Development of Ireland's Offshore Renewable Energy Resource, February 2014;

6. Forestry Programme 2014 – 2020: IRELAND;
7. National Renewable Energy Action Plan IRELAND;
8. Regional Planning Guidelines for the West Region 2010-2022;
9. Regional Planning Guidelines for the Border Region 2010-2022;
10. Regional Planning Guidelines for the South-East Region 2010-2022;
11. South West Regional Planning Guidelines 2010-2022;
12. Mayo County Development Plan 2014-2020;
13. Renewable Energy Strategy for County Mayo 2011– 2020;
14. Ireland West Airport Knock Local Area Plan 2012-2018;
15. Sligo County Development Plan 2017-2023;
16. Roscommon County Development Plan 2014 – 2020;
17. County Donegal Development Plan 2018-2024;
18. Bundoran & Environs Development Plan 2009 – 2015;
19. Variation No. 1 Galway County Development Plan 2015-2021;
20. Longford County Development Plan 2015-2021;
21. Clare County Development Plan 2017-2023;
22. Shannon Integrated Framework Plan (SIFP) for the Shannon Estuary 2013-2020;
23. Kerry County Development Plan 2015-2021;
24. Cork County Development Plan 2014;
25. Waterford County Development Plan 2014-2020;
26. Kilkenny County Development Plan 2014-2020; and
27. Laois County Development Plan 2017-2023.

As noted above at the strategic level the assessment of in-combination effects from other plans, policies and projects assumes only the 'potential' for direct or indirect effects on European sites. Although there was the potential for in-combination effects, with the implementation of mitigation measures identified within the plans, together with the proposed mitigation measures within the Grid IP as detailed in Section 7, no AESI are predicted.

Ten projects were identified with the potential for in-combination effects, details of the projects and potential in-combination effects are included in (**Table F1.2, Appendix F**). These projects comprised the following:

1. N4 Collooney/Castlebaldwin in-combination with North West;
2. North West in-combination with North Connacht;
3. Bellacorick - Castlebar 110kV Line Uprate in-combination with North Connacht;
4. Bellacorick - Moy 110kV in-combination with North Connacht;
5. Oweninny Wind Farm in-combination with North Connacht;
6. Corvoderry Wind Farm Development in-combination with North Connacht;
7. Magheramore/ Cregganbrack, Began, Claremorris in-combination with North Connacht;

8. N5 Westport to Turlough in-combination with North Connacht;
9. Raffeen – Trageb 110kV No. Line Uprate in-combination with Celtic Interconnector; and
10. Ringaskiddy Port Redevelopment in-combination with Celtic Interconnector.

Two projects only, North West and North Connacht and Raffeen-Trabeg 110kV No. 1 Line Uprate and the Celtic Interconnector, were identified as having the potential for operational in-combination effects which could result in mortality or displacement of QI bird species but only if the OHL technology option is taken forward for either of the projects.

For the remainder, several potential negative in-combination effects during both construction and/or operation were identified. Regardless of the technology taken forward for the North Connacht project there is potential for in-combination effects with the Bellacorick-Moy and Bellacorick-Castle line uprates, on for example aquatic QI species of the River Moy SAC, should future upgrade works be undertaken at the same time. There is potential for in-combination effects during construction of the North Connacht project with Oweninny, Corvoderry and Magheramore/ Cregganbrack, Bekan, Claremorris wind farm developments should construction and maintenance/ decommissioning of these wind farms occur at the same time. Effects such as disturbance to QI species for example, the Greenland white-fronted goose or pollution of aquatic QI species of the River Moy SAC could occur. During both construction and operation of the N5 Westport to Turlough road scheme potential in-combination effects with the North Connacht project could result in a reduction in water quality in the River Moy SAC. In-combination effects between the N4 Coollooney/Castlebaldwin project and the North West project from changes in water quality during operation could impact on QI species of the River Unshin SAC. Finally, there is potential during operational activities of the Ringaskiddy Port Development for in-combination effects with the Celtic Interconnector through disturbance to QI bird species of Cork Harbour SPA.

Potential in-combination effects were initially identified in the absence of mitigation. However, a number of highlevel mitigation measures have been developed as part of the NIS including but not limited to adherence to pollution control measures, Erosion and Sedimentation Control Plan (ESCP) to prevent pollution, use of bird markers/diverters to prevent mortality, timing/screening of works to avoid disturbance to QI bird species. Where each/all measures are applied correctly and with supervision of an ECoW (where necessary), no potential for adverse effects on site integrity were identified.

To reiterate, at the project level a more detailed assessment will be carried out for all sites where a potential in-combination effect has been identified.

9. Conclusion

The mitigation measures outlined in **Sections 7.1 - 7.5** above have been prescribed to ensure the projects (in their current form) described in the Grid IP will not result in adverse effects on site integrity either alone or in-combination with other plans or projects. Some of the projects proposed in the Grid IP do not have defined locations or technology options. As such project level AAs will be undertaken (informed by detailed surveys) to identify changes to potential impact pathways and build on and refine the mitigation measures outlined above. Where it happens that after the application of mitigation measure possible adverse effects remain, alternative solutions would need to be identified.

It is considered that the development and implementation of the Grid IP will contribute to the sustainable development of the transmission system in Ireland over the next six years and beyond. A key element of future Grid development is a focus on using the existing network as far as reasonably practical thus reducing potential negative effects on the environment that could be associated with new transmission infrastructure. In particular, the Grid IP has been formulated with the intention of avoiding adverse effects on European sites. The Grid IP has been assessed in terms of examining the likely significant effects of the plan on European Sites and where these effects could lead to adverse effects on the integrity of European sites.

Any project(s) arising from the Grid IP shall be required to conform to the mitigation measures and key principles for protecting European sites identified within this NIS. In addition, all projects arising from the implementation of the Grid IP will themselves be subject to Screening for AA/AA when details of locations and design become known or are refined.

The conclusion of the NIS for the Grid IP is that, following appropriate mitigation and following the key principles for protecting European sites, there will be no adverse effects on the integrity of any European site(s), either alone or in-combination with other plans or projects.

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Appendix A. SEA Scoping Submission Summary

Comment/Issue Raised
<p>The EPA</p>
<p>This submission includes both general and specific issues to be considered in the Plan and SEA processes. Appendix I included responses to the scoping questions posed in the SEA Scoping Report. Appendix II provides links to Useful Planning and Environmental Resources and High Level Plans/Programmes/Strategies. A copy of the Executive Summary of Ireland's Environment - An Assessment- and Chapter 13 - "<i>Environmental Challenges and Emerging Issues for Ireland</i>" are provided separately in Attachments I and II respectively.</p>
<p>There are a number of significant key influential plans/programmes/strategies currently underway at national and regional level which should be taken into account in preparing and implementing the Plan and in the SEA process. These include the National Planning Framework (NPF), Regional Spatial and Economic Strategies (RSES), second cycle of the Water Framework Directive River Basin Management Plans, National Policy Framework on Alternative Fuels Infrastructure for Transport (AFF), National Mitigation Plan (NMP), Offshore Renewable Energy Development Plan (OREDPA), Renewable Electricity Policy and Development Framework, National Catchment Flood Risk Assessment and Management (CFRAM) Studies and Sectoral (and Local Authority) Climate Change Adaptation Plans/Strategies.</p>
<p>A list of additional Plans/Programmes/Strategies to be considered is also provided in Appendix II. Other relevant plans identified during the scoping and on-going consultation should also be taken into account.</p>
<p><u><i>EPA State of the Environment Report for 2016</i></u></p> <p>The EPA has recently published the State of the Environment Report for 2016 'Ireland's Environment – An Assessment (EPA, 2016). The "<i>Environmental Challenges and Emerging Issues for Ireland</i>" and the associated Key Environmental Actions for Ireland are highlighted in Appendix 1 and included Attachments I and II. The main report and the attachments to this submission will provide a useful resource to informing the key environmental related policies to be reflected in the Pan and the key issues to be addressed in the SEA. See: http://www.epa.ie/irelandsenvironment/stateoftheenvironmentreport/</p>
<p>Scoping Process Guidance on the SEA Scoping Process, including an SEA Pack, Integration Guidance, SEA Checklist, SEA Spatial Information Sources and guidance on Integrating Climate Change into SEA, is available on the EPA website and should be considered in the preparation of the SEA. See: http://www.epa.ie/pubs/advice/ea/</p>
<p>Guidance on Developing and Assessing Alternatives in SEA (EPA, 2015) is also available at: http://www.epa.ie/pubs/advice/ea/developingandassessingalternativesinsea.html</p>
<p>The EPA's GIS based SEA Search and Reporting Tool application can be accessed via: www.edenireland.ie</p>
<p>Environmental Authorities</p> <p>Under the SEA Regulations (S.I. No. 435 of 2004), as amended by S.I. No. 200 of 2011, notice should also be given to the following:</p> <ul style="list-style-type: none"> • The Minister for the Environment, Community and Local Government (now the Minister for Housing, Planning, Community and Local Government); • Minister for Agriculture, Food and the Marine, and the Minister for Communications Energy and Natural Resources (now the Minister for Communications, Climate Action and Environment), where it appears to the planning authority that the plan or programme, or modification of the plan or programme, might have significant effects on fisheries or the marine environment; and • Where it appears to the competent authority that the plan or programme, or amendment to a plan or programme, might have significant affects in relation to the architectural heritage or to nature conservation, the

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Minister for Arts, Heritage and the Gaeltacht (now the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs).

The requirements for notifications in relation to SEA scoping are set out under Article 11 of the SEA Regulations (S.I. No. 435 of 2004).

The Department of Communications, Climate Action and Environment on behalf of Inland Fisheries Ireland

Inland Fisheries Ireland (IFI) is a Statutory Body established on the 1st July, 2010.

Under section 7(1) of the Inland Fisheries Act 2010 (No. 10 of 2010) *'the principle function of IFI is the protection, management and conservation of the inland fisheries resource.'*

IFI recognises and acknowledges the broad principles and need (as outlined in **Section 2.6**) for the Renewable Electricity Policy and Development Framework primarily relating to the maximisation of the sustainable use of renewable electricity resources; the achievement of targets for renewable energy, enhancement of security of energy supply and the fostering economic growth and employment opportunities; provision for appropriate community engagement and the identification of a limited number of areas suitable for development of scale, having regard to the protection of natural and cultural heritage, landscape and amenity.

The EirGrid Implementation Plan should have regard to the need for the sustainable development of the inland and marine fisheries resource (including the conservation of fish and other species of fauna and flora, aquatic habitats and the biodiversity of inland and marine water ecosystems). Where potentially impacted, the key issues from a fisheries perspective for consideration in the SEA should include:

- Water quality.
- Surface water hydrology/hydromorphology.
- Fish spawning and nursery areas (fisheries habitats).
- Passage of migratory fish.
- Ecosystem structure and functioning.
- Sport and commercial fishing and angling.
- Amenity and recreational areas.

When developing the EirGrid Implementation Plan further, all measures necessary should be adopted and planned to ensure protection of local aquatic ecological integrity, in the first place by complete impact avoidance and only as a secondary approach through mitigation by reduction and remedy.

It is important to note that while many Irish surface waters are designated (SAC, SPA, NHA, Ramsar) under European and National legislation, a significant portion is located outside those areas subject to formal European or National designation. These waters may however hold species that are listed under the European Habitats Directive (e.g. salmon and lamprey species - sea, river and brook), or indeed other sensitive fish and other aquatic species that warrant careful protection.

A key publication for consideration when developing the EirGrid Implementation Plan includes the following:

- Guidelines on protection of fisheries during construction works in and adjacent to waters. These can be accessed at: <http://www.fisheriesireland.ie/fisheries-management-1/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters>.

A copy of the submission IFI made to EirGrid in 2015, regarding the North South Interconnector was provided.

Eastern and Midland Regional Assembly (EMRA)

The EMRA is part of the regional tier of governance in Ireland. It is primarily focused on the formulation, adoption and implementation of Regional Spatial and Economic Strategies (which will replace the existing Regional Planning Guidelines), oversight and coordination of Local Economic and Community Plans (LECPs), management of EU

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Operational Programs, EU project participation, implementation of national economic policy, and additional functions through working with the new National Oversight and Audit Commission. These comments are issued as part of my role in the EAG and not as a submission from the Regional Assembly. The Assembly does not normally make submissions to SEA Scoping Reports, however we do make submissions on regionally and national significant plans, strategy's and projects and those plans and projects that are listed in the current Regional Planning Guidelines. In this regard the Assembly will make comments at the formal stage of consultation on the EirGrid Implementation Plan.

With regard to the SEA Scoping Report as issued, it appears to be a comprehensive scoping document that addresses the requirements of the EU Directive on the Assessment of Effects of Certain Plans and Programmes on the Environment (SEA Directive).

The proposed consultation and stakeholder engagement is useful and it is recognized that transboundary consultation with other member states should occur. Furthermore, the attempt to engage with wider environmental organizations and other stakeholders who may have interest in the project is welcomed.

The Geographical scale of the Implementation Plan should attempt to reflect the new regional boundaries as defined in the Local Government Act 1991 (Regional Assemblies) (Establishment) Order 2014 (S.I. 573 of 2014) which came into effect on the 1st January 2015 establishing the new Regional Assemblies; the Northern and Western, the Eastern and Midland, and the Southern. This establishment also defined sub regional areas - Strategic Planning Areas which could be reflected in the SEA study Areas.

With regard to planning policy documents it is considered that the Regional Planning Guidelines should be a consideration, a set of seven Regional Planning Guidelines (RPGs) were adopted by the eight former Regional Authorities in 2010 to provide a framework for long term strategic development of the region for the period of 2010-2022, which is consistent with the National Spatial Strategy 2002-2020 (NSS) and which ensures the successful implementation of the NSS at regional, county and local level. These planning documents will be replaced by Regional Spatial and Economic Strategies which will be prepared by the Regional Assemblies and will be informed by the upcoming National Planning Framework (the successor to the National Spatial Strategy).

Natural Resources Wales

NRW welcomes and supports the strategic approach to the assessment of grid infrastructure implementation that the EIRGRID IP 2017-2022 SEA aims to achieve. We consider that a robust strategic assessment of environmental issues associated with the plan will help to reduce risks to the environment and minimise the consenting risks and uncertainties for project promoters by identifying environmental baselines, key constraints, sensitive receptors, potential impacts, alternatives and mitigation approaches.

It is not clear from the scoping report what the 2017-2022 Plan intends as regards the EirGrid east-west interconnector to Wales, although as this connection is already built we have assumed that little in the way of change is planned. We would be grateful if this point could be confirmed. If that is the case, then further consideration of effects in Wales will not be required. However, if any changes to this interconnection are planned then consideration will need to be given to the potential effects to Welsh waters and any land based infrastructure in Wales. Any changes to parts of the grid that will mean that changes to the cabling and connection points in Wales are required will need to be assessed in the light of any potential sensitivity in Wales, and designed so as to minimise or avoid significant impacts.

Department for Communities (NI)

The scope of the planned work is exclusively outside Northern Ireland.

Historic Environment Division would recommend that our digital datasets might be utilized to assess impacts where proposed works have potential for physical or visual impacts on historic environment assets adjacent to the border area.

Many historic sites such as the Black Pigs Dyke and the Ulster Canal extend both sides of the border and it would

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be appropriate to retain cognizance of these assets and their historic significance.
You can download spatial datasets that we hold on the historic environment at: https://www.communities-ni.gov.uk/publications/historic-environment-digital-datasets
Department of Agriculture, Environment and Rural Affairs (Northern Ireland) (DAERA)
General SEA Comments
We would like the SEA Environmental Report to contain a clear statement indicating the opinion (and the reasons for it), about whether or not the implementation of the Plan, in combination with any identified measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment, is likely to have a significant effect on Northern Ireland.
DAERA have no issues or concerns with the SEA scoping report at this stage, but this project may pose concerns in the future as we have a number of licensed aquaculture sites all over Northern Ireland. Our concerns would be in relation to where power line base structures / stations may be placed and if they could have a negative impact on aquaculture sites. We would like to remind the applicant that it is an offence under Article 47 of the Fisheries Act (NI) 1966 to cause pollution which is subsequently shown to have a deleterious effect on fish stocks.
Specific comments
In terms of air pollution – could the SEA perhaps examine the impact on air quality in terms of renewable electricity (e.g. wind) transmission infrastructure, given the large difference in air pollutant emissions between renewables and fossil fuel-derived energy?
Biodiversity, Flora and Fauna baseline information <ul style="list-style-type: none"> • NIEA Natural Heritage Digital datasets: https://www.daera-ni.gov.uk/articles/download-digital-datasets • Northern Ireland State of the Environment Report 2013: https://www.daera-ni.gov.uk/publications/state-environment-report-2013 • Northern Ireland Environmental Statistics Report 2016: https://www.daera-ni.gov.uk/publications/northern-ireland-environmental-statistics-report-2016
Table 5.1 <ul style="list-style-type: none"> • Key PPP sources relevant for Biodiversity, Flora and Fauna should include: Biodiversity Strategy for Northern Ireland to 2020: https://www.daera-ni.gov.uk/publications/biodiversity-strategy-northern-ireland-2020-0 • Key PPP sources relevant for Landscape and Visual Amenity should include: NI Landscape Character Assessment: https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland • NI Regional Landscape Character Assessment: https://www.daera-ni.gov.uk/services/regional-landscape-character-areas-map-viewer
Table 4.1 Draft Strategic Environmental Objectives Biodiversity, Flora and Fauna, in draft objective B2 may want to include the additional wording “including those outside of designated sites” in relation to protected habitats, species and environmental features.
Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
Archaeology:
1. The importance of having a Project Archaeologist is recognised in the report and is accepted as an essential

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ingredient of the plan.

2. In the Cultural Heritage section of the report, Archaeology & Architecture is scoped “In” in the Summary of Environmental Issues (P.63). Both direct and indirect potential impacts are mentioned: “grid development options can be constrained by the need to protect the character of areas of existing archaeological and architectural resources”.

3. The report also identifies as SEA objective CH1: To Avoid impacts upon archaeological heritage (including entries to the Record of Monuments and Places) (P.65). It is recommended that **Section 6.5** of the report should be changed where it outlines the potential interrelationships in between different environmental topics. **Table 6.3** illustrates the relationships that are considered. Archaeology and Cultural Heritage has more interrelationships with other areas of environmental concern than those that have been identified in this section of the report:

- There is a relationships of archaeology with Biodiversity (Flora & Fauna) a clear example of this is on Skellig Michael World Heritage Site (important both for birds and for Built Heritage).
- Land Use – clearly land use can have a profound impact on archaeological sites / landscapes.
- Climate change – this has also had a dramatic impact on some archaeological sites (think of Omev Island storms).
- Water – this is the environment for underwater and riverine/lacustrine archaeological sites and should not be neglected.

Nature Conservation - General

This submission is made in the context of this Department’s role in relation to nature conservation, including as an environmental authority under SEA legislation.

The observations below are offered to assist EirGrid in meeting the obligations that arise in relation to European sites, other nature conservation sites, natural habitats and protected species, and biodiversity.

The opportunity has also been taken to make observations in relation to the appropriate assessment process, including the preparation of an NIS, in the event that screening for appropriate assessment finds that these are necessary.

While not specifically stated, it is assumed that the screening and assessment processes will be carried out under Part 5, Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (hereafter the ‘2011 Regulations’) as the plan is not a ‘land use plan’ for the purposes of Part XAB of the Planning and Development Act, 2000 as amended. The record-keeping obligations of a public authority, as set out in Regulation 61 of the 2011 Regulations, should also be noted.

SEA – Biodiversity, flora and fauna

SEA must assess the likely significant effects on biodiversity, flora and fauna.

Biodiversity is generally defined as the variety of life on earth. An outline of key elements of biodiversity of potential relevance to the plan and plan area is given in **Appendix 1**.

There are interrelationships between biodiversity, flora and fauna and most other environmental issues or topics, including population, human health, water, soil, air, climatic factors, landscape, and possibly architectural and archaeological heritage, and the potentially significant effects of the plan on these interdependencies should be explored and assessed in the SEA.

There will be overlaps and linkages between biodiversity, flora and fauna in the SEA, and sites, habitats and species of relevance to appropriate assessment and Articles 6(3) and 6(4) of the Habitats Directive. The SEA should address all such issues in general, as well as any other relevant provisions of the Habitats Directive. A plan should be developed to integrate biodiversity considerations in a positive, proactive and precautionary way, and this should be reflected in the text and content of the plan, including its aims, objectives and policies, as well as in any maps. The findings of the SEA should be assimilated into and modify the content of the plan.

The biodiversity, flora and fauna section of the environmental report should be prepared by or in conjunction with a suitably qualified ecologist(s), and other specialists as necessary, and in conjunction with the NIS to ensure full

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integration of biodiversity issues and concerns.

The EPA's Integrated Biodiversity Impact Assessment best practice guidance is of relevance in this regard.

Strategic Environmental Objectives (SEOs)

The (draft) Strategic Environmental Objectives (SEOs) in **Table 4.1** of the SEA scoping report are noted. In the case of Biodiversity, Flora and Fauna, the SEOs require review and revision to widen their scope and application to include, for example, the following:

- SEO B1 – to ensure compliance with the Habitats and Birds Directives, and associated legislation, with regard to the conservation and protection of European sites, and the implementation of Article 10 (of the Habitats Directive).
- SEO B2 – to avoid significant impacts on other nature conservation sites (including NHAs and pNHAs), Nature Reserves and Refuges for Fauna or Flora, designated under the Wildlife Acts 1976 to 2012, natural habitats, protected species, and environmental features or other sustaining resources.
- Species protected under the Wildlife Acts including protected flora.
- 'Protected species and natural habitats', as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008, including Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur) and Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur).
- Important bird areas such as those as identified by Birdlife International.
- Features of the landscape which are of major importance for wild flora and fauna, such as those with a "stepping stone" and ecological corridors function, as referenced in Article 10 of the Habitats Directive.
- Other habitats of ecological value in a national to local context (such as those identified as locally important biodiversity areas within Local Biodiversity Action Plans and County Development Plans).
- Red data book species and biodiversity in general.

SEA monitoring

The monitoring programme should be clearly set out and developed in such a manner as to ensure it will identify the effects on the environment that are likely to arise, or will arise, and to monitor the effectiveness of any mitigation on which the assessment relies.

It is important to understand the objectives, methodologies, parameters, assumptions, etc. of any existing monitoring programme that is proposed to be used in such a way.

Available guidance

Existing EU and Irish guidance on SEA and appropriate assessment (see **Appendix 2**) should be followed.

There should be due regard to the terminology, stages and tests of the assessment processes as set out in relevant legislation, notably in the case of the appropriate assessment process. Where legislation updates or amends elements of existing guidance, the former should be used or applied in preference in all cases.

Available ecological information

The National Parks and Wildlife Service website (www.npws.ie) is a key source of data/information etc.

This includes site boundaries, site synopses, lists of qualifying interests (SACs) and special conservation interests (SPAs), conservation objectives (European sites), features of interest (NHAs), and dates of site designation. GIS datasets are available for download for nature conservation sites, and for certain habitats and species arising from various sources, including national surveys.

GIS: <http://www.npws.ie/mapsanddata/habitatsspeciesdata/>

<http://www.npws.ie/article-17-reports-0>

<http://www.npws.ie/news/birds-directive-article-12-reporting>

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Data on ecological features and environmental factors in or near the project area will be available from various other sources including, for example:

- Other organisations, e.g. National Biodiversity Data Centre, BirdWatch Ireland, Bat Conservation Ireland, etc.
- SEA Environmental Reports, NIRs/NISs and other reports for other plans, including national plans and the previous IP.

Appropriate Assessment

General notes on screening for appropriate assessment and the preparation of an NIS are included in Appendices 3 and 4, respectively, and should be taken into account where relevant.

As outlined above, there should be due regard to the terminology, stages and tests of the appropriate assessment process as set out in relevant legislation, i.e. Regulation 42 of the 2011 Regulations.

The terminology in **Section 2.2.3** of the SEA scoping report should be reviewed in line with the applicable legislation noting that, if an appropriate assessment is required, an NIS (not an NIR) would be prepared.

Screening for appropriate assessment is carried out must be carried out to assess, in view of best scientific knowledge and in view of the conservation objectives of the relevant European site(s), if the plan, on its own or in combination with other plans or projects is likely to have a significant effect on the European site(s).

Under the 2011 Regulations, it must be determined that an appropriate assessment is required if it cannot be excluded on the basis of objective scientific information, following screening, that the project, alone or in combination with other plans or projects will have a significant effect on the European site(s). The precautionary principle should be applied in reaching such determinations.

The potential in combination effects of the following will need to be taken into account when carrying out screening for appropriate assessment and when preparing the NIS and carrying out the appropriate assessment, if required, for the IP:

- GRID25.
- 'Your Grid, Your Tomorrow: Ireland's Grid Development Strategy.'
- Transmission Development Plans (TDPs).
- Transmission projects.

Other plans – existing and planned land use zonings or categorisations for new or expanded onshore and offshore energy development, particularly renewable energy development, in plans, including land use plans, are a particular issue of concern in relation to in combination effects.

Other projects – existing, permitted and planned onshore and offshore energy developments, particularly renewable energy developments, are a particular issue of concern in relation to in combination effects

When an appropriate assessment is carried out by a public authority (or competent authority under planning legislation), it is required to take account of the (final) NIS, and should also address the content of submissions made where issues or concerns are raised regarding the likely effects on European sites.

Case law of the Court of Justice of the European Union (e.g. case C-258/11) has established that an appropriate assessment cannot have lacunae, and must contain complete, precise and definitive findings and conclusions with regard to the implications of a project for the conservation objectives and integrity of a European site or sites.

The decision-making authority has obligations to address scientific uncertainties or discrepancies, including matters raised by other parties, particularly in relation to the implications for European sites and their conservation objectives in the appropriate assessment (e.g. judgment of Justice Barton (Irish High Court, January 2016) in the case of Balz and others versus An Bord Pleanála); the final determinations should demonstrate how the differing scientific opinions were resolved, noting the standards of the appropriate assessment as outlined above.

General duties of a public authority

Your attention is drawn to Regulation 27 of the 2011 Regulations as this places particular duties on all public authorities in relation to European sites.

Among other things, this includes a duty to exercise all functions, including but not only consent functions, in

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compliance with, and so as to secure compliance with the requirements of the Habitats and Birds Directives and the 2011 Regulations.

Public authorities are obliged, when exercising their functions, to take appropriate steps to avoid in European sites the deterioration of natural habitats and the habitats of species, as well as disturbance of species.

All public authorities are advised to incorporate such obligations into their plans and programmes, and associated assessments, as required and relevant. This could usefully include the development of systems that will monitor and ensure the compliance of “downstream” projects with these obligations, as well as any internal mechanisms that may be needed to ensure compliance.

Appendix 1

Key elements of biodiversity, flora and fauna of relevance to SEA.

Appendix 2

Available guidance on Article 6 of the Habitats Directive and appropriate assessment.

Appendix 3

Notes on screening for appropriate assessment.

Appendix 4

Notes on the preparation and content of an NIS.

Appendix B. Screening for AA of the Grid IP



GRID Implementation Plan 2017 - 2022

Screening for Appropriate Assessment

March 2017

EirGrid

GRID Implementation Plan 2017 - 2022

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Appendix A. European Site Qualifying Interest Species and Habitats in Ireland

1. Introduction

1.1 The Implementation Plan

EirGrid plc (EirGrid) is the national electricity Transmission System Operator (TSO) for Ireland. In its role EirGrid operates and maintains a safe, secure, reliable, economical and efficient transmission system and develops key infrastructural projects, which are vital for the socio-economic development of the State. Transmission infrastructure is only developed when needed and in consultation with the local communities and stakeholders. All projects are developed with due regard for the environment.

GRID25, published in 2008, was a high-level strategy outlining how EirGrid intended to undertake the development of the electricity transmission grid in the short, medium, and longer terms, to support a long-term sustainable and reliable electricity supply to 2025. The GRID25 Implementation Programme 2011-2016 was a practical strategic overview of how the early stages of the GRID25 strategy were intended to be implemented.

EirGrid has prepared an updated grid development strategy, known as *Your Grid, Your Tomorrow: Ireland's Grid Development Strategy 2017*. EirGrid is preparing a new GRID Implementation Plan 2017-2022 which will detail how the strategy will be delivered and to replace the GRID25 Implementation Programme which expires in 2017.

This report comprises information in support of screening for Appropriate Assessment of the draft Grid Implementation Plan (IP), hereafter referred to as the draft Grid IP. In line with the Department of Environment Heritage and Local Government (DEHLG) guidance (DEHLG, 2010), the Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) processes have been prepared in tandem with the aim of influencing the development of the draft IP 2017-2022. Figure 1 illustrates the links between the SEA and AA process.

The Screening for the Appropriate Assessment is being undertaken by Jacobs on behalf of EirGrid.

1.2 Planning and legislative context

The European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (also referred to as *The Habitats Directive*) provides legal protection for the habitats and species of European importance. Articles 3 to 9 of the Directive set out the legislation to protect these through the establishment and conservation of a Europe wide network of sites: the Natura 2000 site network. European sites comprise¹ Special Areas of Conservation (SAC) designated under the Habitats Directive and Special Protection Areas (SPA) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects with potential to affect SACs and SPAs, including effects on candidate SACs² (cSACs) as set out in DEHLG guidance (DEHLG, 2010).

The Habitats Directive has been transposed into Irish law by the Planning and Development Act 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011). The Grid IP 2017-2022 falls under the governing legislation of the European Communities (Birds and Natural Habitats) Regulations 2011.

¹ "European site" replaced the term "Natura 2000 site" under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.

² There are currently no SACs in Ireland. All remain 'candidate' (cSAC) until the European Commission approves and ratifies the final list of cSACs. cSACs are afforded the same protection as SACs. The process of making cSACs SACs by means of Statutory Instrument has begun. While this process is ongoing the term SAC will be used, in conformance with nomenclature used in NPWS databases.

EirGrid in its role as a Public Authority for the draft Grid IP, is examining the likely significant effects, individually or in combination, of implementing the draft plan on European sites in light of the specific qualifying interests and conservation objectives of the relevant sites.

If screening determines potential for likely significant effects on a European site, then full AA must be carried out for the plan, including the compilation of a Natura Impact Report to inform the decision making.

1.3 Aims of the Report

This report examines the potential for likely significant effects on European sites arising from the policies and objectives of the draft Grid IP and will inform the requirement for further assessment (i.e. Appropriate Assessment).

The aims of this report are:

- To identify European sites which occur within a possible zone of influence of the draft Grid IP.
- To ascertain whether the implementation of the policies and objectives of the draft Grid IP could, alone or in combination with other plans and projects, result in likely significant effects on the Irish Natura 2000 network of European sites in terms of impacting on the Conservation Objectives of individual sites.

2. Methodology

2.1 Introduction to Appropriate Assessment

Article 6(3) of the Habitats Directive establishes the requirement for an AA and specifies the first step of the process as Screening to establish whether, in relation to a particular plan or project, an AA is required. Article 6(3) states:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have [or capable of having³] 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.”

This has been implemented in Ireland under the European Communities (Birds and Natural Habitats) Regulations 2011-2015 and the Planning and Development Acts 2000-2010 (as amended).

European Commission (EC, 2001) and Irish departmental guidance (DEHLG, 2010) divide the provisions of Article 6 into four ‘stages’ in the AA process. This approach is used industry-wide as standard and is followed in this Screening Statement⁴. These four stages are described below and shown in Figure 1. Figure 1 also illustrates the links between the AA process and the SEA process that is being carried out in parallel for the IP.

- **Stage 1 Screening** - Screening determines whether AA can be excluded, on the basis of objective information, that the project or plan, either alone or in combination with other projects / plans, will not result in significant effects on the conservation objectives of a European site.

Reasoned application of the Precautionary Principle is fundamental to the Screening stage (and AA). Where there is evidence of possible effects on a European site(s) from the project / plan, but uncertainty remains, significant effects must be presumed without evidence to the contrary. The project / plan will be ‘screened-in’, requiring an AA. Where there is no evidence of significant effects, and no reasonable scientific doubt remains regarding this judgement, the assessment is stopped, and the plan / project is ‘screened-out’ from further assessment.

- **Stage Two: Appropriate Assessment** – If ‘screened-in’ the effect of the project / plan on the integrity of the European site(s), with respect to the site structure and function and its conservation objectives either alone or in combination with other projects or plans is assessed. Where there are adverse effects identified, mitigation measures are proposed as appropriate to avoid or remove adverse effects. The AA process is documented within a Natura Impact Report (NIR) to facilitate an informed assessment of the plan / project.

It is unusual for AA of plans to progress further than this stage.

- **Stage Three: Assessment of Alternative Solutions** - The process of examining alternative ways to complete the plan / project and avoid adverse effects to the integrity of any European sites is likely to have been incorporated into Screening and AA. However, if adverse effects remain after mitigation, alternatives will be revisited at this stage.

³ In accordance with the Opinion of Advocate General Eleanor Sharpston in Reference for a Preliminary Ruling from the Supreme Court (Ireland), Case C-258/11, the term “likely to have a significant effect” in Article 6 (3) was interpreted as “capable of having a significant effect” (i.e. a lower probability is required to trigger Appropriate Assessment).

⁴ Defining AA as Stage 2 of the AA process is, strictly speaking, incorrect. Screening determines whether an AA should be undertaken, but is not Stage 1 of the process. However the widespread adoption by industry and public authorities of this EC terminology has made it difficult to remove the “stage” concept from reporting without introducing confusion.

- **Stage Four: Imperative Reasons of Over-Riding Public Interest (IROPI)** - In the unlikely event where an Assessment of Alternatives was required, and only if this failed to identify any alternatives which would not adversely affect European sites, Imperative Reasons of Over-Riding Public Interest (IROPI) could potentially be enacted, whereby compensatory measures are implemented to maintain the coherence of the European site network in the face of adverse effects to site integrity. If a plan / project is to be authorised on the basis of IROPI, an application 'statement of case' is required to serve as the basis for an IROPI decision. Referral to the relevant Minister is also required, in advance of informing or obtaining the opinion of the European Commission.

Figure 1 illustrates the stages in AA and the links between the AA process and the SEA process that is being carried out in parallel for the IP. The current stage of the AA process is highlighted in red.

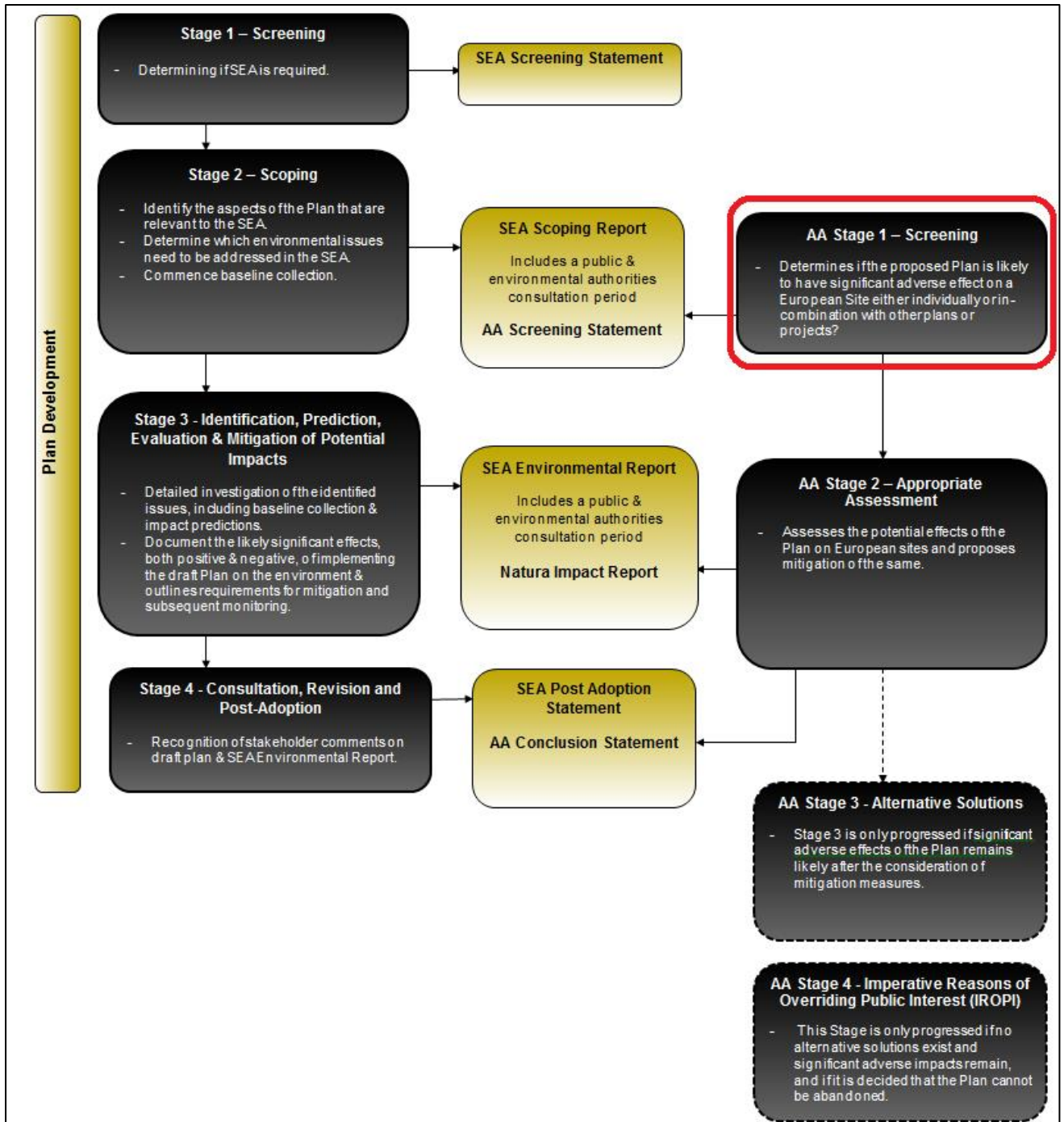


Figure 1: Stages of the AA process and the links to SEA process

2.2 Guidance used

The following key information sources are relied upon for the Screening exercise:

- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (DEHLG⁵, 2010);
- *Integrated Biodiversity Impact Assessment – Streamlining AA, SEA and EIA Processes: Practitioner’s Manual* (EPA, 2013);
- *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* (EC, 2001); and
- *Ecology Guidelines for Electricity Transmission Projects. A standard approach to ecological impact assessment of high voltage transmission projects* (EirGrid, 2012).

EirGrid have produced a number of Evidence Based Environmental Studies (EBES) of relevance to Biodiversity, Flora and Fauna which will inform the AA and SEA process of the IP. These include:

- **EBES 3: Bats** - Literature review and evidence based field study on the effects of high voltage transmission lines on bats in Ireland (EirGrid, 2015);
- **EBES 4: Habitats** - Literature review and evidence based field study on the effects of high voltage transmission lines on natural and semi-natural habitats in Ireland (EirGrid, 2016);
- **EBES 5: Birds** - Literature review and evidence based field study on the effects of high voltage transmission lines on birds (EirGrid, 2016a);
- **EBES 6: Water Quality & Aquatic Ecology** - Literature review and evidence based field studies on the effects of high voltage transmission lines on water quality and aquatic ecology in Ireland (EirGrid, 2016b); and
- **EBES 7: Soils & Geology** - Literature review and evidence based field study on the effects of high voltage transmission development on soils and geology (EirGrid, 2016c).

2.2.1 Role of precautionary principle

The precautionary principle is fundamental to AA and prevails where reasonable scientific doubt cannot be ruled out. Known threats to qualifying interests (QI) species or habitats of relevant European sites are analysed to avoid overlooking subtle or far-field effect pathways. The duration of potential effects is a key consideration, in particular because the European Court of Justice has recently ruled (albeit in specific reference to priority habitats) that effects to site integrity must be “lasting”⁶.

Reasoned application of the ‘Precautionary Principle’ is fundamental to the Screening stage (and AA). The precautionary principle is referenced in Article 191 of the Treaty on the Functioning of the European Union (TFEU). It relates to an approach to risk management whereby if there is the possibility that a given policy or action might cause harm to the public or the environment and if there is still no scientific consensus on the issue, the policy or action in question should not be pursued. Once more scientific information becomes available, the situation should be reviewed.

⁵ Now the Department of Housing, Planning, Community and Local Government

⁶ Judgment Of The European Court (Third Chamber) on 11 April 2013 in Case C 258/11 (REQUEST for a preliminary ruling under Article 267 TFEU from the Supreme Court (Ireland)) in relation to Peter Sweetman, Ireland, Attorney General, Minister for the Environment, Heritage and Local Government v An Bord Pleanála, para 46 (and others).

2.3 Detailed screening methodology

This Screening report was informed by:

- a desk study of relevant environmental information e.g. Ordnance Survey Maps;
- publically available terrestrial, aquatic and marine baseline data sets (detailed in Section 2.6 and guided by Appendix 3 in (EPA, 2013)); and
- relevant guidance:
 - *Integrated Biodiversity Impact Assessment – Streamlining AA, SEA and EIA Processes: Practitioner’s Manual* (EPA, 2013).
 - *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites - Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission, 2001).

It involved the following steps broadly based on the above mentioned guidance (EC, 2001) and aimed to:

- determine if the IP is directly connected with or necessary to the management of a European site;
- describe the IP;
- identify aspects of the IP that have the potential to impact on the Irish Natura 2000 network of European sites , either alone or in combination with other plans or projects;

Those aspects of the IP which would not be likely to have a significant effect on a European site (either alone or in combination) can be ‘screened out’.

Where effects are unknown or there is uncertainty regarding aspects of the plan and its potential effects, the plan will be subject to AA for a more detailed examination of the effects on the integrity of European sites.

It should be noted that screening of plans is not necessarily a single stage in the preparation of a plan; it can be repeated as and when modifications, embedded environmental mitigation or further proposals are included.

2.3.1 How the plan could affect a European Site(s)

A plan may have the potential to impact on a European site(s) or prevent a site achieving its Conservation Objectives through the promotion of policies and objectives that result in development in sensitive locations. The main aspects of the plan which could give rise to direct or indirect impacts on European sites relate to Grid development policy and development needs that arise from these policies. These policies are required to meet the system needs of the transmission system.

Where a plan includes constituent projects, individual projects could affect a European site causing impacts to the habitats and / or species for which that European site is designated if those projects are within a zone of influence of such sites.

Effects can be characterised as:

- direct or indirect;
- short, medium or long-term;
- temporary or permanent;
- continuous or intermittent;
- positive, neutral or negative; and
- reversible or irreversible.

Examples of direct effects include permanent habitat loss through a proposed development or habitat severance caused by linear engineering operations across a European site. Often effects are indirect or cause effects via biophysical changes or changes in water or air quality. Changes in site hydrology can occur as result of changes some distance from the European site.

Of particular importance is to acknowledge that mobile species, such as birds protected under Annex I of the Birds Directive, can be affected by proposals developed outside of European sites where these developments affect or impact on species movements between sites.

The (draft) IP must also be examined in terms of potential impacts that may arise due to the in-combination effect of other projects and plans.

2.3.2 Identifying relevant European sites

The DEHLG guidance on AA of plans recommends that all European sites within 15km of the plan area should be assessed, this derives from UK guidance (Scott Wilson et al, 2006 cited in DEHLG, 2010; p.32, para 1). However, as the draft Grid IP is a national plan, the broad study area for AA screening needs to consider the island of Ireland and the off shore as it may apply to any possible future interconnection with Europe. The implications of the IP for the Natura Network of European sites in Ireland will be examined.

Potential for transboundary effects will also be considered. EirGrid is the Irish TSO in Ireland but the draft Grid IP also relates to transboundary projects with Northern Ireland and the potential for grid interconnection with France. As such, European sites in Northern Ireland must also be considered in the assessment. Furthermore, the AA of the plan should identify any potential effects on the surrounding marine environment in the context of potential off shore connections and / or cumulative and transboundary effects as applicable.

At the point of drafting this report, the draft Grid IP and draft SEA are still in development. Policies and objectives related to grid development in the period 2017-2022 are being drafted and therefore the potential implications of the draft Grid IP are uncertain and must be examined in a precautionary way as to the potential impacts to the Natura 2000 Network of sites in Ireland.

2.4 Data resources

Digital mapping of ecological data is a critical part of determining the potential for significant effects on European sites. The following key sources are available to inform the assessment:

- mapping of European site boundaries and qualifying interest species and habitats obtained in digital format online from the NPWS in 2016;
- data from NPWS Research Branch including:
 - freshwater pearl mussel (FWPM) 'Habitat' and 'Population' GIS Data;
 - FWPM Catchment boundaries in GIS format;
 - Special Protection Area (SPA) Wetland bird roost locations in GIS format; and
 - favourable reference ranges and tabulated threats and pressures for QI species / habitats in the NPWS' latest national conservation status assessments (NPWS, 2013).
- data from the online portal of the National Biodiversity data centre on species records, and the landscape conservation for bats mapping (Lundy et al., 2011);
- Ordnance Survey Ireland mapping and aerial photography available from www.osi.ie;
- conservation status of relevant species and habitats from NPWS conservation status assessments (NPWS, 2013); and

2.5 Limitations and assumptions

At the time of writing this report for Screening for Appropriate Assessment the Grid IP was being drafted. Screening for AA will continue as the draft Grid IP develops and more detail emerges regarding policies, objectives and regional Grid development.

3. The (Draft) GRID Implementation Plan 2017-2022

The draft Grid IP consists of three parts comprising:

- Part A: Vision and Strategy;
- Part B: Implementation (policy and objectives); and
- Part C: Grid Projects (as outlined in the Transmission Development Plan, 2016).

Part C of the draft Grid IP is of particular relevance to the AA process. This part of the plan captures the key provisions of EirGrid's draft Transmission Development Plan (TDP) 2016, which provides details on projects over a 10 year timeframe. The projects contained in the draft Grid IP are driven by the development requirements to maintain a safe, secure and reliable transmission system for the Island of Ireland. This includes the requirement for upgrading of existing infrastructure and maximising the efficiency of the network and also includes requirements for new transmission infrastructure such as substations, overhead lines and underground cables (see Section 3.5).

3.1 Need for the Plan

The Grid IP 2017-2022 will replace the *Grid 25 Implementation Programme 2011-2016* (IP 2011). It is being drafted in the context of EirGrid's new strategy entitled "*Ireland's Grid Development Strategy 2017 – Your Grid, Your Tomorrow*". The draft Grid IP is a practical strategic overview of how the new grid strategy is intended to be implemented.

The draft Grid IP identifies those parts of the country that require investment in the transmission system and that are likely to be developed over the next five years. The draft Grid IP identifies the issues, policies and objectives that will be addressed in developing the transmission system (the Grid). In this way, it establishes the parameters and criteria for the underlying processes by which subsequent decisions will be made.

3.2 Overarching Objectives of the (draft) Grid IP

The overall objectives of the Grid IP (in draft) are:

- To realise the vision for grid development set out in EirGrid's new Grid Development Strategy.
- To review the Grid 25 IP prepared in 2011 and to update it in the context of the new Grid Development Strategy 2017 and policies, processes and approaches that have been developed in the interim.
- To examine the successes and challenges encountered of the previous IP (2011) and to integrate the lessons learned into the development of new Grid IP.
- To identify and discuss the strategic environmental, social, technical, project development, planning and consenting matters, as well as consultation / engagement opportunities, pertinent to the implementation of the new Grid Development Strategy. To draft policies and objectives that will ensure appropriate consideration is given to these topics in grid development activities proposed within the IP period of 2017-2022.
- To articulate a strategy for regional grid development based on the new Grid Development Strategy and separately to examine transmission infrastructure projects that are envisaged as likely to be developed during the plan period, as set out in EirGrid's TDP 2016

3.3 Geographical Scale of the Plan

As part of a national scale plan, the draft Grid IP area covers the Republic of Ireland. EirGrid is the Irish Transmission System Operator, and this draft Grid IP relates to grid development in Ireland. The EirGrid Group own the electricity transmission System Operator in Northern Ireland (SONI). As such, the IP, SEA and AA

process will have significant regard to grid development in Northern Ireland, primarily from a transboundary impact perspective (EirGrid, 2011).

The potential for an interconnection with France has also been included in the EirGrid Transmission System Development Plans since 2012 and is also included in the recent Grid Strategy. Any potential effects in relation to this proposed interconnection with France will be examined as part of this process.

3.4 Policies and Objectives

The draft Grid IP includes policies and objectives developed to ensure appropriate protection of the natural, built and human environment in all aspects of grid development. Detailed policies and objectives will be included in the Grid IP under the following headings (those highlighted in black are of particular relevance to protection of the natural environment):

- General
- **Biodiversity**
- **Climate Change**
- Noise
- **Landscape**
- Cultural Heritage
- **Water- Water Framework Directive**
- **Air Quality**
- Tourism

The environmental assessments (SEA and AA) will influence the development of these policies and objectives as the plan progresses. The policies and objectives of the draft Grid IP will be screened for their implications for AA throughout the SEA and AA process.

3.5 Projects within the Plan

The projects detailed in the draft Grid IP come from the draft Transmission Development Plan (TDP) 2016 – 2026. This ten year plan presents projects that are needed for the operation of the transmission network. The projects detailed are at various stages of development, from concept to construction and to fully operational (energisation). These projects are broadly categorised into three phases. Phase 1 is defined by the identification of a need for a project but the project solution has not yet been developed. Phase 2 is defined by projects in a stage of development that includes outline design, EIA, public consultation and the public planning process. Phase 3 involves detailed design, procurement, construction, commissioning and energisation. Figure 2 below shows the existing transmission system and those projects in Phase 2.

An overview of the types of transmission projects within the TDP is provided below. It should be noted that depending on the needs of the transmission system, the requirements for these projects can change. Similarly, it is likely, given the continuously changing nature of electricity requirements, that new developments will emerge that could impact the plan as presented. These changes will be identified in future studies and accommodated in future TDPs. As such, the long-term development of the network is under review on an on-going basis.



Figure 2. Existing Transmission System and Phase 2 projects

3.5.1 Project Phases and Types

The (draft) TDP 2016 outlines 20 projects that have been completed since TDP 2015 and 13 new projects. It also outlines a total of 116 projects that are currently in progress, which can be categorised as follows:

- 34 - new builds;
- 60 - uprating/modification of existing network;
- 20 – refurbishment/replacement of existing network; and
- 2 – other

For the purpose of the AA projects in Phase 1 and the early stages of Phase 2 will be assessed for implications on European sites as projects in the later stages of Phases 2 and in Phase 3 will have gone through the necessary planning process or approval as required. These projects will be examined for any possible cumulative impacts with other projects contained within the IP.

The nature of the transmission system, linking energy generation points to demand centres means that projects can span regions/ counties. The projects detailed in the draft Grid IP will comprise the following categories:

- **New Build (NB)** - Projects that involve the construction of new infrastructure. This can include new substations, transmission lines or underground cable. This category also includes projects that involve the installation of new equipment in existing substations.
- **Uprate (U)** - Projects that involve upgrading existing infrastructure to higher technical specifications. For overhead lines, this involves replacing the conductors with higher performing conductors. It generally involves the replacement of a significant number of support structures comprising wooden pole sets and or steel towers. For substations, this involves replacement of infrastructure to support the higher capacity needs of the uprate.
- **Modify (M)** - involves the modification of existing assets. An example of a modification project is the installation of new bays in an existing station. Reconfiguration of existing stations is also included in this category.
- **Refurbish/Replace (RR)** - Projects that involve the maintenance of existing stations or existing circuits. This category also includes projects that involve some limited replacement of existing assets.
- **Redevelopment (RD)** – Projects that consider the redevelopment of assets due to the condition and age of the assets. For example these works could involve the development of a new station to replace an existing one.

3.5.2 Offshore works

A number of scenarios for future electrical generation and transmission in Ireland involve the consideration of the development of offshore grid infrastructure.

Proposals involving the connection of offshore energy generation (wind wave and tidal) are still in the early stages of development in Ireland and it is unlikely that significant developments of this nature will occur in the life cycle of this Grid IP.

EirGrid along with French TSO counterpart, Reseau de Transmport d'Electricitie (Rte) are currently assessing and examining the benefits of an interconnector with France. A decision to proceed in developing this as a viable project will be based on a full technical and economical evaluation. The south eastern coastline has been identified as the likely landfall area if the project progresses.

Private developers are also exploring interconnection to Great Britain.

3.6 Standard environmental protection measures

The SEA in respect of the GRID25 Implementation Programme 2011-2016 identified a number of Environmental Mitigation Measures (EMMs) designed to prevent, reduce and, as much as possible, offset any significant negative impacts on the environment that may arise as a result of the adoption the IP. A number of these comprised measures involving changes in organisational and working practices within EirGrid, including:-

- EMM1: “Full integration of Planning and Environmental Considerations in Transmission System Planning”;
- EMM2: “Preparation of Strategic Environmental Constraints Mapping”;
- EMM3: “Preparation of Evidence-Based Environmental Guidelines”; (these consist of (a) Environmental Benchmarking Studies, (b) Evidence-Based Environmental Design Guidelines, (c) Guidelines on EIA for Transmission Projects in Ireland);
- EMM4: “Consideration of the Broadest Possible Range of Alternatives in all Future Energy Transmission Strategies”;
- EMM8: “Other Measures Integrated into the IP”; (in the areas of Biodiversity and Flora and Fauna, Water Resources, Soils and Geology, Cultural Heritage, Landscape and Visual, Noise, Liquid Effluents and Spillages, Solid Wastes, as well as in respect of Construction of New Substations and Extension of Existing Substations, and Reinforcement of the Transmission System in the Regions (IP, Appendix B, p.75)).

These mitigation measures have been implemented and together with EirGrid’s *Ecology Guidelines for Electricity Transmission Projects (2012)* influence the development of transmission projects at all stages of project development.

3.7 Overview of programme

The new strategy document from EirGrid *Your Grid, Your Tomorrow: Ireland’s Grid Development Strategy 2017* was published in January 2017. The current timeframe provides for the publication of the Grid IP in autumn 2017, accompanied by a finalised environmental report as part of the SEA process and Natura Impact Report (for Appropriate Assessment). The Grid IP covers the five year period up to 2022.

The draft Grid IP can only be adopted if the AA process determines that there will be no adverse effects on European sites or that there are imperative reasons for overriding public interest (IROPI) to proceed. Therefore an AA must be completed before any plan can be adopted.

4. Screening

This section of the report examines the potential for significant effects of the draft Grid IP on the Natura 2000 Network of European sites in Ireland.

4.1 Is the plan exempt from assessment?

The draft Grid IP (the plan) is not directly connected with or necessary to the management of a European site and therefore is not exempt from assessment.

4.2 Is the plan excluded from assessment?

The plan cannot be excluded from assessment as it:

- sets the framework for future grid development proposals;
- goes beyond aspiration and sets out an intended course of future action; and
- sets out an intention or decision about what is going to be done, or should be done.

As a plan, defined by the Habitat Regulations and legal precedent, it must undergo assessment.

4.3 Can the plan obviously be eliminated from assessment?

Given that the draft Grid IP is of national scale, comprising of possible developments in multiple regions of Ireland, it is not possible to screen out the potential for impacts on European sites based on the information currently available.

The main aspects of the draft Grid IP which could give rise to direct or indirect impacts on European sites relate to Grid development policies and objectives and the development needs that arise from these. Given that the Grid IP is still in draft at the writing of this report it is appropriate to invoke the precautionary approach and consider that in the absence of further information and more detailed assessment, the Grid IP will be subject to Appropriate Assessment.

4.4 Conclusion and Screening Statement

The draft Grid IP 2017-2022 is a national scale plan covering all regions in the country with potential transboundary implications. Given the Grid IP is at draft stage and the fact that there are uncertainties regarding potential implications of the policies, objectives and projects arising from the draft Grid IP, impacts on European sites cannot be ruled out.

At this stage, in the absence of further information or the integration of mitigation measures, it is considered that the draft Grid IP may have potential to impact on European sites. In the absence of more detailed information on the Grid IP and projects listed therein at this stage, the precautionary principle must be applied. Therefore, in accordance with Article 6(3) of the Habitats Directive, AA of the draft Grid IP is required. This will be presented in a Natura Impact Report. It should be noted that further refinement of the Screening stage will continue as more detail on the Grid IP becomes available.

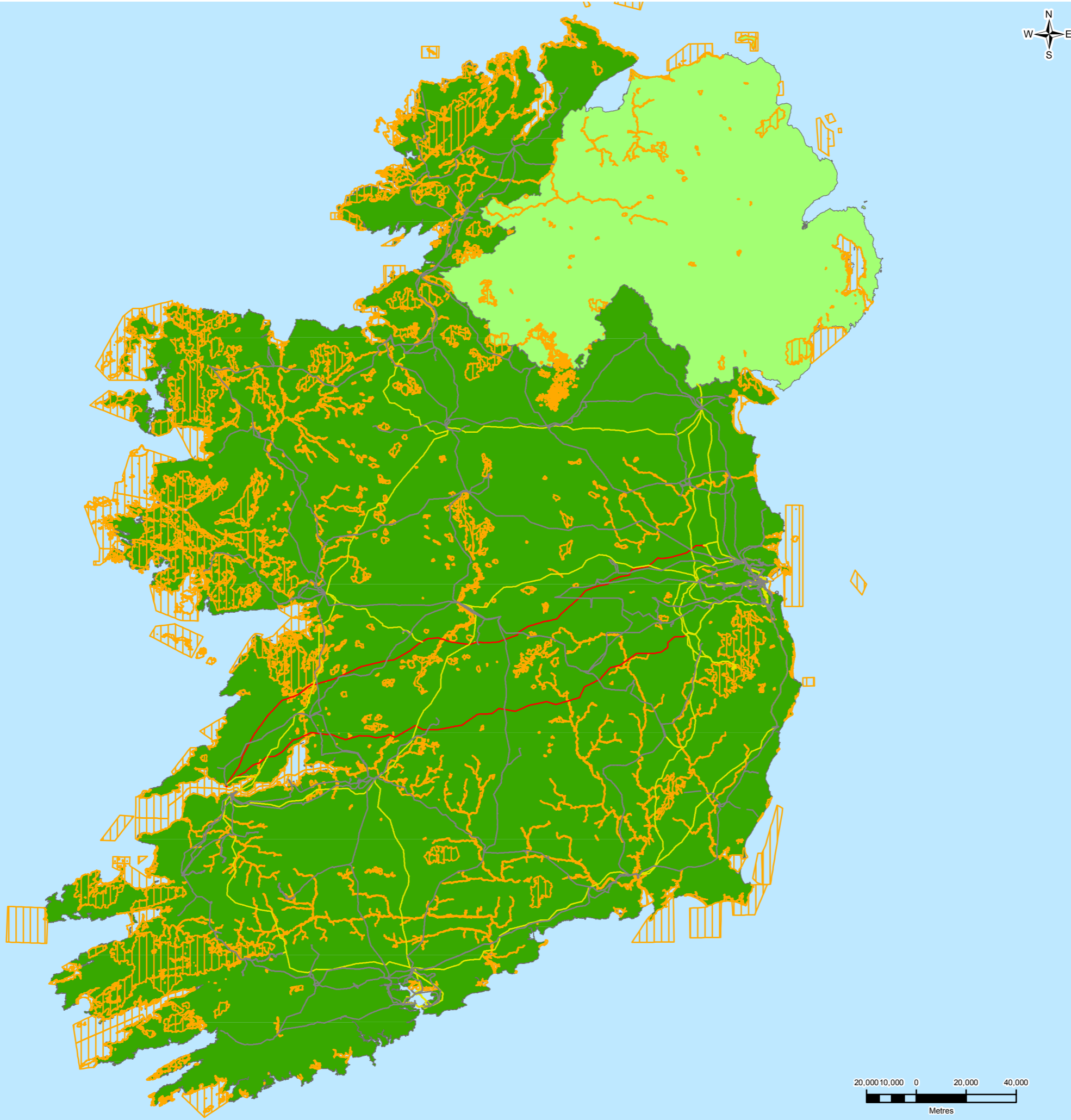
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Figures

Figure 3. Special Areas of Conservation (SAC) in Ireland

FIGURE 3.



- Legend**
- 110kV_Cables
 - 110kV_Lines
 - 220kV_Lines
 - 400kV_Lines
 - Special Area of Conservation
 - Northern Ireland
 - Republic of Ireland

0	23/03/2017	Initial Issue	AC	PW	LG	OD
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

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Project
 GRID Implementation Plan 2017 - 2022

Drawing Title
Special Areas of Conservation (SAC) in Ireland

Drawing Status	
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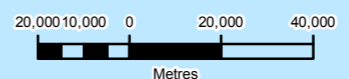
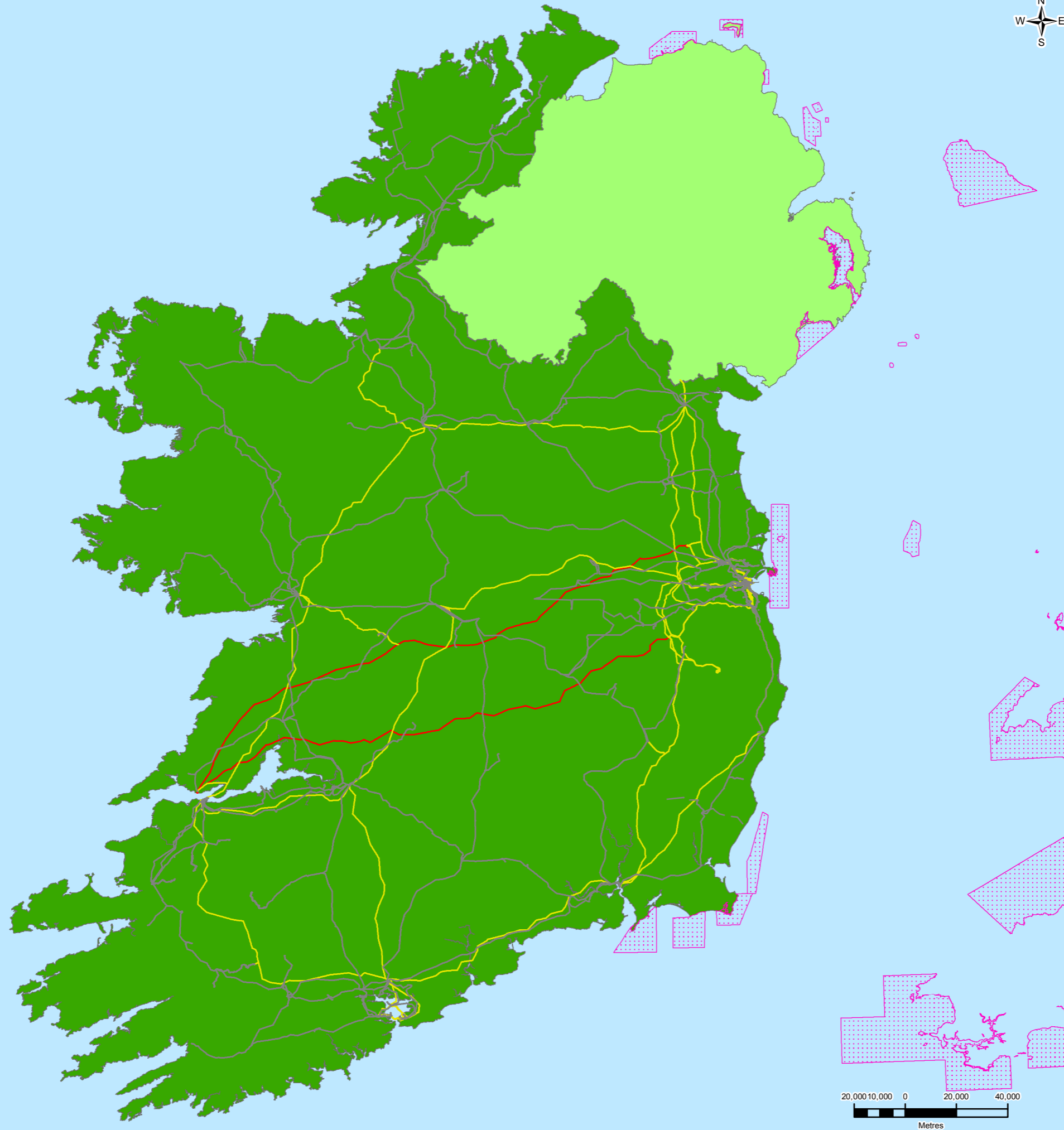


Figure 4. Marine SAC's in Ireland

FIGURE 4.



Legend

- 110kV_Cables
- 110kV_Lines
- 220kV_Lines
- 400kV_Lines
- Marine Special Areas of Conservation
- Northern Ireland
- Republic of Ireland

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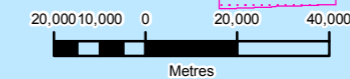
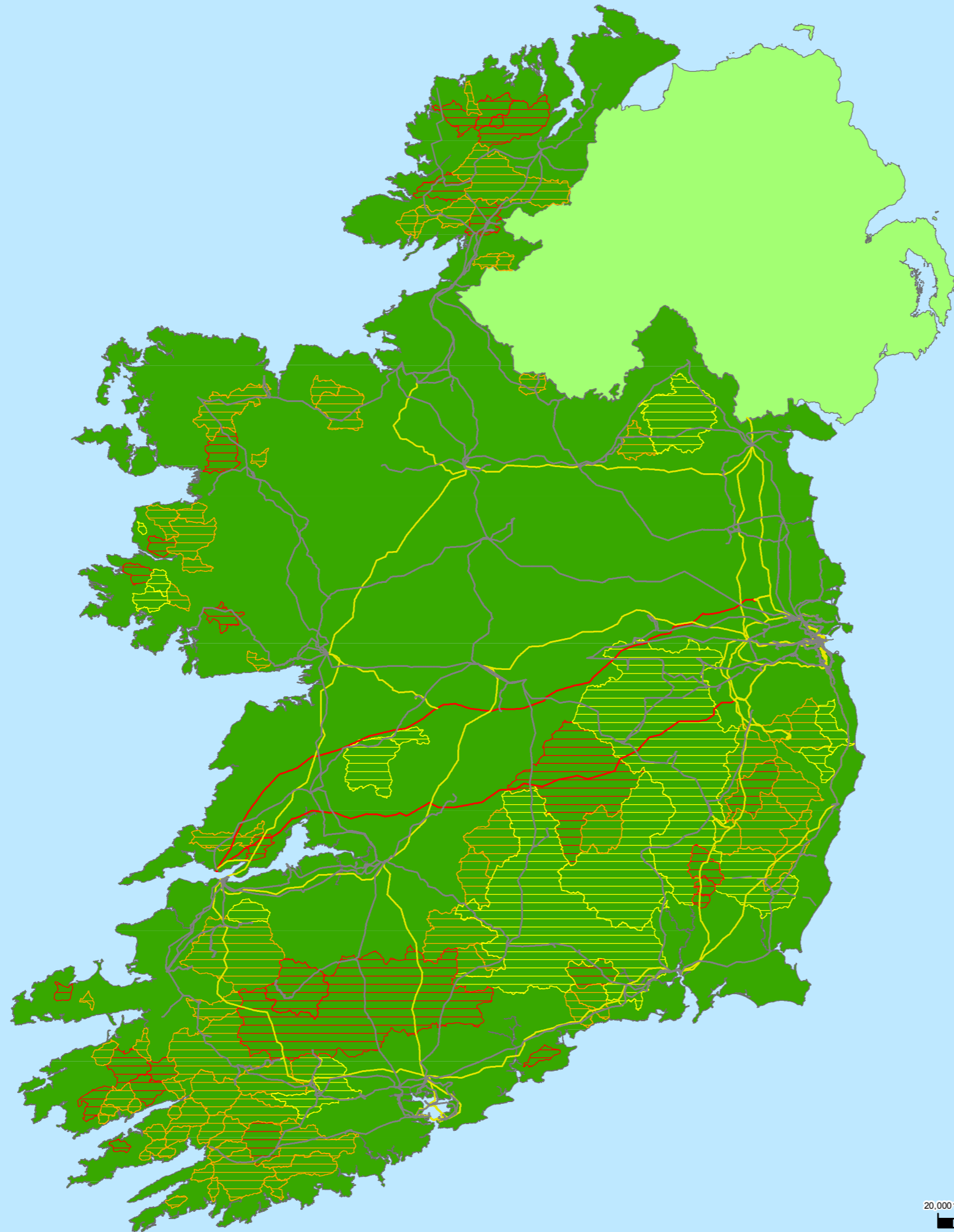


Figure 5. Freshwater Pearl Mussel Catchments

FIGURE 5.



Legend

- 110kV_Cables
- 110kV_Lines
- 220kV_Lines
- 400kV_Lines

Freshwater Pearl Mussel Catchments

- SAC populations listed in S.I.296 of 2009
- Catchments of other extant populations
- Current status unknown
- Northern Ireland
- Republic of Ireland

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Freshwater Pearl Mussel Catchments in Ireland

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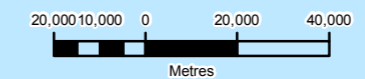
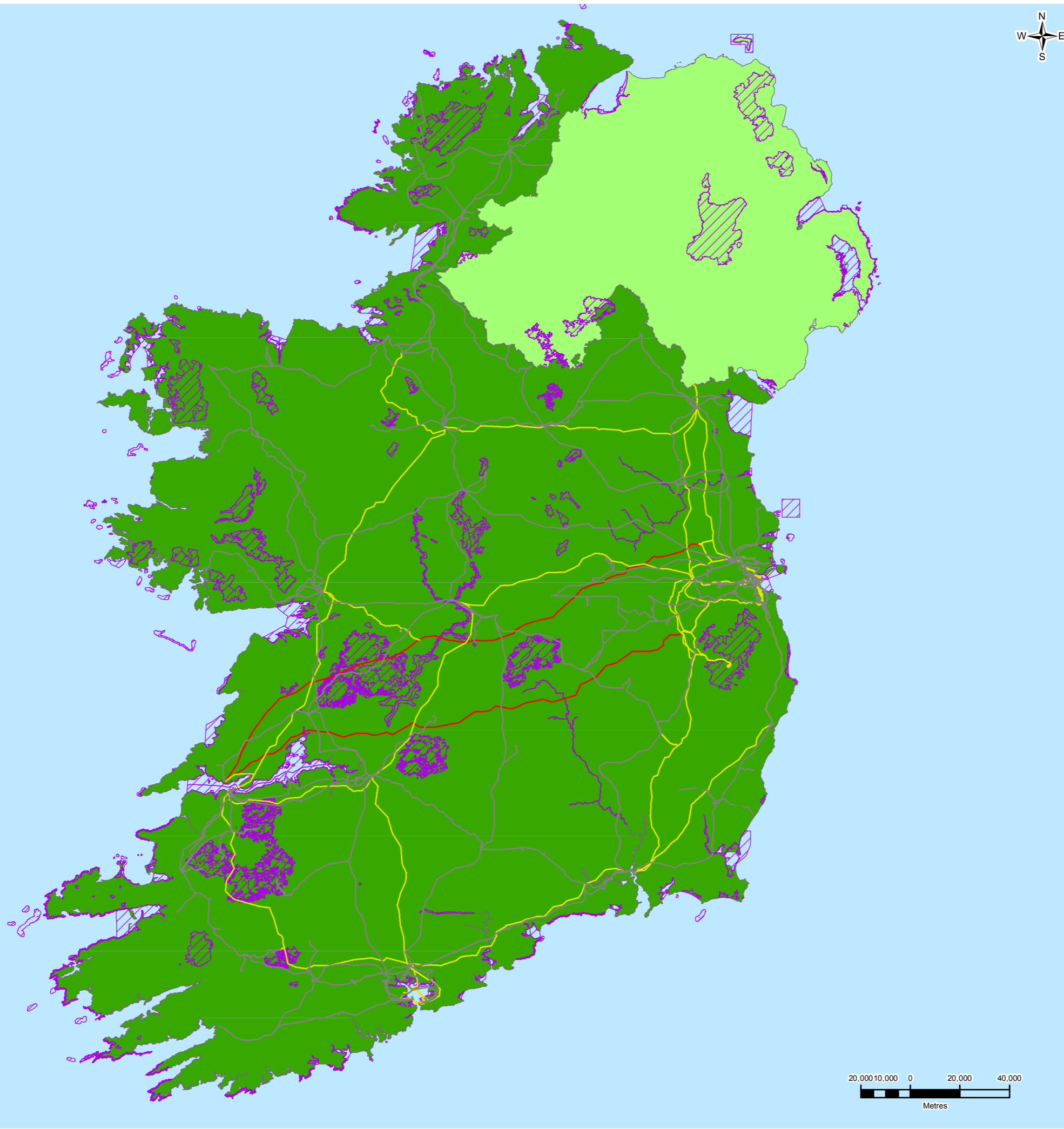


Figure 6. Species Protection Areas (SPA) in Ireland

FIGURE 6.



Legend

- 110kV_Cables
- 110kV_Lines
- 220kV_Lines
- 400kV_Lines
- Special Protection Areas
- Northern Ireland
- Republic of Ireland

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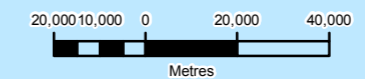
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Drawing Title
Special Protection Areas (SPA) in Ireland

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Appendix A. European Site Qualifying Interest Species and Habitats in Ireland

SAC Habitats

- Active raised bogs
- Alkaline fens
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
- Alpine and Boreal heaths
- Annual vegetation of drift lines
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)
- Atlantic salt meadows (*Glaucopuccinellietalia maritimae*)
- Blanket bogs (* if active bog)
- Bog woodland
- Calaminarian grasslands of the *Violetalia calaminariae*
- Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*
- Calcareous rocky slopes with chasmophytic vegetation
- Caves not open to the public
- Coastal lagoons
- Decalcified fixed dunes with *Empetrum nigrum*
- Degraded raised bogs still capable of natural regeneration
- Depressions on peat substrates of the *Rhynchosporion*
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)
- Embryonic shifting dunes
- Estuaries
- European dry heaths
- Fixed coastal dunes with herbaceous vegetation (grey dunes)
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- Humid dune slacks
- *Hydrophilous* tall herb fringe communities of plains and of the montane to alpine levels
- *Juniperus communis* formations on heaths or calcareous grasslands
- Large shallow inlets and bays
- Limestone pavements
- Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)
- Machairs (* in Ireland)
- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)
- Mediterranean salt meadows (*Juncetalia maritimi*)
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- Mudflats and sandflats not covered by seawater at low tide
- Natural dystrophic lakes and ponds
- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
- Northern Atlantic wet heaths with *Erica tetralix*
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*
- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- Perennial vegetation of stony banks
- Petrifying springs with tufa formation (*Cratoneurion*)
- Reefs
- Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation
- Salicornia and other annuals colonising mud and sand
- Sandbanks which are slightly covered by sea water all the time
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
- Siliceous rocky slopes with chasmophytic vegetation
- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)
- *Spartina* swards (*Spartinion maritimae*)
- Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)

- Submarine structures made by leaking gases
- Submerged or partially submerged sea caves
- *Taxus baccata* woods of the British Isles
- Transition mires and quaking bogs
- Turloughs
- Vegetated sea cliffs of the Atlantic and Baltic coasts
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation

SAC Species

- *Alosa fallax fallax* Atlantic twaite shad
- *Alosa fallax killarnensis* Killarny shad
- *Austropotamobius pallipes* White clawed crayfish
- *Drepanocladus vernicosus* Slender green feather moss
- *Euphydryas aurinia* March fritillary butterfly
- *Geomalacus maculosus* Kerry slug
- *Halichoerus grypus* Grey seal
- *Lampetra fluviatilis* River lamprey
- *Lampetra planeri* Brook lamprey
- *Lutra lutra* Otter
- *Margaritifera durrovensis* Nore freshwater pearl mussel
- *Margaritifera margaritifera* Freshwater pearl mussel
- *Najas flexilis* Slender naiad
- *Petalophyllum ralfsii* Petalwort
- *Petromyzon marinus* Sea lamprey
- *Phoca vitulina* Harbour seal
- *Phocoena phocoena* Harbour porpoise
- *Rhinolophus hipposideros* Lesser horseshoe bat
- *Salmo salar* Atlantic salmon
- *Saxifraga hirculus* Marsh saxifrage
- *Trichomanes speciosum* Killarney fern
- *Tursiops truncatus* Bottlenose dolphin
- *Vertigo angustior* Narrow-mouthed whorl snail
- *Vertigo geyeri* Geyer's whorl snail
- *Vertigo moulinsiana* Desmoulin's whorl snail

SPA species

- *Alca torda* Razorbill
- *Alcedo atthis* Common kingfisher
- *Anas acuta* Northern pintail
- *Anas clypeata* Northern shoveler
- *Anas crecca* Eurasian teal
- *Anas penelope* Eurasian wigeon
- *Anas platyrhynchos* Mallard
- *Anas strepera* Gadwall
- *Anser anser* Greylag goose
- *Anser albifrons flavirostris* Greenland white-fronted goose
- *Ardea cinerea* Grey heron
- *Arenaria interpres* Ruddy turnstone
- *Aythya ferina* Common pochard
- *Aythya fuligula* Tufted duck
- *Aythya marila* Greater scaup
- *Branta leucopsis* Greenland barnacle goose
- *Branta leucopsis* Svalbard barnacle goose
- *Branta bernicla hrota* Canadian light-bellied brent goose
- *Bucephala clangula* Common goldeneye
- *Calidris alba* Sanderling
- *Calidris alpina* Dunlin
- *Calidris canutus* Knot
- *Calidris maritima* Purple sandpiper
- *Charadrius hiaticula* Ringed plover
- *Chroicocephalus ridibundus* Black-headed gull
- *Circus cyaneus* Hen harrier
- *Crex crex* Corn crake
- *Cygnus columbianus* Tundra swan
- *Cygnus cygnus* Whooper swan
- *Falco columbarius* Merlin
- *Falco peregrinus* Peregrine falcon
- *Fratercula arctica* Atlantic puffin
- *Fulica atra* Common coot
- *Fulmarus glacialis* Northern fulmar

- *Gavia immer* Great northern diver
- *Gavia stellata* Red-throated diver
- *Haematopus ostralegus* Eurasian oystercatcher
- *Hydrobates pelagicus* European storm-petrel
- *Larus argentatus* Herring gull
- *Larus canus* Mew gull
- *Larus fuscus* Lesser black-backed gull
- *Limosa lapponica* Bar-tailed godwit
- *Limosa limosa* Black-tailed godwit
- *Melanitta nigra* Common scoter
- *Mergus serrator* Red-breasted merganser
- *Morus bassanus* Northern gannet
- *Numenius arquata* Eurasian curlew
- *Oceanodroma leucorhoa* Leach's storm-petrel
- *Phalacrocorax aristotelis* European shag
- *Phalacrocorax carbo* Great cormorant
- *Pluvialis apricaria* European golden plover
- *Pluvialis squatarola* Grey plover
- *Podiceps cristatus* Great crested grebe
- *Puffinus puffinus* Manx shearwater
- *Pyrhocorax pyrrhocorax* Red-billed chough
- *Rissa tridactyla* Black-legged kittiwake
- *Somateria mollissima* Common eider
- *Sterna dougallii* Roseate tern
- *Sterna hirundo* Common tern
- *Sterna paradisaea* Arctic tern
- *Sterna sandvicensis* Sandwich tern
- *Sternula albifrons* Little tern
- *Tachybaptus ruficollis* Little grebe
- *Tadorna tadorna* Common shelduck
- *Tringa nebularia* Common greenshank
- *Tringa totanus* Common redshank
- *Uria aalge* Common guillemot
- *Vanellus vanellus* Northern lapwing

Appendix C. Screening of the TDP 2016 Project List

CP No.	Project Title	Type	Scheme Length Km	County	Planning Area	Phase	ECD	Screening Info	Outcome (Take forward to AA stage)
CP0945	Great Island to Kilkenny 110kV circuit (Regional Solution)	Uprate	49.1	Kilkenny, Waterford	B-M-W, S-W-MW, SE-ME-D	Pre-planning	TBC	Screening for AA was undertaken for this project by EirGrid (EirGrid,2017). The proposed uprate works on the Great Island-Kilkenny 110kV Line will include the replacement of angle masts and polesets in order to accommodate the new higher rating conductor. The proposed line uprate of the Great Island- Kilkenny110kV transmission line was screened for likely significant effects on European Sites. The possible zone of influence of the line uprate includes the River Barrow, River Nore SAC, and River Nore SPA. Following examination of the proposed works in terms of the conservation objectives of the sites, the nature, location and timing of works it has been concluded that there is potential for impacts to occur in relation to the River Barrow River Nore SAC as it relates to the estuary crossing and the Arrigle River in particular. In the absence of mitigation or further details on the project, these impacts could be significant. The potential for significant impacts on the River Nore SPA as designated for Kingfisher has been ruled out based on the examination and assessment of the location of the nearest works area which are outside of the zone of influence of this species at this location. Screening for AA has established that the line uprate poses the potential for significant effects on the River Barrow, River Nore SAC.	Screen in
CP970	Shannon Crossing 400kV Cable (Regional Solution)	New Build	TBC	Kerry, Clare	B-M-W, S-W-MW, SE-ME-D	In early development (study area examination)	TBC	Yes. Landtake required. There are a number of European sites potentially within the project boundary and therefore the potential for LSE could not be ruled out at this stage.	Screen in
CP0755	Cauteen - Killonan 110kV Line Uprate	Uprate/Modify	27.9	Tipperary South, Limerick	SE-ME-D, SW-MW	Approved ¹⁸	2017	n/a	Screen out
CP0596	Kinnegad - Mullingar 110kV New Circuit	New Build	27*	Meath, Westmeath	B-M-W, SE-ME-D	Approved	2016	n/a	Screen out
CP0825	Oldstreet - Woodland 400kV Line Refurbishment	Refurbish/Replace	126.4	Galway, Tipperary, Offaly, Kildare, Meath	SE-ME-D, B-M-W	Approved	2017	n/a	Screen out
CP0197	Mount Lucas - Thornsberry New 110kV Line	New Build	30	Offaly, Offaly	B-M-W	Approved	2017	n/a	Screen out
CP0697	Carrick-on-Shannon 110kV Station - Busbar Uprate and Other Works	Uprate/Modify	0	Roscommon	B-M-W	Approved	2016	n/a	Screen out
CP0724	Thornsberry 110kV Station - Busbar Uprate	Uprate/Modify	0	Offaly	B-M-W	Approved	2017	n/a	Screen out
CP0778	Castlebar 110kV Station - Transmission Works Associated with Installation of New 38kV GIS	Refurbish/Replace	0	Mayo	B-M-W	Approved	2017	n/a	Screen out
CP0603	Clogher and Mulreavy 110kV New Stations - New Wind Farm Connections	New Build	7.7*	Donegal, Donegal	B-M-W	Approved	2016	n/a	Screen out
CP0706	Cloon 110kV Station - New 110kV Bay	Uprate/Modify	0	Galway	B-M-W	Approved	2018	n/a	Screen out
CP0731	Bellacorick - Castlebar 110kV Line Uprate	Uprate/Modify	38	Mayo, Mayo	B-M-W	Approved	2016	n/a	Screen out
CP0833	Tawnaghmore and Moy 110kV Stations - Mayo Renewable Power Connection	Uprate/Modify	0	Mayo	B-M-W	Approved	2016	n/a	Screen out
CP0834	Carrick-on-Shannon 110kV Station - Uprate Four 110kV Circuit Breakers	Uprate/Modify	0	Leitrim	B-M-W	Approved	2017	n/a	Screen out
CP0771	Castlebar 110kV Station - Busbar Uprate	Uprate/Modify	0	Mayo	B-M-W	Approved	2017	n/a	Screen out
CP0849	Uprate Two 110kV Circuit Breakers	Uprate/Modify	0	Galway	B-M-W	Not progressing	2016	n/a	Screen out
CP0709	Dunmanway 110kV Station - Busbar Uprate and New Coupler	Uprate/Modify	0	Cork	SW-MW	Approved	2016	n/a	Screen out
CP0399	Shannon Crossing (Regional Solution) - Moneypoint - Kilpaddoge 220kV New Cable (RegIP/117)	New Build	10*	Clare, Kerry	SW-MW	Approved	2017	n/a	Screen in

¹⁸ The term *approved* is used for projects that have gone through the appropriate planning channels, thereby excluding them from the plan level assessment. This ranges from projects already constructed, under construction, with planning consent or deemed exempt development.

CP No.	Project Title	Type	Scheme Length Km	County	Planning Area	Phase	ECD	Screening Info	Outcome (Take forward to AA stage)
CP0500	Knockanure 220/110kV New Station	New Build	1*	Kerry, Limerick	SW-MW	Approved	2016	n/a	Screen out
CP0501	Clashavoon - Dunmanway 110kV New Line	New Build	35*	Cork, Cork	SW-MW	Approved	2017	n/a	Screen out
CP0622	Tarbert 220/110kV Station Refurbishment	Refurbish/Replace	0	Kerry	SW-MW	Approved	2020	n/a	Screen out
CP0763	Kilpaddoge – Knockanure and Ballyvouskil - Clashavoon 220kV Line Uprates and Kilpaddoge - Tarbert 220kV Line Refurbishment	Uprate/Modify	97.3	Cork, Kerry	SW-MW	Approved	2016	n/a	Screen out
CP0647	Kilpaddoge 220/110kV New Station	New Build	0	Kerry	SW-MW	Approved	2017	n/a	Screen out
CP0650	Ballyvouskill 220/110kV New Station	New Build	14*	Cork, Cork	SW-MW	Approved	2016	n/a	Screen out
CP0651	Ballynahulla 220/110kV New Station	New Build	10*	Kerry	SW-MW	Approved	2016	n/a	Screen out
CP0688	Moneypoint 400/220/110kV GIS Development	New Build	0	Clare	SW-MW	Approved	2017	n/a	Screen out
CP0054	Ardnacrusha 110kV Station Redevelopment	Refurbish/Replace	0	Clare	SW-MW	Approved	2017	n/a	Screen out
CP0794	Aghada 220/110 kV Station Upgrade	Uprate/Modify	0	Cork	SW-MW	Approved	2016	n/a	Screen out
CP0830	Raffeen - Trabeg 110kV No. 1 Line Uprate	Uprate/Modify	10.4	Cork, Cork	SW-MW	Approved	2017	n/a	Screen out
CP0852	Clahane 110kV Station - Reconfiguration works associated with Wind Farm Extension	Uprate/Modify	0	Kerry	SW-MW	Approved	2016	n/a	Screen out
CP0753	Waterford 110kV Station - Uprate 110kV Bay	Uprate/ Modify	0	Waterford	SE-ME-D	Approved	2016	n/a	Screen out
CP0623	Great Island 220kV Station Redevelopment	Refurbish/Replace	0	Wexford	SE-ME-D	Approved	2016	n/a	Screen out
CP0667	Inchicore - Maynooth No. 1 and No. 2 220kV Line Uprate	Uprate/Modify	38	Dublin, Kildare	SE-ME-D	Approved	2016	n/a	Screen out
CP0683	Dunstown 400/ 220kV Station - New 400/220kV 500MVA Transformer	New Build	0	Kildare	SE-ME-D	Approved	2016	n/a	Screen out
CP0747	Maynooth - Ryebrook 110kV Line Uprate	Uprate/Modify	9	Kildare, Kildare	SE-ME-D	Approved	2016	n/a	Screen out
CP0668	Corduff - Ryebrook 110kV Line Uprate and Ryebrook 110kV Station Busbar Uprate	Uprate/Modify	8	Dublin, Kildare	SE-ME-D	Approved	2016	n/a	Screen out
CP0798	Dunstown - Turlough Hill 220kV Line Refurbishment	Refurbish/Replace	25.2	Kildare, Wicklow	SE-ME-D	Approved	2016	n/a	Screen out
CP0779	Dungarvan 110kV Station - Transmission Works Associated with Installation of New 38kV GIS	Refurbish/Replace	0	Waterford	SE-ME-D	Approved	2017	n/a	Screen out
CP0756	Cauteen - Tipperary 110kV Line Uprate	Uprate/Modify	13	Tipperary South, Tipperary South	SE-ME-D	Approved	2017	n/a	Screen out
CP0789	Ryebrook 110kV Station Redevelopment	Refurbish/Replace	0	Kildare	SE-ME-D	Approved	2016	n/a	Screen out
CP0646	Finglas 110kV Station Redevelopment	Refurbish/Replace	0	Dublin	SE-ME-D	Approved	2018	n/a	Screen out
CP0437	Belcamp 220/110kV Project - New 220/110 kV Station to the East of Finglas 220/110kV Station	New Build	10*	Dublin	SE-ME-D	Approved	2017	n/a	Screen out
CP0859	Cloghran - Corduff 110kV New Cable	New Build	2.5	Dublin, Dublin	SE-ME-D	Approved	2016	n/a	Screen out

CP No.	Project Title	Type	Scheme Length Km	County	Planning Area	Phase	ECD	Screening Info	Outcome (Take forward to AA stage)
CP0580	Carrickmines 220/110kV Station - New 4th 220/110kV 250MVA Transformer and GIS Development	New Build	0	Dublin	SE-ME-D	Approved	2017	n/a	Screen out
CP0752	HV Line Tower Painting - South	Refurbish/Replace	0	n/a	n/a	Approved	2015	n/a	Screen out
CP0788	Micafil Bushings Replacement	Refurbish/Replace	0	n/a	n/a	Approved	2015	n/a	Screen out
CP0786	Surge Arrestor Replacement - North	Refurbish/Replace	0	n/a	n/a	Approved	2016	n/a	Screen out
CP0322	Protection Upgrades at Various Stations	Refurbish/Replace	0	n/a	n/a	Approved	2016	n/a	Screen out
CP0857	Paint Towers Nationwide	Refurbish/Replace	0	n/a	n/a	Approved	2016	n/a	Screen out
CP0819	Bellacorick - Moy 110kV Line Uprate	Uprate/Modify	8.4	Laois, Laois	B-M-W	Approved	2018	n/a	Screen out
CP0466	North South 400kV Interconnection Development (TYNDP / 81)	New Build	106*	Meath, Cavan, Monaghan, Armagh, Tyrone	B-M-W, SE-ME-D	Approved (planning phase in 2016, TDP)	2019	n/a	Screen out
CP0737	Knockranny, Uggool/Seacon New 110kV Stations - New Wind Farm Connections	New Build	4.2*	Galway	B-M-W	Approved (planning phase in 2016, TDP)	2016	n/a	Screen out
CP0861	Sliabh Bawn 110kV New Station - New Wind Farm Connection	New Build	1.2	Roscommon	B-M-W	Approved (planning phase in 2016, TDP)	2016	n/a	Screen out
CP0850	Shranakilly 110kV New Station - New Wind Farm Connections	New Build	0	Mayo	B-M-W	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0818	Cordal 110kV New Station and Connection to Ballynahulla 220/110kV New Station – New Wind Farm Connections	New Build	0	Kerry	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0926 (NEW)	Slievecallan 110kV Station – New Station	New Build	29.6	Clare	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0585	Laois-Kilkenny Reinforcement Project	New Build	30* + 22	Laois, Kilkenny	SE-ME-D, B-M-W	Approved (planning phase in 2016, TDP)	2019	n/a	Screen out
CP0872	West Dublin New 220/110kV Station	New Build	0	Dublin	SE-ME-D	Approved (planning phase in 2016, TDP)	2019	n/a	Screen out
CP0883	Ballynahulla - Ballyvouskill and Ballynahulla - Knockanure 220kV Line Uprates (formerly part of CP0763)	Uprate/Modify	1.2	Cork, Kerry	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0597	Ennis - Booltiagh - Tullabrack T - Moneypoint 110kV Line Uprate	Uprate/Modify	50.2	Clare, Clare	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0865	Cashla - Salthill 110kV Line Uprate	Uprate/Modify	9.4	Galway, Galway	B-M-W	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0870	Carrick-on-Shannon - Arigna T - Corderry 110kV Line Uprate	Uprate/Modify	35	Roscommon, Leitrim	B-M-W	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0847	Arva - Shankill No.1 110kV Line Uprate	Uprate/Modify	18.6	Cavan, Cavan	B-M-W	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0824	Moneypoint - Oldstreet 400kV Line Refurbishment	Refurbish/Replace	102.5	Clare, Galway	SW-MW, B-M-W	Approved (planning phase in 2016, TDP)	2019	n/a	Screen out
CP0838	Dalton 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Mayo	B-M-W	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0882	Glenree 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Mayo	B-M-W	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out

CP No.	Project Title	Type	Scheme Length Km	County	Planning Area	Phase	ECD	Screening Info	Outcome (Take forward to AA stage)
CP0840	Ballynahulla 220kV station - Second 220/110kV Transformer	New Build	0	Kerry	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0925	Kilpaddoge 220kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Kerry	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0875	Charleville 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Cork	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0930 (NEW)	Barnadivane 110kV Station – New Station	Uprate/Modify	Minor	Cork	SW-MW	Approved (planning phase in 2016, TDP)	2017	n/a	Screen out
CP0757	Remote Control for NCC Phase 3	Other	0	n/a	n/a	Approved (planning phase in 2016, TDP)	2016	n/a	Screen out
CP0867 (NEW)	Flagford - Louth 220kV Refurbishment Project	Refurbish/ Replace	110.1	Roscommon, Leitrim, Longford, Cavan, Meath, Louth	B-M-W, SE-ME-D	Approved (planning phase in 2016, TDP)	2018	n/a	Screen out
CP0873	Dunstown - Moneypoint Existing 400kV Line Refurbishment	Refurbish/ Replace	208.5	Clare, Tipperary, Laois, Kildare	SE-ME-D, SW-MW, B-M-W	Awaiting Approval	2018	Screening for AA was undertaken for this project by EirGrid. Operationally there is minimal change there will be no alterations of towers or foundation works required, Works will comprise of general refurbishment and replacement of outdated hardware. The AA screening examined the proposed works and access to existing towers, the likelihood of significant effects on the conservation interests of Natura 2000 sites was ruled out.	Screen out
CP0740	Letterkenny 110kV Station - Relocation of 110kV Bay and 2 New Couplers	Uprate/Modify	0	Donegal	B-M-W	Awaiting Approval	2018	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0680	Castlebar 110kV Station - Uprate transformer 110kV Bay	Uprate/Modify	0	Mayo	B-M-W	Awaiting Approval	2018	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0645	Portlaoise 110kV Station - 2 New 110kV Bays	Uprate/Modify	0	Laois	B-M-W	Awaiting Approval	2021	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0721	The Grid West Project (RegIP/ 115)	New Build	103-115*	Mayo, Sligo, Roscommon	B-M-W	Project Cancelled	-	Replaced with the North Connacht 110kV Solution (see below)	-
CP0799	Louth 220kV Station Upgrade	Uprate/Modify	0	Louth	B-M-W	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0800	North West Project - RIDP Phase 1 - Reinforcement of the grid in the north-west (TYNDP/ 82)	New Build	83	Donegal, Leitrim, Sligo	B-M-W	In early development (study area examination) No decision as to whether this project is to be progressed at time of finalising the Grid IP.	2022	Yes. Landtake required. There are a number of European sites potentially within the project boundary and therefore the potential for LSE could not be ruled out at this stage.	Screen in
CP0816	North Connacht 110kV Solution	New Build	TBC	Mayo, Sligo, Roscommon, Galway	B-M-W	In early development (study area examination)	TBC	Yes. Landtake required. There are a number of European sites potentially within the project boundary and therefore the potential for LSE could not be ruled out at this stage.	Screen in
N/A	Celtic Interconnector 400kV Cable	New build	TBC	Cork, West Wexford	SE-ME-D or SW-MW	In early development (study area examination)		To date a number of studies have been undertaken including a high level Social Impact Assessment, Marine Route Investigation and Land Study Reports. From the studies undertaken to date the Celtic Interconnector will be located on the southeast coast of Ireland and will travel across the Celtic Sea to tie into the northwest coast of France. The exact location of the landfall point where the submarine circuit will come onshore has not been determined, as of yet. There are a number of European sites potentially within the project boundary and therefore the potential for LSE could not be ruled out at this stage.	Screen in

CP No.	Project Title	Type	Scheme Length Km	County	Planning Area	Phase	ECD	Screening Info	Outcome (Take forward to AA stage)
CP0835	Coolnaback - Portlaoise 110kV Line Uprate	Uprate/Modify	8.4	Laois, Laois	B-M-W	Awaiting Approval	2018	No source-pathway-receptor linkages. Operationally there is minimal change but there will be construction related impact in relation to the line uprate works. The closest European site is the Ballyprior Grassland SAC which is located 3.8km from the existing line. QI features of the SAC are Semi-natural dry grasslands and scrubland facies on calcareous substrates. There is no potential for LSEs on these QI from the proposed refurbishment works. There is no source-pathway-receptor link to any other SAC. There is only one SPA within 15km of the proposed development which is the Slieve Bloom mountains SPA located over 8km away and of which the SCI is Hen Harrier.	Screen out
CP0836	Derryiron 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Offaly	B-M-W	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0839	Moy 110kV Station - Reconfiguration and Busbar Uprate	Uprate/Modify	0	Mayo	B-M-W	Awaiting Approval	2019	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0837	Bellacorick 110kV Station - Transformer Uprate	Uprate/Modify	0	Mayo	B-M-W	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0878	Binbane 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Donegal	B-M-W	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0879	Letterkenny 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Donegal	B-M-W	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0881	Galway 110kV Station - Uprate Two 110kV Circuit Breakers	Uprate/Modify	0	Galway	B-M-W	Awaiting Approval	2016	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0951 (NEW)	Garvagh 110kV Station Redevelopment	Uprate/Modify	minor	Leitrim	B-M-W	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0976 (NEW)	Portlaoise 110kV Station – Uprate two DSO Transformers	Uprate/Modify	0	Laois	B-M-W	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0041	Macroom 110kV Station - New 110kV Bay for Hartnett's Cross 110kV New Station	Uprate/Modify	0	Cork	SW-MW	Awaiting Approval	2019	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0041	Macroom 110kV Station - New 110kV Bay for Hartnett's Cross 110kV New Station	Uprate/Modify	0	Cork	SW-MW	Awaiting Approval	2019	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0743	Cow Cross 110kV Station - New 110kV Bay	Uprate/Modify	0	Cork	SW-MW	Awaiting Approval	2019	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0796	Knockraha 220kV Station Upgrade	Uprate/Modify	0	Cork	SW-MW	Awaiting Approval	2018	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0624	Killonan 220/110kV Station Redevelopment	Refurbish/ Replace	0	Limerick	SW-MW	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0726	Moneypoint to Knockanure 220 kV Project (RegIP /117)	New Build	26*	Kerry	SW-MW	Approved (planning phase in 2016, TDP)	2018	Underground cable in road. AA Screening undertaken. The cable will be directionally drilled under the River Galey (forms part of the Lower River Shannon SAC) thus avoiding any impacts on QI species or habitats.	Screen out

CP No.	Project Title	Type	Scheme Length Km	County	Planning Area	Phase	ECD	Screening Info	Outcome (Take forward to AA stage)
CP0829	Clashavoon - Macroom No. 2 New 110kV Circuit and Increased Transformer Capacity in Clashavoon 220/110kV Station	New Build	6	Cork, Cork	SW-MW	Awaiting Approval	2018	No source-pathway- receptor linkages. Part of this scheme has been consented and built (e.g. 6km section of underground cable). The remainder of the works involves works in existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSE.	Screen out
CP0892	Aughinish 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Limerick	SW-MW	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0863	Midleton 110kV Station - New 110kV DSO Transformer Bay	Uprate/Modify	0	Cork	SW-MW	Awaiting Approval	2019	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0864	Tarbert - Tralee No. 1 110kV Line Refurbishment	Refurbish/ Replace	41.8	Kerry, Kerry	SW-MW	Awaiting Approval	2017	Screening for AA was undertaken for this project by EirGrid. The likelihood of significant effects on the conservation interests of the Natura 2000 sites was ruled out. The proposed uprate works will involve the replacement of polesets and therefore localised excavation works. Potential impacts associated with the proposed works identified in this assessment, included potential disturbance to breeding Hen Harrier in the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA and possible localised siltation of water bodies and disturbance to otter within the Lower River Shannon SAC. Scheduling works within the SPA, outside of the bird breeding season, will avoid any impacts or disturbance of Hen Harrier. The replacement of polesets will not result in significant effects on watercourses due to the limited and short.	Screen out
CP0741	Trabeg 110kV Station - Uprate 2 110kV Transformer Bays	Uprate/Modify	0	Cork	SW-MW	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0941 (NEW)	Moneypoint 110kV Station – New 110V Transformer Bay	Uprate/Modify	Minor	Clare	SW-MW	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0933 (NEW)	Thurles 110kV Station – New Statcom	New Build	0	N Tipperary	SW-MW	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0934 (NEW)	Ballynahulla 110kV Station – New Statcom	New Build	0	Kerry	SW-MW	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0935 (NEW)	Ballyvouskill 110kV Station – New Statcom	New Build	0	Cork	SW-MW	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0936 (NEW)	Knockanure 110kV Station – New Reactor	New Build	0	Kerry	SW-MW	Awaiting Approval	2018	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0770	Poolbeg 220kV Station - Fencing	Other	0	Dublin	SE-ME-D	Awaiting Approval	2016	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0486	Wexford 110kV Station - New 110kV Transformer Bay and New Coupler	Uprate/Modify	0	Wexford	SE-ME-D	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0729	Great Island 110kV Station Redevelopment	Refurbish/Replace	0	Wexford	SE-ME-D	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0490	Great Island 220/110kV Station - New 110kV DSO Transformer Bay for DSO Connection to Knockmullen (New Ross)	Uprate/Modify	0	Wexford	SE-ME-D	Awaiting Approval	2019	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0760	Installation of 100 Mvar Reactive Support in Dublin Region	New Build	0	Dublin	SE-ME-D	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out

CP No.	Project Title	Type	Scheme Length Km	County	Planning Area	Phase	ECD	Screening Info	Outcome (Take forward to AA stage)
CP0792	Finglas 220kV Station Upgrade	Uprate/Modify	0	Dublin	SE-ME-D	Awaiting Approval	2018	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0693	Baroda 110kV Station - 2 New 110kV Bays	Uprate/Modify	0	Kildare	SE-ME-D	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0692	Inchicore 220kV Station Upgrade	Uprate/Modify	0	Dublin	SE-ME-D	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0862	Cloghran 110kV Station - New Cable Bay and New Transformer Bay	Uprate/Modify	0	Dublin	SE-ME-D	Awaiting Approval	2016	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0894	Great Island 220kV Station - New DSO 110/ 38kV Transformer	Uprate/Modify	0	Wexford	SE-ME-D	Awaiting Approval	2020	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0869	Maynooth - Woodland 220kV Line Refurbishment	Refurbish/ Replace	22.3	Dublin	SE-ME-D	Awaiting Approval	2017	No source-pathway-receptor linkages. Operationally there is minimal change but there will be construction related impact in relation to replacement of existing assets. The closest European site is the Rye Water Valley/Cartron SAC which is located 0.8km from the existing line. QI features of the SAC include Petrifying springs with tufa formation, <i>Vertigo angustior</i> and <i>Vertigo moulinsiana</i> . Given the distance of the proposed project from the site impacts on these QI are not predicted. There is only one SPA within 15km of the proposed development which is the River Boyne and Blackwater SPA located over 14km away and for which the SCI is kingfisher. Impacts on this SCI have been ruled out.	Screen out
CP0914	Meath Hill 110kV Station – Uprate 2 DSO Transformers	Uprate/Modify	0	Meath	SE-ME-D	Awaiting Approval	2016	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0927 (NEW)	Clonee 220kV Station – New 220kV Station to supply a demand load	New Build	1.4	Meath	SE-ME-D	Awaiting Approval	2017	No source-pathway-receptor linkages. Landtake required for new station. The 1.4km piece is underground cable within road. There is only one European site within 15km of the proposed project which is the Rye Water Valley/Cartron SAC which is located 8km from the proposed development. QI features of the SAC include Petrifying springs with tufa formation, <i>Vertigo angustior</i> and <i>Vertigo moulinsiana</i> . Given the distance of the proposed project from the site impacts on these QI are not predicted. Impacts on SCI bird species have been ruled out as the proposed project is for an underground cable within the existing road.	Screen out
CP0928 (NEW)	Cloghran Phase 3, Cloghran 110kV Station – 2 New Transformers and cables	Uprate/Modify	0.7	Dublin	SE-ME-D	Awaiting Approval	2016	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out
CP0915 (NEW)	Cauteen 110kV Station – Busbar expansion and station development	Uprate/Modify	0	S Tipperary	SE-ME-D	Awaiting Approval	2017	No source-pathway-receptor linkages. Works within existing station out with within any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs.	Screen out

Appendix D. Detailed Source-Pathway- Receptor Analysis

Table D1.1: Source-Pathway- Receptor Analysis – potential impact pathways connecting the various potential technology options of the **North West Project** Area to SACs and Mitigation Measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Arroo Mountain SAC	0.00 km (within proposed study area)	Annex I Habitats 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 7130 Blanket bogs (* if active bog) 7220 Petrifying springs with tufa formation <i>Cratoneurion</i> 8120 Calcareous and calcshist screes of the montane to alpine levels <i>Thlaspietea rotundifolii</i> 8210 Calcareous rocky slopes with chasmophytic vegetation	Habitat loss – loss of QI/Annex 1 habitats.	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – hydrogeology: potential impacts on Petrifying springs during construction.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats). Impacts on sensitive aquatic/GWDT habitats (See Box 7B, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ballintra SAC	0.00 km (within proposed study area)	Annex I Habitats 4030 European dry heaths 8240 Limestone pavements	Habitat loss – loss of QI/Annex 1 habitats.	Habitat loss – loss of QI/Annex 1 habitats.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ben Bulbin, Gleniff and Glenade Complex SAC	0.00 km (within proposed study area)	Annex I Habitats 3260 Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation 4030 European dry heaths 4060 Alpine and Boreal heaths 5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands 7220 Petrifying springs with tufa formation <i>Cratoneurion</i> 8120 Calcareous and calcshist screes of the montane to alpine levels <i>Thlaspietea rotundifolii</i> 8210 Calcareous rocky slopes with chasmophytic vegetation Annex II Species 1013 <i>Vertigo geyeri</i> 1355 <i>Lutra</i>	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – hydrogeology: potential impacts on Petrifying springs during construction. Habitat degradation – water quality during construction (3260). Mortality risk – QI species (1013/1355) during construction. Disturbance to QI species (1355) during construction.	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – hydrogeology potential impacts on Petrifying springs during construction. Habitat degradation – water quality during construction (3260). Mortality risk – QI species (1013/1355) during construction. Disturbance – to QI species (1355) during construction.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats). Impacts on sensitive aquatic habitats and species (See Box 7B, Section 7.2). Mortality risk - QI species (See Box 7C, Section 7.2). Disturbance - QI species (See Box 7D, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Donegal Bay (Murvagh) SAC	0.00 km (within proposed study area)	Annex I Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) 2190 Humid dune slacks Annex II Species 1365 <i>Phoca vitulina</i>	No potential impact pathways identified.	No potential impact pathways identified.	N/A	No potential impact pathways identified. No potential for LSEs.	N
Dunmuckrum Turloughs SAC	0.00 km (within proposed study area)	Annex I Habitats 3180 Turloughs	Habitat loss – loss of QI/Annex 1 habitats.	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – hydrogeology impacts on Turloughs during construction.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats). Impacts on sensitive aquatic habitats (See Box 7B, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Dunragh Loughs/Pettigo Plateau SAC (ROI/UK site)	0.00 km (within proposed study area)	Annex I Habitats 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 7130 Blanket bogs (* if active bog)	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – hydrogeology.	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – hydrogeology.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats). Impacts on sensitive aquatic habitats (See Box 7B, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Glenade Lough SAC	0.00 km (within proposed study area)	Annex I Habitats 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation Annex II Species 1092 <i>Austropotamobius pallipes</i> 1833 <i>Najas flexilis</i>	Habitat loss – loss of QI/Annex 1 habitats or Annex II plant species. Habitat degradation – water quality during construction on water bodies (3150) and sensitive aquatic species (1092/1833).	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – water quality during construction on water bodies (3150) and sensitive aquatic species (1092/1833). Mortality risk – QI species (1092) during construction.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats). Impacts on sensitive aquatic habitats and species (See Box 7B, Section 7.2). Mortality risk - QI species (See Box 7C, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Eske and Ardnamona Wood SAC	0.00 km (within proposed study area)	Annex I Habitats 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) 7220 Petrifying springs with tufa formation <i>Cratoneurion</i> 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles Annex II Species 1029 <i>Margaritifera margaritifera</i> 1106 <i>Salmo salar</i> 1421 <i>Trichomanes speciosum</i>	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – water quality during construction on water bodies (3110) and sensitive aquatic species (1029/1106). Mortality risk – QI species (1029/1106) during construction.	Habitat loss – loss of QI/Annex 1 habitats. Habitat degradation – water quality during construction on water bodies (3110) and sensitive aquatic species (1029/1106). Mortality risk – QI species (1029/1106) during construction. Habitat degradation – hydrogeology impacts on Petrifying springs during construction.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats). Impacts on sensitive aquatic habitats and species (See Box 7B, Section 7.2). Mortality risk - QI species (See Box 7C, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Lough Gill SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>, <i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i></p> <p>Annex II Species</p> <p>1092 <i>Austropotamobius pallipes</i></p> <p>1095 <i>Petromyzon marinus</i></p> <p>1096 <i>Lampetra planeri</i></p> <p>1099 <i>Lampetra fluviatilis</i></p> <p>1106 <i>Salmo salar</i></p> <p>1355 <i>Lutra lutra</i></p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – water quality during construction on water bodies and sensitive aquatic species (3150, 1092,1095, 1096, 1099, 1106).</p> <p>Mortality risk QI species (1092,1095, 1096, 1099, 1106).</p> <p>Disturbance QI species (1355).</p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – water quality during construction on water bodies and sensitive aquatic species (3150, 1092,1095, 1096, 1099, 1106).</p> <p>Mortality risk QI species (1092,1095, 1096, 1099, 1106).</p> <p>Disturbance QI species (1355).</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats).</p> <p>Impacts on sensitive aquatic habitats and species (See Box 7B, Section 7.2).</p> <p>Mortality risk - QI species (See Box 7C, Section 7.2).</p> <p>Disturbance - QI species (See Box 7D, Section 7.2).</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Lough Golagh and Breesy Hill SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>7130 Blanket bogs (* if active bog)</p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – hydrogeology.</p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – hydrogeology.</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats).</p> <p>Impacts on sensitive aquatic habitats (See Box 7B, Section 7.2).</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Lough Melvin SAC (ROI/UK site)	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></p> <p>Annex II Species</p> <p>1106 <i>Salmo salar</i></p> <p>1355 <i>Lutra</i></p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – water quality during construction on water bodies and sensitive aquatic species (3130, 1106,1355).</p> <p>Mortality risk QI species (1355).</p> <p>Disturbance to QI species (1355).</p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – water quality during construction on water bodies and sensitive aquatic species (3130, 1106,1355).</p> <p>Mortality risk QI species (1106,1355).</p> <p>Disturbance to QI species (1355).</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats).</p> <p>Impacts on sensitive aquatic habitats and species (See Box 7B, Section 7.2).</p> <p>Mortality risk - QI species (See Box 7C, Section 7.2).</p> <p>Disturbance - QI species (See Box 7D, Section 7.2).</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Tamur Bog SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>7130 Blanket bogs (* if active bog)</p> <p>7150 Depressions on peat substrates of the Rhynchosporion</p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – hydrogeology.</p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p> <p>Habitat degradation – hydrogeology.</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats).</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Durnesh Lough SAC	0.39	<p>Annex I Habitats</p> <p>1150 Coastal lagoons</p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils <i>Molinion caeruleae</i></p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p>	<p>Habitat loss – loss of QI/Annex 1 habitats.</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats).</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Unshin River SAC	1.58	<p>Annex I Habitats</p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and Callitriche-Batrachion vegetation</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>, <i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i></p> <p>Annex II Species</p> <p>1106 <i>Salmo salar</i></p> <p>1355 <i>Lutra lutra</i></p>	<p>This site is outside the immediate proposed project boundary. However, potential impacts still remain due to potential hydrological links and mobile QI species:</p> <p>Habitat degradation – water quality during construction on water bodies and sensitive aquatic species (3260, 1106, 1355).</p> <p>Mortality risk QI species (1106, 1355).</p> <p>Disturbance to QI species (1355).</p>	<p>This site is outside the immediate proposed project boundary. However, potential impacts still remain due to potential hydrological links and mobile QI species:</p> <p>Habitat degradation – water quality during construction on water bodies and sensitive aquatic species (3260, 1106, 1355).</p> <p>Mortality risk QI species (1106, 1355).</p> <p>Disturbance to QI species (1355).</p>	<p>Impacts on sensitive aquatic habitats and species (See Box 7B, Section 7.2).</p> <p>Mortality risk - QI species (See Box 7C, Section 7.2).</p> <p>Disturbance - QI species (See Box 7D, Section 7.2).</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
River Finn SAC (Lough Derg section of the SAC is closest)	2.93	<p>Annex I Habitats</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains <i>Littorelletalia uniflorae</i></p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>7130 Blanket bogs (* if active bog)</p> <p>7140 Transition mires and quaking bogs</p> <p>Annex II Species</p> <p>1106 <i>Salmo salar</i></p> <p>1355 <i>Lutra lutra</i></p>	<p>No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed project which are within different catchments. Otter from this SAC are unlikely to be affected.</p>	<p>No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed project which are within different catchments. Otter from this SAC are unlikely to be affected.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Union Wood SAC	3.83	<p>Annex I Habitats</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p>	<p>No potential impact pathways identified.</p>	<p>No potential impact pathways identified.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Croaghonagh Bog SAC	4.77	<p>Annex I Habitats</p> <p>7130 Blanket bogs (* if active bog)</p>	<p>No potential impact pathways identified.</p>	<p>No potential impact pathways identified.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
River Foyle and Tributaries (UK0030320)	4.97	<p>Annex I Habitats</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i></p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils <i>Molinion caeruleae</i></p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>Annex II Species</p> <p>1106 <i>Salmo salar</i></p>	<p>No potential impact pathways identified. This site is outside the immediate proposed project study area and there is no hydrological link between the site and the proposed project which are within different catchments.</p>	<p>No potential impact pathways identified. This site is outside the immediate proposed project study area and there is no hydrological link between the site and the proposed project which are within different catchments.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	5.05	<p>Annex I Habitats</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>2110 Embryonic shifting dunes</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>7220 Petrifying springs with tufa formation <i>Cratoneurion</i></p> <p>Annex II Species</p> <p>1014 <i>Vertigo angustior</i></p> <p>1095 <i>Petromyzon marinus</i></p> <p>1099 <i>Lampetra fluviatilis</i></p> <p>1365 <i>Phoca vitulina</i></p>	<p>This site is outside the immediate proposed project boundary. However, potential impacts still remain due to potential hydrological links and mobile QI species:</p> <p>Habitat degradation – water quality during construction sensitive aquatic species (1095/1099).</p>	<p>This site is outside the immediate proposed project boundary. However, potential impacts still remain due to potential hydrological links and mobile QI species:</p> <p>Habitat degradation – water quality during construction sensitive aquatic species (1095/1099).</p>	<p>Impacts on sensitive aquatic habitats and species (See Box 7B, Section 7.2).</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Ballysadare Bay SAC	5.40	<p>Annex I Habitats</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>2110 Embryonic shifting dunes</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>2190 Humid dune slacks</p> <p>Annex II Species</p> <p>1014 <i>Vertigo angustior</i></p> <p>1365 <i>Phoca vitulina</i></p>	<p>No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.</p>	<p>No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Boleybrack Mountain SAC	5.54	<p>Annex I Habitats</p> <p>3160 Natural dystrophic lakes and ponds</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>4030 European dry heaths</p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils <i>Molinion caeruleae</i></p> <p>7130 Blanket bogs (* if active bog)</p>	<p>No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.</p>	<p>No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Bunduff Lough And Machair/Trawalua/Mullaghmore SAC	6.47	<p>Annex I Habitats</p> <p>1160 Large shallow inlets and bays</p> <p>1170 Reefs</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>21A0 Machairs (* in Ireland)</p> <p>5130 Juniperus communis formations on heaths or calcareous grasslands</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco Brometalia</i> (*important orchid sites)</p> <p>7230 Alkaline fens</p> <p>Annex II Species</p> <p>1395 <i>Petalophyllum ralfsii</i></p>	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Arrow SAC	7.57	<p>Annex I Habitats</p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.</p>	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Meenaguse/Ardbane Bog SAC	8.31	<p>Annex I Habitats</p> <p>7130 Blanket bogs (* if active bog)</p>	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Bricklieve Mountains & Keishcorran SAC	9.00	<p>Annex I Habitats</p> <p>3180 Turloughs*</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco Brometalia</i> (*important orchid sites)*</p> <p>6510 Lowland hay meadows <i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i></p> <p>8120 Calcareous and calcshist screes of the montane to alpine levels <i>Thlaspietea rotundifolii</i></p> <p>Annex II Species</p> <p>1065 <i>Euphydryas aurinia</i></p> <p>1092 <i>Austropotamobius pallipes</i></p>	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Meenaguse Scragh SAC	10.37	<p>Annex I Habitats</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p>	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Templehouse And Cloonacleigha Loughs SAC	10.71	<p>Annex I Habitats</p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.</p> <p>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation</p>	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	No potential impact pathways identified. This site is outside the immediate proposed study area and there is no hydrological link between the site and the proposed project which are within different catchments.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Largalunny (UK0030045)	10.41	<p>Annex I Habitats</p> <p>[91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles</p>	No potential impact pathways identified. This site is outside the immediate proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
West Fermanagh Scarplands (UK0030300)	11.84	<p>Annex I Habitats</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco-Brometalia</i> (*important orchid sites)</p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</p> <p>8240 Limestone pavements *</p> <p>9180 <i>Tilio-Acerion</i> forests of slopes, screes and ravines *</p> <p>3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>7130 Blanket bogs (* if active bog) * Priority feature</p> <p>7220 Petrifying springs with tufa formation (Cratoneurion)* Priority feature</p> <p>7230 Alkaline fens</p>	No potential impact pathways identified. This site is outside the immediate proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Streedagh Point Dunes SAC	12.02	<p>Annex I Habitats</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1220 Perennial vegetation of stony banks</p> <p>1330 Atlantic salt meadows <i>Glauco-Puccinellietalia maritimae</i></p> <p>1410 Mediterranean salt meadows <i>Juncetalia maritimi</i></p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>Annex II Species</p> <p>1014 <i>Vertigo angustior</i></p>	No potential impact pathways identified. This site is outside the immediate proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Monawilkin (UK0016619)	12.38	Annex I Habitats 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco-Brometalia</i> (* important orchid sites) 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles	No potential impact pathways identified. This site is outside the immediate proposed study area	No potential impact pathways identified. This site is outside the immediate proposed study area	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Nillan Bog (Carrickatlieve) SAC	12.76	Annex I Habitats 3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 7130 Blanket bogs (* if active bog)	No potential impact pathways identified. This site is outside the immediate proposed study area	No potential impact pathways identified. This site is outside the immediate proposed study area	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Nageage SAC	13.90	Annex II Species 1092 <i>Austropotamobius pallipes</i>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area which are within different catchments.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area which are within different catchments.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
St. John's Point SAC	14.81	Annex I Habitats 1160 Large shallow inlets and bays 1170 Reefs 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco Brometalia</i> (*important orchid sites) 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 7230 Alkaline fens 8240 Limestone pavements 8330 Submerged or partially submerged sea caves	No potential impact pathways identified. This site is outside the immediate proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Table D1.2: Source-Pathway- Receptor Analysis – potential impact pathways connecting the various potential technology options of the **North West Project** to SPAs and Mitigation Measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation measured	Conclusion	Adverse Effects on Site Integrity (Y/N)
				Option – OHL	Option - UGC			
Donegal Bay SPA	0.00 km (within proposed study area)	A003 Great Northern Diver <i>Gavia immer</i> +++ A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A065 Common Scoter <i>Melanitta nigra</i> + A114 Sanderling <i>Calidris alba</i> ++	Non-b	Potential impact pathways include: Potential for disturbance to A046 during construction in or next to important feeding areas. No construction related impacts predicted for A003/A065/A114 as construction unlikely in the immediate vicinity of the bay. Mortality (collision/ electrocution) risk with OHL during operation (A046/A003).	Potential impact pathways include: Potential for disturbance to A046 during construction in or next to important feeding areas. No construction related impacts predicted for A003/A065/A114 as construction unlikely in the immediate vicinity of the bay.	Mortality risk – SCI species (See Box 7C, Section 7.2). Disturbance - SCI species (See Box 7D, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Pettigo Plateau Nature Reserve SPA	0.00 km (within proposed study area)	A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> +++	Non-b	Potential impact pathways include: Potential for disturbance to A395 during construction in or next to important foraging areas. Mortality (collision/ electrocution) risk with OHL during operation (A395).	Potential impact pathways include: Potential for disturbance A395 during construction in or next to important feeding areas.	Mortality risk – SCI species (See Box 7C, Section 7.2). Disturbance - SCI species (See Box 7D, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Sligo/Leitrim Uplands SPA	0.00 km (within proposed study area)	A103 Peregrine <i>Falco peregrinus</i> + A346 Chough <i>Pyrrhocorax pyrrhocorax</i> ++	Breed	Potential impact pathways include: Potential for disturbance to breeding SCI species (A103/A346) during construction. Mortality (collision/ electrocution) risk with OHL during operation (A103/A346).	Potential impact pathways include: Potential for disturbance to breeding SCI species (A103/A346) during construction.	Mortality risk – SCI species (See Box 7C, Section 7.2). Disturbance - SCI species (See Box 7D, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Durnesh Lough SPA	0.85	A038 Whooper Swan <i>Cygnus cygnus</i> +++ A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> +++	Non-b	Potential impact pathways include: Potential for disturbance to A038 and A395 during construction in or next to important feeding areas. Mortality (collision/ electrocution) risk with OHL during operation (A038/A395).	Potential impact pathways include: Potential for disturbance to A038 and A395 during construction in or next to important feeding areas.	Mortality risk – SCI species (See Box 7C, Section 7.2). Disturbance - SCI species (See Box 7D, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation measured	Conclusion	Adverse Effects on Site Integrity (Y/N)
				Option – OHL	Option - UGC			
Lough Derg (Donegal) SPA	3.03	A183 Lesser Black-backed Gull <i>Larus fuscus</i> + A184 Herring Gull <i>Larus argentatus</i> + A017 Cormorant <i>Phalacrocorax carbo</i> +++ A061 Tufted Duck <i>Aythya fuligula</i> +++ A067 Goldeneye <i>Bucephala clangula</i> +++ A193 Common Tern <i>Sterna hirundo</i> +	Breed	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Cummeen Strand SPA	5.29	A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A130 Oystercatcher <i>Haematopus ostralegus</i> ++ A162 Redshank <i>Tringa tetanus</i> ++	Non-b	Potential impact pathways include: Mortality (collision/ electrocution) risk with OHL during operation (A046).	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	Mortality risk – SCI species (See Box 7C, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ballysadare Bay SPA	5.41	A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A141 Grey Plover <i>Pluvialis squatarola</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ A162 Redshank <i>Tringa tetanus</i> ++	Non-b	Potential impact pathways include: Mortality (collision/ electrocution) risk with OHL during operation (A046).	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted. No construction related impacts predicted for GND/CS/S as construction unlikely in the immediate vicinity of the bay.	Mortality risk – SCI species (See Box 7C, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Arrow SPA	7.65	A004 Little Grebe <i>Tachybaptus ruficollis</i> +++ A061 Tufted Duck <i>Aythya fuligula</i> +++	Non-b	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Drumcliff Bay SPA	8.27	A144 Sanderling <i>Calidris alba</i> ++ A156 Bar-tailed Godwit <i>Limosa lapponica</i> ++	Non-b	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation measured	Conclusion	Adverse Effects on Site Integrity (Y/N)
				Option – OHL	Option - UGC			
Ballintemple and Ballygilgan SPA	11.57	A045 Barnacle Goose <i>Branta leucopsis</i> +++	Non-b	Potential impact pathways include: Mortality (collision/ electrocution) risk with OHL during operation (A045).	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	Mortality risk – SCI species (See Box 7C, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Nillan Bog SPA	12.75	A103 Merlin <i>Falco columbarius</i> + A104 Golden Plover <i>Pluvialis apricaria</i> ++ A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> +++ A149 Dunlin <i>Calidris alpina schinzii</i> ++		Potential impact pathways include: Mortality (collision/ electrocution) risk with OHL during operation (A103/A395).	No potential impact pathways identified. This site is outside the immediate proposed project boundary and as such no construction and or operational impacts are predicted.	Mortality risk – SCI species (See Box 7C, Section 7.2).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Table D1.3: Source-Pathway- Receptor Analysis – potential impact pathways connecting the various potential technology options of the **North Connacht project** to SACs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Killala Bay/Moy Estuary SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1210 Annual vegetation of drift lines</p> <p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>1310 Salicornia and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows <i>Glauco-Puccinellietalia maritimae</i></p> <p>2110 Embryonic shifting dunes</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>2190 Humid dune slacks</p> <p>Annex II Species</p> <p>1014 <i>Vertigo angustior</i></p> <p>1095 <i>Petromyzon marinus</i></p> <p>1096 <i>Lampetra planeri</i></p> <p>1365 <i>Phoca vitulina</i></p>	<p>Habitat loss – the final specific locations of structures, likely placed at 100m intervals, would seek to avoid features and critical supporting habitat within (and immediately outwith) this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats during construction works although unlikely cannot be discounted at this stage.</p> <p>Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect marine habitats and associated communities downstream (1130, 1140, 1330) and the marshy ground preferred by the Whorl Snail (1014).</p> <p>Mortality risk – pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish and restrict access to spawning habitat (1095) (1096) (1106).</p> <p>Disturbance – low (non-significant) risk of disturbance to surfaced or hauled-out seals within the estuary (1365) from temporary noise and visual disturbance during construction.</p>	<p>Habitat loss – none anticipated as UGC would be constructed in existing public roads.</p> <p>Location of the driving and reception compounds would avoid this SAC.</p> <p>Habitat degradation – hydrogeology potential impacts on hydrological flows and water quality impacting on Annex I priority habitat and associated communities (1014).</p> <p>Disturbance – low (non-significant) risk of disturbance to surfaced or hauled-out seals within the estuary (1365) from temporary noise and visual disturbance during construction.</p>	Based on the Key Principles outlined in Section 7.1, Box 7A , (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E (habitat loss specifically in relation to Annex I estuarine habitats) and the approach to mitigation in relation to habitat degradation (hydrogeology) Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Balla Turlough SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>3180 Turloughs</p>	<p>Habitat loss – the final specific locations of structures, likely placed at 100m intervals, would seek to avoid features and critical supporting habitat within (and immediately outwith) this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats during construction works although unlikely cannot be discounted at this stage.</p> <p>Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect hydrogeological regime in the vicinity of the works which in turn has the potential to affect groundwater dependent/groundwater fed habitats.</p>	<p>Habitat degradation – hydrogeology/water quality potential impacts on hydrological flows and water quality associated with tunneling and/or deep excavation works associated with the placement of UGCs.</p>	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7F (Mitigation measures in relation to habitat degradation - hydrogeology/water quality) affecting Annex I habitats).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Callow Bog SAC	0.00 km (within proposed study area)	Annex I Habitats 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion	Habitat loss - the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats (raised bogs and peat substrates) during construction works although unlikely cannot be discounted at this stage. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats.	Habitat loss – none anticipated as UGC would be constructed in existing public roads. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats. Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I Habitats.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology) outlined in Section 7.3, Box 7F	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Derrinea Bog SAC	0.00 km (within proposed study area)	Annex I Habitats 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats (raised bogs and peat substrates) during construction works cannot be discounted. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats. Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I Habitats.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology) outlined in Section 7.3, Box 7F	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Hoe Bog SAC	0.00 km (within proposed study area)	Annex I Habitats 3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 7130 Blanket bogs (* if active bog) Annex II Species 1013 <i>Vertigo geyeri</i> 1092 <i>Austropotamobius pallipes</i>	Habitat loss –the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats (blanket bogs) and supporting marsh habitat for the Whorl Snail (1013) cannot be discounted. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies (3110) and sensitive aquatic species (1013) (1092).	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies (3110) and sensitive aquatic species (1013) (1092). Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I Habitats (3110) (7130) and dependent species (1013) (1092).	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Urlaur Lakes SAC	0.00 km (within proposed study area)	Annex I Habitats 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	Habitat loss – no pathways identified. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact hydrologically dependent water bodies (3140).	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies (3140). Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats (3140).	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in relation to habitat degradation (hydrogeology/water quality) affecting Annex I habitats in Section 7.3, Box 7F	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Bellacorick Bog Complex SAC	0.00 km (within proposed study area)	Annex I Habitats 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with Erica tetralix [4010] 7130 Blanket bogs (* if active bog) 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> 7230 Alkaline fens Annex II Species 1013 <i>Vertigo geyeri</i> 1528 <i>Saxifraga hirculus</i>	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of Annex 1 habitats (blanket bogs, peat substrates, fens and heaths) and supporting marsh habitat for the Whorl Snail (1013) or Annex II plant species cannot be discounted. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies (3160) habitats (4010) (7230) and species (1013) (1528).	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies (3160) and sensitive aquatic species (1013) (1528). Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats (3160) (7130) (7230) and species (1013) (1528).	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
River Moy SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>7110 Active raised bogs</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p> <p>7150 Depressions on peat substrates of the Rhynchosporion</p> <p>7230 Alkaline fens</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>, <i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i></p> <p>Annex II Species</p> <p>1092 <i>Austropotamobius pallipes</i> (White-clawed Crayfish)</p> <p>1095 <i>Petromyzon marinus</i></p> <p>1096 <i>Lampetra planeri</i></p> <p>1106 <i>Salmo salar</i></p> <p>1355 <i>Lutra lutra</i></p>	<p>Habitat loss – The final specific locations of structures, likely placed at 100m intervals, would seek to avoid features and critical supporting habitat within (and immediately outwith) this site. However, any connection out of Moy would likely intersect the SAC, the chance of minimal loss of Annex 1 habitats, although unlikely, cannot be discounted at this stage.</p> <p>Habitat degradation – water quality pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species (1092) (1095) (1096) (1106) (1355).</p> <p>Mortality risk - pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish and restrict access to spawning habitat (1095) (1096) (1106).</p> <p>Disturbance – Habitat fragmentation temporary disturbance of species (e.g. otter holts) during construction and maintenance works (1355).</p>	<p>Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC, or where the SAC has to be crossed directional drilling would be employed.</p> <p>Habitat degradation – water quality pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species (1092) (1095) (1096) (1106) (1355).</p> <p>Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats and dependent species.</p> <p>Mortality risk - pollution of water courses during construction could impact migratory fish and restrict access to spawning habitat (1095) (1096) (1106).</p> <p>Disturbance - Habitat fragmentation associated with construction of the compounds leading to temporary disturbance of species during construction (1355).</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation set out in Section 7.3, Box 7 specifically in relation to mitigating the loss of Annex I habitats) and the approach outlined in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species set out in Section 7.3, Box 7F.</p> <p>Also, the approach to mitigation in relation to disturbance affecting species in Section 7.3, Box 7G</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Tullaghanrock Bog SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>7110 Active raised bogs</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p> <p>7150 Depressions on peat substrates of the Rhynchosporion</p>	<p>Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats (raised bogs and peat substrates) during construction works cannot be discounted.</p> <p>Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats.</p>	<p>Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.</p> <p>Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats.</p> <p>Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats.</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) the approach to mitigation set out in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats) and the approach to mitigation in relation to habitat degradation (hydrogeology) outlined in Section 7.3, Box 7F.</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Lough Corrib SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or Isoeto-Nanojuncetea</p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</p> <p>7110 Active raised bogs</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p> <p>7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i></p> <p>7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>)</p> <p>7230 Alkaline fens</p> <p>8240 Limestone pavements</p> <p>91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p>91D0 Bog woodland</p> <p>Annex IISpecies</p> <p>1029 <i>Margaritifera margaritifera</i></p> <p>1092 <i>Austropotamobius pallipes</i></p> <p>1095 <i>Petromyzon marinus</i></p> <p>1096 <i>Lampetra planeri</i></p> <p>1106 <i>Salmo salar</i></p> <p>1303 <i>Rhinolophus hipposideros</i></p> <p>1355 <i>Lutra lutra</i></p> <p>1393 <i>Drepanocladus vernicosus</i></p> <p>1833 <i>Najas flexilis</i></p>	<p>Habitat loss – the northern most section of this European site is located on the study area boundary. The final specific locations of structures would seek to avoid features within this site. No loss of Annex I habitat within this site is predicted.</p> <p>Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats.</p>	<p>Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.</p> <p>Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect groundwater dependent/groundwater fed habitats.</p> <p>Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats.</p> <p>Mortality risk - pollution of water courses during construction could impact migratory fish and restrict access to spawning habitat (1095) (1096) (1106).</p> <p>Disturbance - Habitat fragmentation associated with construction of the compounds leading to temporary disturbance of species during construction (1355).</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) the approach to mitigation set out in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats) and the approach to mitigation in relation to habitat degradation (hydrogeology) and sensitive aquatic species outlined in Section 7.3, Box 7F.</p> <p>Also, the approach to mitigation in relation to disturbance affecting species in Section 7.3, Box 7G</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects</p>	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Bellacorick Iron Flush SAC	0.00 km (within proposed study area)	Annex II Species 1528 <i>Saxifraga hirculus</i>	Habitat loss – the final specific locations of structures would seek to avoid the site including the Annex II species for which it has been designated.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats/Annex II species)	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Doocastle Turlough SAC	0.00 km (within proposed study area)	Annex I Habitats 3180 Turloughs	Habitat loss – the final specific locations of structures would seek to avoid this site. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect hydrogeological regime in the vicinity of the works which in turn has the potential to affect groundwater dependent/groundwater fed habitats.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology/water quality potential impacts on hydrological flows and water quality associated with tunneling and/or deep excavation works associated with the placement of UGCs during construction.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7F (Mitigation measures in relation to habitat degradation - hydrogeology/water quality) affecting Annex I habitats).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Flughany Bog SAC	0.00 km (within proposed study area)	Annex I Habitats 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the <i>Rhynchosporion</i>	Habitat loss – The final specific locations of structures would seek to avoid features within this site. Given the location of existing sub-stations within the study area and therefore the potential route options, no habitat loss predicted.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation in relation to habitat degradation (hydrogeology) outlined in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Glenamoy Bog Complex SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>21A0 Machairs (* in Ireland)</p> <p>3160 Natural dystrophic lakes and ponds</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>7130 Blanket bogs (* if active bog)</p> <p>7140 Transition mires and quaking bogs</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p> <p>Annex II Species</p> <p>1106 <i>Salmo salar</i></p> <p>1393 <i>Drepanocladus vermicosus</i></p> <p>1395 <i>Petalophyllum ralfsii</i></p> <p>1528 <i>Saxifraga hirculus</i></p>	<p>Habitat loss – a large proportion of the site is outwith the main study area any structures associated with OHLs should easily avoid features and critical supporting habitat within the site. Annex I and Annex II plant species would be avoided.</p> <p>Habitat degradation – water quality pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected aquatic species (1106).</p> <p>Mortality risk - pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish and restrict access to spawning habitat (1106).</p>	<p>Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.</p> <p>Habitat degradation – water quality pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) has the potential to impact any hydrologically connected habitats and associated species (1106).</p> <p>Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats and dependent species.</p> <p>Mortality risk - pollution of water courses during construction could impact migratory fish and restrict access to spawning habitat (1106).</p>	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation set out in Section 7.3, Box 7 specifically in relation to mitigating the loss of Annex I habitats) and the approach outlined in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species set out in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lackan Saltmarsh and Kilcummin Head SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>1310 Salicornia and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p> <p>21020 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p>	Given the location of the SAC at the very northern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	Given the location of the SAC at the very northern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Carrowbehy/Caher Bog SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>7110 Active raised bogs</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p>	Given the location of the SAC at the very northern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	Given the location of the SAC at the very northern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Nabrickkeagh Bog SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>7130 Blanket bogs (* if active bog)</p>	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats (raised bogs and peat substrates) during construction works cannot be discounted.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) the approach to mitigation set out in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Turloughmore (Sligo) SAC	0.00 km (within proposed study area)	Annex I Habitats 3180 Turloughs	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats (raised bogs and peat substrates) during construction works cannot be discounted. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect hydrogeological regime in the vicinity of the works which in turn has the potential to affect groundwater dependent/groundwater fed habitats.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology/water quality potential impacts on hydrological flows and water quality associated with tunneling and/or deep excavation works associated with the placement of UGCs.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7F (mitigation measures in relation to habitat degradation - hydrogeology/water quality) affecting Annex I habitats).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Knockalongy and Knockachree Cliffs SAC	0.00 km (within proposed study area)	Annex II Species 1421 <i>Trichomanes speciosum</i>	Habitat loss – the final specific locations of structures would seek to avoid the site including the Annex II species for which it has been designated.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats/Annex II species).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Cloonakillina Lough SAC	0.00 km (within proposed study area)	Annex I Habitats 7140 Transition mires and quaking bogs	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats during construction works cannot be discounted.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology/water quality potential impacts on hydrological flows and water quality associated with tunneling and/or deep excavation works associated with the placement of UGCs.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7F (mitigation measures in relation to habitat degradation - hydrogeology/water quality) affecting Annex I habitats).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ox Mountains Bogs SAC	0.00 km (within proposed study area)	Annex I Habitats 3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 7130 Blanket bogs (* if active bog) 7140 Transition mires and quaking bogs 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> Annex II Species 1013 <i>Vertigo geyeri</i> 1528 <i>Saxifraga hirculus</i>	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, given the location of the SAC in relation to existing stations the chance of minimal loss of/damage to QI/Annex 1 habitats and supporting habitat for Annex II species (1013/1528) cannot be discounted. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies (3110/3160).	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I Habitats.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E habitat loss (specifically in relation to Annex II species) and the mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Drumalough Bog SAC	0.00 km (within proposed study area)	Annex I Habitats 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the <i>Rhynchosporion</i>	Given the location of the SAC at the very south eastern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	Given the location of the SAC at the very south eastern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Newport River SAC	0.00 km (within proposed study area)	Annex II Species 1029 <i>Margaritifera margaritifera</i> 1106 <i>Salmo salar</i>	Habitat degradation – water quality this SAC is within the proposed study area. Given the proximity of the site to the works, there are possible source-receptor pathways that could lead to species mortality and habitat fragmentation (1106) (1029) from the pollution of nearby watercourses during ground clearance (sediment run-off) and construction works (accidental spillage).	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – water quality/hydrology this SAC is within the proposed study area. Given the proximity of the site to the works, there are possible source-receptor pathways that could lead to species mortality and habitat fragmentation (1106) (1029) from the pollution of nearby watercourses during ground clearance (sediment run-off) and construction works (accidental spillage) and potential alterations to hydrological flows.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation set out in Section 7.3, Box 7F in relation to habitat degradation and species mortality (hydrogeology).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ballinacorney SAC	0.00 km (within proposed study area)	Annex II Species 1303 <i>Rhinolophus hipposideros</i>	Habitat loss/fragmentation – this SAC is within the proposed study area. Although loss of habitat within the SAC is unlikely there is potential for habitat loss outside the confines of the SAC (woodland/hedgerow removal) which could sever important commuting routes for Lesser Horse Shoe bats commuting between their roost site in the SAC and foraging areas outside the confines of the SAC. This species is known to avoid flying across open spaces, and therefore existing habitat corridors are crucial in maintaining the SAC population. Construction of the OHL could result in a loss of supporting habitat within the core sustenance zone of the species. Mortality risk: There are currently no peer reviewed studies into the potential impacts of OHLs on bat species from collision risk.	Habitat loss/fragmentation – this SAC is within the proposed study area. Although loss of habitat within the SAC is unlikely there is potential for habitat loss outside the confines of, there is potential for habitat loss outside the confines of the SAC (woodland/hedgerow removal) which could sever important commuting routes for Lesser Horse Shoe bats commuting between their roost site in the SAC and foraging areas outside the confines of the SAC. This species is known to avoid flying across open spaces, and therefore existing habitat corridors are crucial in maintaining the SAC population. Construction of the OHL could result in a loss of supporting habitat within the core sustenance zone of the species.	Mitigation set out in Section 7.3, Box 7E to ensure no loss of important foraging/commuting routes.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Lough Dahybaun SAC	0.00 km (within proposed study area)	Annex I Habitats 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the <i>Rhynchosporion</i>	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, given the location of the SAC in relation to existing stations the chance of minimal loss of/damage to QI/Annex 1 habitats cannot be discounted.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology: potential alterations to hydrological flows impacting on Annex I priority Habitats.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation in relation to habitat degradation (hydrogeology) outlined in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Cumeen Strand/Drumciff Bay (Sligo Bay) SAC	0.00 km (within proposed study area)	1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide [1140] 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) 5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) 7220 Petrifying springs with tufa formation (Cratoneurion) Annex II Species 1014 <i>Vertigo angustior</i> 1095 <i>Petromyzon marinus</i> 1099 <i>Lampetra fluviatilis</i> 1365 <i>Phoca vitulina</i>	Given the location of the SAC at the very northern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	Given the location of the SAC at the very northern tip of the study area boundary and distance from existing stations no impact pathways are predicted.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ballysadare Bay SAC	0.00 km (within proposed study area)	Annex I Habitats 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) 2190 Humid dune slacks Annex II Species 1014 <i>Vertigo angustior</i> 1365 <i>Phoca vitulina</i>	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, given the location of the SAC in relation to existing stations the chance of minimal loss of/damage to QI/Annex 1 habitats and supporting habitat for Annex II species cannot be discounted. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I Habitats.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E habitat loss (specifically in relation to Annex II species) and the mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Templehouse And Cloonacleigha Loughs SAC	0.00 km (within proposed study area)	Annex I Habitats 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. 3260 Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	Habitat degradation – water quality – potential pollution of nearby watercourses during construction could impact water bodies.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology/ water quality) affecting habitats and species in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Errit Lough SAC	0.00 km (within proposed study area)	Annex I Habitats 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology/ water quality) affecting habitats and species in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Union Wood SAC	0.00 km (within proposed study area)	Annex I Habitats 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, given the location of the SAC in relation to existing stations the chance of minimal loss of/damage to QI/Annex I cannot be discounted.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats).	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Bricklieve Mountains & Keishcorran SAC	0.00 km (within proposed study area)	Annex I Habitats 3180 Turloughs* 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco Brometalia</i> (*important orchid sites)* 6510 Lowland hay meadows <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> 8120 Calcareous and calcshist screes of the montane to alpine levels <i>Thlaspietea rotundifolii</i> Annex II Species 1065 <i>Euphydryas aurinia</i> 1092 <i>Austropotamobius pallipes</i>	Habitat loss – the final specific locations of structures would seek to avoid features within this site. However, given the location of the SAC in relation to existing stations the chance of minimal loss of/damage to QI/Annex I habitats and supporting habitat for Annex II species cannot be discounted. Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies and the QI species they support. Mortality risk – pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact aquatic species (1092) while supporting habitat loss outside of the confines of the SAC could impact on mobile terrestrial QI species (1065) Disturbance – Habitat fragmentation temporary disturbance of species (e.g. otter holts) during construction and maintenance works (1355).	Habitat degradation – hydrogeology potential alterations to hydrological flows impacting on Annex I priority Habitats and dependent species. Mortality risk – pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact aquatic species (1092) while supporting habitat loss outside of the confines of the SAC could impact on mobile terrestrial QI species (1065)	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation set out in Section 7.3 – Box 7 specifically in relation to mitigating the loss of Annex I habitats) and the approach outlined in relation to habitat degradation. (hydrogeology/water quality) affecting habitats and species set out in Section 7.3, Box 7F . Also, the approach to mitigation in relation to mortality affecting QI species in Section 7.3, Box 7H .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Lough Arrow SAC	0.00 km (within proposed study area)	Annex I Habitats 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	Habitat degradation – water quality potential pollution of nearby watercourses during construction could impact water bodies.	Habitat loss – none anticipated as underground cable will be constructed in public roads corridors and existing tracks. Location of the driving and reception compounds would avoid this SAC.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology/ water quality) affecting habitats and species in Section 7.3, Box 7F .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Unshin River SAC	0.00 km (within proposed study area)	Annex I Habitats 3260 Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> , <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> Annex II Species 1106 <i>Salmo salar</i> 1355 <i>Lutra lutra</i>	Habitat loss – the final specific locations of structures, likely placed at 100m intervals, would seek to avoid features and critical supporting habitat within (and immediately outwith) this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats during construction works although unlikely cannot be discounted at this stage. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect aquatic QI species such as salmon, which could have an indirect effect on otter. Mortality risk – pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish and restrict access to spawning habitat (1106) Disturbance – temporary disturbance of species (e.g. otter holts) during construction and works.	Habitat loss – none anticipated as UGC would be constructed in existing public roads. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology/water quality potential impacts on hydrological flows and water quality impacting on Annex I priority habitat and associated communities (1014). Disturbance – temporary disturbance of species (e.g. otter holts) during construction and works.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species in Section 7.3, Box 7F . Also, the approach to mitigation in relation to disturbance affecting species in Section 7.3, Box 7G .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Gill SAC	0.00 km (within proposed study area)	Annex I Habitats 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> , <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> Annex II Species 1092 <i>Austropotamobius pallipes</i> 1095 <i>Petromyzon marinus</i> 1096 <i>Lampetra planeri</i> 1099 <i>Lampetra fluviatilis</i> 1106 <i>Salmo salar</i> 1355 <i>Lutra lutra</i>	Habitat loss – the final specific locations of structures, likely placed at 100m intervals, would seek to avoid features and critical supporting habitat within (and immediately outwith) this site. However, the chance of minimal loss of/damage to QI/Annex 1 habitats during construction works although unlikely cannot be discounted at this stage. Habitat degradation – water quality potential pollution of nearby watercourses during construction could affect aquatic QI species such as salmon, which could have an indirect effect on otter. Mortality risk – pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish and restrict access to spawning habitat. Disturbance – temporary disturbance of species (e.g. otter holts) during construction and works.	Habitat loss – none anticipated as UGC would be constructed in existing public roads. Location of the driving and reception compounds would avoid this SAC. Habitat degradation – hydrogeology/water quality potential impacts on hydrological flows and water quality impacting on Annex I priority habitat and associated communities (1014). Mortality risk – pollution of water courses during construction (associated with sediment runoff, or accidental spillage) could impact migratory fish and restrict access to spawning habitat (1106) Disturbance – temporary disturbance of species (e.g. otter holts) during construction and works.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.3, Box 7E habitat loss (specifically in relation to Annex I habitats) and the mitigation measures in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species in Section 7.3, Box 7F . Also, the approach to mitigation in relation to disturbance affecting species in Section 7.3, Box 7G .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Carrowmore Lake Complex SAC	1.39 km	<p>Annex I Habitats</p> <p>7130 Blanket bogs (* if active bog)</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p> <p>Annex II Species</p> <p>1393 <i>Drepanocladus vernicosus</i></p> <p>1528 <i>Saxifraga hirculus</i></p>	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ben Bulbin, Gleniff and Glenade Complex SAC	2.7km	<p>Annex I Habitats</p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</p> <p>4030 European dry heaths</p> <p>4060 Alpine and Boreal heaths</p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>7220 Petrifying springs with tufa formation <i>Cratoneurion</i></p> <p>8120 Calcareous and calcshist screes of the montane to alpine levels <i>Thlaspietea rotundifolii</i></p> <p>8210 Calcareous rocky slopes with chasmophytic vegetation</p> <p>Annex II Species</p> <p>1013 <i>Vertigo geyeri</i></p> <p>1355 <i>Lutra</i></p>	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Towerhill House SAC	2.73 km	<p>Annex II Species</p> <p>1303 <i>Rhinolophus hipposideros</i></p>	<p>Habitat loss/fragmentation – this SAC is within the proposed study area. Although loss of habitat within the SAC is unlikely there is potential for habitat loss outside the confines of the SAC (woodland/hedgerow removal) which could sever important commuting routes for Lesser Horse Shoe bats commuting between their roost site in the SAC and foraging areas outside the confines of the SAC. This species is known to avoid flying across open spaces, and therefore existing habitat corridors are crucial in maintaining the SAC population. Construction of the OHL could result in a loss of supporting habitat within the core sustenance zone of the species.</p> <p>Mortality risk – there are currently no peer reviewed studies into the potential impacts of OHLs on bat species from collision risk.</p>	<p>Habitat loss/fragmentation – This SAC is within the proposed study area. Although loss of habitat within the SAC is unlikely there is potential for habitat loss outside the confines of, there is potential for habitat loss outside the confines of the SAC (woodland/hedgerow removal) which could sever important commuting routes for Lesser Horse Shoe bats commuting between their roost site in the SAC and foraging areas outside the confines of the SAC. This species is known to avoid flying across open spaces, and therefore existing habitat corridors are crucial in maintaining the SAC population. Construction of the UGC could result in a loss of supporting habitat within the core sustenance zone of the species.</p>	Mitigation set out in Section 7.3, Box 7E to ensure no loss of important foraging/commuting routes.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Lough Carra/Mask Complex SAC	3.21 km	<p>Annex I Habitats</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i></p> <p>4030 European dry heaths</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)</p> <p>7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i></p> <p>7230 Alkaline fens</p> <p>8240 Limestone pavements</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)</p> <p>Annex II Species</p> <p>1303 <i>Rhinolophus hipposideros</i></p> <p>1355 <i>Lutra lutra</i></p> <p>1393 <i>Drepanocladus vernicosus</i></p>	<p>Habitat loss/fragmentation – this SAC is within the proposed study area. Although loss of habitat within the SAC is unlikely there is potential for habitat loss outside the confines of the SAC (woodland/hedgerow removal) which could sever important commuting routes for Lesser Horse Shoe bats commuting between their roost site in the SAC and foraging areas outside the confines of the SAC. This species is known to avoid flying across open spaces, and therefore existing habitat corridors are crucial in maintaining the SAC population. Construction of the OHL could result in a loss of supporting habitat within the core sustenance zone of the species.</p> <p>Mortality risk – there are currently no peer reviewed studies into the potential impacts of OHLs on bat species from collision risk.</p> <p>Disturbance – Habitat fragmentation temporary disturbance of species (e.g. otter holts) during construction and maintenance works (1355).</p>	<p>Habitat loss/fragmentation – this SAC is within the proposed study area. Although loss of habitat within the SAC is unlikely there is potential for habitat loss outside the confines of, there is potential for habitat loss outside the confines of the SAC (woodland/hedgerow removal) which could sever important commuting routes for Lesser Horse Shoe bats commuting between their roost site in the SAC and foraging areas outside the confines of the SAC. This species is known to avoid flying across open spaces, and therefore existing habitat corridors are crucial in maintaining the SAC population. Construction of the UGC could result in a loss of supporting habitat within the core sustenance zone of the species.</p> <p>Disturbance – Habitat fragmentation temporary disturbance of species (e.g. otter holts) during construction and maintenance works (1355).</p>	<p>Mitigation set out in Section 7.3, Box 7E to ensure no loss of important foraging/commuting routes.</p> <p>Also, the approach to mitigation in relation to disturbance affecting species in Section 7.3, Box 7G.</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Bellanagare Bog SAC	3.94 km	<p>Annex I Habitats</p> <p>7110 Active raised bogs</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p>	<p>No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.</p>	<p>No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Clew Bay Complex SAC	3.9km	<p>Annex I Habitats</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1150 Coastal lagoons</p> <p>1160 Large shallow inlets and bays</p> <p>1210 Annual vegetation of drift lines</p> <p>1220 Perennial vegetation of stony banks</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>2110 Embryonic shifting dunes</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>21A0 Machairs (* in Ireland)</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>Annex II Species</p> <p>1013 <i>Vertigo geyeri</i></p> <p>1355 <i>Lutra lutra</i></p> <p>1365 <i>Phoca vitulina</i></p>	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Coolcam Turlough SAC	3.99km	<p>Annex I Habitats</p> <p>3180 Turloughs</p>	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Carrowkeel Turlough SAC	4.23 km	<p>Annex I Habitats</p> <p>3180 Turloughs</p>	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Slieve Fyagh Bog SAC	4.50 km	<p>Annex I Habitats</p> <p>7130 Blanket bogs (* if active bog)</p>	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Moore Hall (Lough Carra) SAC	5.17 km	Annex II Species 1303 <i>Rhinolophus hipposideros</i>	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the study area boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Williamstown Turloughs SAC	5.63 km	Annex I Habitats 3180 Turloughs	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Croaghill Turlough SAC	5.76 km	Annex I Habitats 3180 Turloughs	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Cortiskea/Trien/Cloonfellov Bog SAC	6.15 km	Annex I Habitats 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> 91D0 Bog woodland	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Cloonshanville Bog SAC	6.26 km	Annex I Habitats 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the <i>Rhynchosporion</i> 91D0 Bog woodland	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Boleybrack Mountain SAC	8.5km	Annex I Habitats 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils <i>Molinion caeruleae</i> 7130 Blanket bogs (* if active bog)	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Kilglassan/Caheravoostia Turlough Complex SAC	8.94 km	Annex I Habitats 3180 Turloughs	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Glenade Lough SAC	9.3km	Annex I Habitats 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation Annex II Species 1092 <i>Austropotamobius pallipes</i> 1833 <i>Najas flexilis</i>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Arroo Mountain SAC	10.2km	Annex I Habitats 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 7130 Blanket bogs (* if active bog) 7220 Petrifying springs with tufa formation <i>Cratoneurion</i> 8120 Calcareous and calcshist screes of the montane to alpine levels <i>Thlaspietea rotundifolii</i> 8210 Calcareous rocky slopes with chasmophytic vegetation	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Greaghans Turlough SAC	10.76 km	Annex I Habitats 3180 Turloughs	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ardkill Turlough SAC	11.65 km	Annex I Habitats 3180 Turloughs	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Bunduff Lough And Machair/Trawalua/Mullaghmore SAC	11.9km	<p>Annex I Habitats</p> <p>1160 Large shallow inlets and bays</p> <p>1170 Reefs</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>21A0 Machairs (* in Ireland)</p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates <i>Festuco Brometalia</i> (*important orchid sites)</p> <p>7230 Alkaline fens</p> <p>Annex II Species</p> <p>1395 <i>Petalophyllum ralfsii</i></p>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Streedagh Point Dunes SAC	12.02	<p>Annex I Habitats</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1220 Perennial vegetation of stony banks</p> <p>1330 Atlantic salt meadows <i>Glaucopuccinellietalia maritimae</i></p> <p>1410 Mediterranean salt meadows <i>Juncetalia maritimi</i></p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>Annex II Species</p> <p>1014 <i>Vertigo angustior</i></p>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Skealaghan Turlough SAC	12.59 km	<p>Annex I Habitats</p> <p>3180 Turloughs</p>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Kilsallagh Bog SAC	13.32 km	<p>Annex I Habitats</p> <p>7110 Active raised bogs</p> <p>7210 Degraded raised bogs still capable of natural regeneration</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
Mweelrea/Sheeffry/Erriff Complex SAC	13.74 km	<p>Annex I Habitats</p> <p>1150 Coastal lagoons</p> <p>1210 Annual vegetation of drift lines</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p> <p>2110 Embryonic shifting dunes</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2150 Atlantic decalcified fixed dunes (<i>Callino-Ulicetea</i>)</p> <p>2170 Dunes with <i>Salix repens ssp. argentea</i> (<i>Salicion arenariae</i>)</p> <p>21A0 Machairs (* in Ireland)</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></p> <p>3160 Natural dystrophic lakes and ponds</p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>4030 European dry heaths</p> <p>4060 Alpine and Boreal heaths</p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels</p> <p>7130 Blanket bogs (* if active bog)</p> <p>7140 Transition mires and quaking bogs</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p> <p>7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>)</p> <p>7230 Alkaline fens</p> <p>8110 Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)</p> <p>8210 Calcareous rocky slopes with chasmophytic vegetation</p> <p>8220 Siliceous rocky slopes with chasmophytic vegetation</p>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL)	(Option – UGC)			
		<u>Annex II Species</u> 1013 <i>Vertigo geyeri</i> 1014 <i>Vertigo angustior</i> 1029 <i>Margaritifera margaritifera</i> 1106 <i>Salmo salar</i> 1355 <i>Lutra lutra</i> 1395 <i>Petalophyllum ralfsii</i> 1833 <i>Najas flexilis</i>					
Brackloon Woods SAC	13.81 km	<u>Annex I Habitats</u> Old sessile oak woods with Ilex and Blechnum in the British Isles	No potential impact pathways identified. This site is outside the proposed study area.	No potential impact pathways identified. This site is outside the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lisnageeragh Bog and Ballinastack Turlough SAC	14.09 km	<u>Annex I Habitats</u> 3180 Turloughs 7110 Active raised bogs 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the <i>Rhynchosporion</i>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Clyard Kettle-holes SAC	14.87 km	<u>Annex I Habitats</u> 3180 Turloughs 7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	No potential impact pathways identified. This site is outside the immediate proposed project boundary and there is no hydrological link between the site and the proposed study area.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Table D1.4: Source-Pathway- Receptor Analysis – potential impact pathways connecting the various potential technology options of the **North Connacht project** to SPAs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
				(Option – OHL) *	(Option – UGC)			
Cummeen Strand SPA	0Km	A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A130 Oystercatcher <i>Haematopus ostralegus</i> ++ A162 Redshank <i>Tringa tetanus</i> ++	Non-b	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction, operation and maintenance of transmission lines. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction of the project if located within close proximity to the SPA.	Mitigation in relation to disturbance affecting SPA species in Section 7.3, Box 7G and mortality risk from collisions for SPA species Box 7H, Section 7.3 .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ballysadare Bay SPA	0km	A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A141 Grey Plover <i>Pluvialis squatarola</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ A162 Redshank <i>Tringa tetanus</i> ++	Non-b	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction, operation and maintenance of transmission lines. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction of the project if located within close proximity to the SPA.	Mitigation in relation to disturbance affecting SPA species in Section 7.3, Box 7G and mortality risk from collisions for SPA species Box 7H, Section 7.3 .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Conn and Lough Cullin SPA	0.00 km (within proposed study area)	A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> +++ A061 Tufted Duck <i>Aythya fuligula</i> +++ A065 Common Scoter <i>Melanitta nigra</i> + A182 Common Gull <i>Larus canus</i> +	Non-b Non-b Breed Breed	Disturbance (noise and visual) – Habitat Fragmentation: possible habitat fragmentation and disturbance associated with the construction, operation and maintenance of transmission lines. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction of the project if located within close proximity to the SPA.	Mitigation in relation to disturbance affecting SPA species in Section 7.3, Box 7G and mortality risk from collisions for SPA species Box 7H, Section 7.3 .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Killala Bay/Moy Estuary SPA	0.00 km (within proposed study area)	137 Ringed Plover <i>Charadrius hiaticula</i> ++ 140 Golden Plover <i>Pluvialis apricaria</i> ++ 141 Grey Plover <i>Pluvialis squatarola</i> ++ 144 Sanderling <i>Calidris alba</i> ++ 149 Dunlin <i>Calidris alpina</i> ++ 157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ 160 Curlew <i>Numenius arquata</i> ++ 162 Redshank <i>Tringa totanus</i> ++ A999 Wetland and Waterbirds	Non-b	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction, operation and maintenance of transmission lines. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction of the project if located within close proximity to the SPA.	Mitigation in relation to disturbance affecting SPA species in Section 7.3, Box 7G and mortality risk from collisions for SPA species Box 7H, Section 7.3 .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Lough Gara SPA	0.00 km (within proposed study area)	A038 Whooper Swan <i>Cygnus Cygnus</i> +++ A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> +++	Non-b	Disturbance (noise and visual) – Habitat Fragmentation possible habitat fragmentation and disturbance associated with the construction, operation and maintenance of transmission lines. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance (noise and visual) – Habitat Fragmentation: possible habitat fragmentation and disturbance associated with the construction of the project if located within close proximity to the SPA.	Mitigation in relation to disturbance affecting SPA species in Section 7.3, Box 7G and mortality risk from collisions for SPA species Box 7H, Section 7.3 .	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
				(Option – OHL) *	(Option – UGC)			
							plans or projects.	
Sligo/Leitrim Uplands SPA	0.3km	A103 Peregrine <i>Falco peregrinus</i> + A346 Chough <i>Pyrrhocorax pyrrhocorax</i> ++	Breed	Mortality – (collision/ electrocution) risk with OHL during operation.	No impact pathway predicted.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Drumcliff Bay SPA	1.2km	A144 Sanderling <i>Calidris alba</i> ++ A156 Bar-tailed Godwit <i>Limosa lapponica</i> ++	Non-b	Mortality – (collision/ electrocution) risk with OHL during operation.	No impact pathway predicted.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Aughris Head SPA	882 m	A188 Kittiwake <i>Rissa tridactyla</i>	Breed	The site supports important breeding colonies of <i>Rissa tridactyla</i> . As this SPA is not within the project boundary and the OHL connection would not transect the site, no significant impact pathways have been identified between OHL option and this European site.	No impact pathways have been identified between UGC option and this European site as this SPA is not within the project boundary	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ballintemple and Ballygilgan SPA	4.1km	A045 Barnacle Goose <i>Branta leucopsis</i> +++	Non-b	Mortality – (collision/ electrocution) risk with OHL during operation.	No impact pathway predicted.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
				(Option – OHL) *	(Option – UGC)			
Lough Carra SPA	4.44 km	A182 Common Gull <i>Larus canus</i> +	Breed	The site supports important breeding colonies of <i>Larus canus</i> . As this SPA is not within the project boundary and the OHL connection would not transect the site, no significant impact pathways have been identified between OHL option and this European site.	No impact pathways have been identified between UGC option and this European site as this SPA is not within the project boundary.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Bellanagare Bog SPA	7.07 km	A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> +++	Non-b	Mortality – (collision/ electrocution) risk with OHL during operation.	No significant impact pathways have been identified between UGC option and this European site.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Owenduff/Nephin Complex SPA	7.57 km	A098 Merlin <i>Falco columbarius</i> + A140 Golden Plover <i>Pluvialis apricaria</i> ++	Perm Breed	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between the OHL option and this European site. The species for which the SPA is are likely to stay within the confines of the SPA boundary that protects an area of favoured breeding habitat.	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ardboline Island and Horse Island SPA	7.91 km	A017 Cormorant <i>Phalacrocorax carbo</i> A045 Barnacle Goose <i>Branta leucopsis</i> +++	Breed Non-breed	Mortality – (collision/ electrocution) risk with OHL during operation.	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Carrowmore Lake SPA	10.26 km	A191 Sandwich Tern <i>Sterna sandvicensis</i> +	Breed	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between the OHL option and this European site. The species for which the SPA is are likely to stay within the confines of the SPA boundary that protects an area of favoured breeding habitat.	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
				(Option – OHL) *	(Option – UGC)			
Lough Mask SPA	10.39 km	A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> +++ A061 Tufted Duck <i>Aythya fuligula</i> +++ A179 Black-headed Gull <i>Chroicocephalus ridibundus</i> + A182 Common Gull <i>Larus canus</i> + A183 Lesser Black-backed Gull <i>Larus fuscus</i> + A193 Common Tern <i>Sterna hirundo</i> + A999 Wetland and Waterbirds	Non-b Breed Breed Breed Breed Non-b	Non-b – This SPA is not within the project boundary and the OHL connection would not likely transect the site. Pathways to the bird features of this SPA are not considered likely on the basis over-wintering birds are likely to stay within the confines (or close proximity) of the SPA boundary that protects an area of favoured wintering habitat. Breed – The possibility of significant mortality (collision/ electrocution) risk with OHL during operation on foraging seabirds during breeding season is discounted on the basis the coastline is due west and foraging seabirds would not likely cross the project area to reach foraging grounds. Mortality – (collision/ electrocution) risk with OHL during operation for A395.	Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Illanmaster SPA	12.39 km	A014 Storm Petrel <i>Hydrobates pelagicus</i>	Breed	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between the OHL option and this European site. The species for which the SPA is are likely to stay within the confines of the SPA boundary that protects an area of favoured breeding habitat.	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Derryveagh and Glendowan Mountains SPA	12.39	A001 Red-throated Diver <i>Gavia stellata</i> +++ A098 Merlin <i>Falco columbarius</i> + A103 Peregrine <i>Falco peregrinus</i> + A140 Golden Plover <i>Pluvialis apricaria</i> ++ A446 Dunlin <i>Calidris alpina schinzii</i> ++	Breed Breed Breed Breed	Mortality – (collision/ electrocution) risk with OHL during operation.	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Blacksod Bay/Broadhaven SPA	13.km	A003 Great Northern Diver <i>Gavia immer</i> +++ A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A065 Common Scoter <i>Melanitta nigra</i> A069 Red-breasted Merganser <i>Mergus serrator</i> A137 Ringed Plover <i>Charadrius hiaticula</i> ++ A144 Sanderling <i>Calidris alba</i> A149 Dunlin <i>Calidris alpina</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++	Non-b Non-b Non-b Non-b Non-b Non-b Non-b/breed Non-b	Mortality – (collision/ electrocution) risk with OHL during operation.	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	Mitigation in relation to mortality risk from collisions for SPA species Box 7H, Section 7.3.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
				(Option – OHL) *	(Option – UGC)			
		A160 Curlew <i>Numenius arquata</i> ++ A191 Sandwich Tern <i>Sterna sandvicensis</i> + Wetland and Waterbirds	Non-b Breed					
Lough Arrow SPA	14.40 km	A004 Little Grebe <i>Tachybaptus ruficollis</i> +++ A061 Tufted Duck <i>Aythya fuligula</i> +++	Non-b	No potential impact pathways identified. Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between the OHL option and this European site. The species for which the SPA is are likely to stay within the confines or close proximity) of the SPA boundary that protects an area of favoured wintering habitat.	Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Table D1.5: Source-Pathway- Receptor Analysis – potential impact pathways connecting the various potential technology options of the **Celtic Interconnector project** to SACs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL land circuit between the converter station and the connection point to the Irish grid)	(Option – UGC used for all land circuits, and the sea cable)			
Ballymacoda (Clonpriest and Pillmore) SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1310 Salicornia and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p>	<p>Habitat loss: None anticipated as landfall point where the submarine circuit will come onshore, the converter station and on land cable connections will avoid going directly through any SAC.</p> <p>No further impact pathways predicted.</p>	<p>Habitat loss: None anticipated as on land cable connection would avoid going directly through the SAC.</p> <p>No further impact pathways predicted.</p>	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Blackwater River (Cork/Waterford) SAC	0.00 km (within proposed study area)	<p>Annex I Habitats</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1220 Perennial vegetation of stony banks</p> <p>1310 Salicornia and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows <i>Glauco-Puccinellietalia maritimae</i></p> <p>1410 Mediterranean salt meadows <i>Juncetalia maritimi</i></p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>, <i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i></p> <p>Annex I Species</p> <p>1029 <i>Margaritifera margaritifera</i></p> <p>1092 <i>Austropotamobius pallipes</i></p> <p>1095 <i>Petromyzon marinus</i></p> <p>1096 <i>Lampetra planeri</i></p> <p>1099 <i>Lampetra fluviatilis</i></p> <p>1103 <i>Alosa fallax fallax</i></p> <p>1106 <i>Salmo salar</i></p> <p>1355 <i>Lutra lutra</i></p> <p>1421 <i>Trichomanes speciosum</i></p>	<p>Habitat loss: None anticipated as landfall point where the submarine circuit will come onshore and on land cable connections would avoid going directly through the SAC.</p> <p>Habitat degradation – water quality: Depending on the proximity of the land circuits route to the SAC, potential pathway to impacts on Annex I marine habitat from potential changes in water quality during construction works for the OHL land circuit.</p> <p>Mortality risk: Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) could impact sensitive aquatic species (1029) (1092) (1355) and migrating fish (1095) (1096) (1099) (1103) (1106) and restrict access to spawning habitat.</p> <p>Disturbance: Risk of temporary disturbance (noise and visual) of foraging otter during construction works (1355).</p>	<p>Habitat loss: None anticipated as on land cable connection would avoid going direct through the SAC.</p> <p>Habitat degradation – water quality: Depending on the proximity of the land circuits route to the SAC, potential pathway to impacts on Annex I marine habitat from potential changes in water quality during construction works for the OHL land circuit.</p> <p>Mortality risk: Pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) could impact sensitive aquatic species (1029) (1092) (1355) and migrating fish (1095) (1096) (1099) (1103) (1106) and restrict access to spawning habitat.</p> <p>Disturbance: Risk of temporary disturbance of foraging otter during construction works associated with driving and reception compounds for the UGC land circuit (1355).</p>	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation outlined in Section 7.4, Box 7I in relation to habitat degradation (hydrogeology) and species mortality. Also, the approach to mitigation measures outlined in Section 7.4, Box 7J in relation to disturbance affecting species (otter) in European sites.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
			(Option – OHL land circuit between the converter station and the connection point to the Irish grid)	(Option – UGC used for all land circuits, and the sea cable)			
Great Island Channel SAC	464 m	<p>Annex I Habitats</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p>	Given the distance of the SAC from the project boundary and absence of any hydrological pathways, no potential impact pathways have been identified to the habitats within this site.	Given the distance of the SAC from the project boundary and absence of any hydrological pathways, no potential impact pathways have been identified to the habitats within this site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Ardmore Head SAC	5.01 km	<p>Annex I Habitats</p> <p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>4030 European dry heaths</p>	Given the distance of the SAC from the project boundary, it is considered that there is no potential for the project to affect the terrestrial and coastal habitats within this site.	Given the distance of the SAC from the project boundary, it is considered that there is no potential for the project to affect the terrestrial and coastal habitats within this site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Table D1.6: Source-Pathway- Receptor Analysis – potential impact pathways connecting the various potential technology options of the **Celtic Interconnector Project** to SPAs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
				(Option – OHL land circuit between the converter station and the connection point to the Irish grid)	(Option – UGC used for all land circuits, and the sea cable)			
Ballycotton Bay SPA	0.00 km (within proposed study area)	A052 Teal <i>Anas crecca</i> +++ A137 Ringed Plover <i>Charadrius hiaticula</i> ++ A140 Golden Plover <i>Pluvialis apricaria</i> ++ A141 Grey Plover <i>Pluvialis squatarola</i> ++ A142 Lapwing <i>Vanellus vanellus</i> ++ A156 Black-tailed Godwit <i>Limosa limosa</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ A160 Curlew <i>Numenius arquata</i> ++ A169 Turnstone <i>Arenaria interpres</i> ++ A182 Common Gull <i>Larus canus</i> + A183 Lesser Black-backed Gull <i>Larus fuscus</i> + A999 Wetland and Waterbirds	Non-b	Habitat Fragmentation – disturbance depending on the location of the tower foundations, possible disturbance associated with the construction or operation of transmission lines in the vicinity of important feeding or roosting areas. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance – Habitat fragmentation depending on the location of the driving and receiving compounds there is a risk of temporary disturbance of species during construction works in the vicinity of important feeding or roosting areas.	Mitigation measures outlined in in Section 7.4.1, Box 7J in relation to disturbance affecting SPA bird species from European sites and mitigation measures outlined in in Section 7.4.1, Box 7K in relation to mortality to SPA birds from collision.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Blackwater Estuary SPA	0.00 km (within proposed study area)	A050 Wigeon <i>Anas penelop</i> +++ A140 Golden Plover <i>Pluvialis apricaria</i> ++ A142 Lapwing <i>Vanellus vanellus</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A156 Black-tailed Godwit <i>Limosa limosa</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ A160 Curlew <i>Numenius arquata</i> ++ A162 Redshank <i>Tringa totanus</i> ++ A999 Wetland and Waterbirds	Non-b	Habitat Fragmentation – disturbance depending on the location of the tower foundations, possible disturbance associated with the construction or operation of transmission lines in the vicinity of important feeding or roosting areas. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance – Habitat fragmentation depending on the location of the driving and receiving compounds there is a risk of temporary disturbance of species during construction works in the vicinity of important feeding or roosting areas.	Mitigation measures outlined in in Section 7.4.1, Box 7J in relation to disturbance affecting SPA bird species from European sites and mitigation measures outlined in in Section 7.4.1, Box 7K in relation to mortality to SPA birds from collision.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Cork Harbour SPA	0.00 km (within proposed study area)	A004 Little corn <i>Tachybaptus ruficollis</i> +++ A005 Great Crested Grebe <i>Podiceps cristatus</i> +++ A017 Cormorant <i>Phalacrocorax carbo</i> +++ A028 Grey Heron <i>Ardea cinerea</i> + A048 Shelduck <i>Tadorna tadorna</i> +++ A050 Wigeon <i>Anas penelope</i> +++ A052 Teal <i>Anas crecca</i> +++ A054 Pintail <i>Anas acuta</i> +++ A056 Shoveler <i>Anas clypeata</i> +++ A069 Red-breasted Merganser (<i>Mergus serrator</i>)+++ A130 Oystercatcher <i>Haematopus ostralegus</i> ++ A140 Golden Plover <i>Pluvialis apricaria</i> ++ A141 Grey Plover <i>Pluvialis squatarola</i> ++ A142 Lapwing <i>Vanellus</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A156 Black-tailed Godwit <i>Limosa limosa</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++	Non-b A193 Breed	Habitat Fragmentation – disturbance depending on the location of the tower foundations, possible disturbance associated with the construction or operation of transmission lines in the vicinity of important feeding or roosting areas. Mortality – (collision/ electrocution) risk with OHL during operation.	Disturbance - Habitat fragmentation depending on the location of the driving and receiving compounds there is a risk of temporary disturbance of species during construction works in the vicinity of important feeding or roosting areas.	Mitigation measures outlined in in Section 7.4.1, Box 7J in relation to disturbance affecting SPA bird species from European sites and mitigation measures outlined in in Section 7.4.1, Box 7K in relation to mortality to SPA birds from collision.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway		Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
				(Option – OHL land circuit between the converter station and the connection point to the Irish grid)	(Option – UGC used for all land circuits, and the sea cable)			
		A160 Curlew <i>Numenius arquata</i> ++ A162 Redshank <i>Tringa totanus</i> ++ A179 Black-headed Gull <i>Chroicocephalus ridibundus</i> + A182 Common Gull <i>Larus canus</i> + A183 Lesser Black-backed Gull <i>Larus fuscus</i> + A193 Common Tern <i>Sterna hirundo</i> + A999 Wetland and Waterbirds						
Helvick Head to Ballyquin SPA	7.33 km	A017 Cormorant <i>Phalacrocorax carbo</i> +++ A103 Peregrine <i>Falco peregrinus</i> + A184 Herring Gull <i>Larus argentatus</i> + A188 Kittiwake <i>Rissa tridactyla</i> + A346 Chough <i>Pyrrhocorax pyrrhocorax</i> ++	Breed Perm Breed Breed Perm	This SPA is not within the project boundary and the OHL connection would not likely transect the site. Given the absence of direct interactions with the site (e.g. relating to habitat loss and disturbance to roosts) and given the vast extent of foraging habitat available, no significant pathways to the breeding or resident features of this SPA have been identified.	Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Sovereign Islands SPA	13.39 km	A017 Cormorant <i>Phalacrocorax carbo</i> +++	Breed	This SPA is not within the project boundary and the OHL connection would not likely transect the site. Given the absence of direct interactions with the site (e.g. habitat loss, disturbance) and the vast extent of foraging habitat available, no significant pathways to the breeding cormorant feature of this SPA have been identified.	Given the distance of the SPA from the project boundary, no significant impact pathways have been identified between UGC option and this European site.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Table D1.7: Source-Pathway- Receptor Analysis – potential impact pathways from of the **Shannon Crossing project** to SACs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Potential Impact Pathway	Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
Lower River Shannon SAC	0.00 km (within proposed study area)	<p>Annex I habitats</p> <p>1170 Reefs</p> <p>1110 Sandbanks which are slightly covered by sea water all the time</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1150 Coastal lagoons</p> <p>1160 Large shallow inlets and bays</p> <p>1220 Perennial vegetation of stony banks</p> <p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>1310 Salicornia and annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows <i>Glauco-Puccinellietalia maritima</i></p> <p>1410 Mediterranean salt meadows <i>Juncetalia maritimi</i></p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils <i>Molinia caerulea</i></p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>, <i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i></p> <p>Annex II species</p> <p>1349 <i>Tursiops truncatus</i></p> <p>1355 <i>Lutra lutra</i></p> <p>1029 <i>Margaritifera margaritifera</i></p> <p>1095 <i>Petromyzon marinus</i></p> <p>1096 <i>Lampetra planeri</i></p> <p>1099 <i>Lampetra fluviatilis</i></p> <p>1106 <i>Salmo salar</i></p>	<p>Habitat loss – as the cable will be laid on the inter-tidal area, there is a risk of habitat loss / damage of any habitats along the cable route, potentially direct loss of (1110) (1130) (1140) (1160) (1170) (1220) (1310) (1330) (1410) (6410) (91E0). Habitat loss could be both permanent (to accommodate the cable and due to scour) and temporary (to accommodate plant and construction works).</p> <p>Habitat degradation – smothering the laying of the submarine cable (jetting of soft sediment with air, ploughing to remove boulders, or rock dumping to bury the cable) could lead to increased suspended sediment and smothering of reef features (1170). The suspension of contaminated sediment could also affect sensitive reef communities</p> <p>Habitat fragmentation – Disturbance - noise and visual the laying of the submarine cable and onshore works could result in localised, temporary disturbance to marine species, dolphin (1349) and otter (1355), leading to avoidance of particular areas during the works.</p> <p>Habitat degradation and mortality risk – pollution of water courses during construction works could impact Annex I habitats, aquatic species (1349) (1355) (1029) and their prey. Pollution could directly affect migrating fish (1095) (1096) (1099) (1103) (1106) and restrict access to spawning habitat.</p>	<p>Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats)</p> <p>Also, the approach to mitigation measures outlined in Section 7.5.1, Box 7L for mitigation in relation to habitat loss (Annex I habitat, Section 7.5.1, Box 7M in relation to disturbance of aquatic species.</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N
Tullaheer Lough and Bog SAC	1.17 km	<p>Annex I habitats</p> <p>7110 Active raised bogs</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p> <p>7140 Transition mires and quaking bogs 7150 Depressions on peat substrates of the <i>Rhynchosporion</i>.</p>	<p>This SAC is not within the project boundary. Given the absence of any hydrological links to the project area, no potential impact pathways have been identified.</p>	N/A	<p>No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

Table D1.8: Source-Pathway- Receptor Analysis – potential impact pathways from of the **Shannon Crossing project** to SPAs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Study Area (Km)	Qualifying Interests	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway	Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
River Shannon and River Fergus Estuaries SPA	0.00 km (within proposed study area)	A017 Cormorant <i>Phalacrocorax carbo</i> +++ A038 Whooper Swan <i>Cygnus cygnus</i> +++ A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A048 Shelduck <i>Tadorna tadorna</i> +++ A050 Wigeon <i>Anas penelope</i> +++ A052 Teal <i>Anas crecca</i> +++ A054 Pintail <i>Anas acuta</i> +++ A056 Shoveler <i>Anas clypeat</i> +++ A062 Scaup <i>Aythya marila</i> +++ A137 Ringed Plover <i>Charadrius hiaticula</i> ++ A140 Golden Plover <i>Pluvialis apricaria</i> ++ A141 Grey Plover <i>Pluvialis squatarola</i> ++ A142 Lapwing <i>Vanellus vanellus</i> ++ A143 Knot <i>Calidris canutus</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A156 Black-tailed Godwit <i>Limosa limosa</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ A160 Curlew <i>Numenius arquata</i> ++ A162 Redshank <i>Tringa totanus</i> ++ A164 Greenshank <i>Tringa nebularia</i> ++ A179 Black-headed Gull <i>Chroicocephalus ridibundus</i> + A999 Wetland and Waterbirds	Non-b	Supporting habitat loss – as the submarine cable across the Shannon Estuary would be laid on land on the estuary shore and the inter-tidal area, there is a risk of supporting habitat loss (wetland and estuarine) along the cable route. Disturbance – noise and visual – there is a risk of temporary disturbance, particularly in the vicinity of important feeding or roosting areas. Sources of disturbance include the cable laying and the construction of the new station at Kilpaddocke.	Based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats). Also, the approach to mitigation outlined in Section 7.5.1, Box 7L in relation to supporting habitat loss, and Section 7.5.1, Box 7M in relation to disturbance of SPA bird species.	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	6.80 km	A082 Hen Harrier <i>Circus cyaneus</i> +	Perm	Supporting habitat loss – none anticipated. This SPA is not within the project boundary. As foraging habitat preferences of hen harriers are generally biased towards moorland/grassland and nesting within pre-thicket forest habitats. No supporting habitat within the zone of influence.	N/A	Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Mid-Clare Coast SPA	14.94 km	A017 Cormorant <i>Phalacrocorax carbo</i> +++ A045 Barnacle Goose <i>Branta leucopsis</i> +++ A137 Ringed Plover <i>Charadrius hiaticula</i> ++ A144 Sanderling <i>Calidris alba</i> ++ A148 Purple Sandpiper <i>Calidris maritima</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A169 Turnstone <i>Arenaria interpres</i> ++ A999 Wetland and Waterbirds	Non-b Breed (A017)	This SPA is not within the project boundary and there would be no direct interactions with the favoured wintering habitat protected within the site. No impact pathways identified.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Table D1.9: Source-Pathway- Receptor Analysis – potential impact pathways from of the **Great Island to Kilkenny 100Kv uprate project** SACs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Project Boundary	Qualifying Interests	Potential Impact Pathway	Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
River Barrow and River Nore SAC	0.00 km (within proposed study area)	<p>Annex I habitats</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1170 Reefs</p> <p>1310 Salicornia and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows <i>Glauco-Puccinellietalia maritimae</i></p> <p>1410 Mediterranean salt meadows <i>Juncetalia maritimi</i></p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</p> <p>4030 European dry heaths</p> <p>6430 <i>Hydrophilous</i> tall herb fringe communities of plains and of the montane to alpine levels</p> <p>7220 Petrifying springs with tufa formation <i>Cratoneurion</i></p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>, <i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i></p> <p>Annex II species</p> <p>1016 <i>Vertigo moulinsiana</i></p> <p>1029 <i>Margaritifera margaritifera</i></p> <p>1092 <i>Austropotamobius pallipes</i></p> <p>1095 <i>Petromyzon marinus</i></p> <p>1096 <i>Lampetra planeri</i></p> <p>1099 <i>Lampetra fluviatilis</i></p> <p>1103 <i>Alosa fallax fallax</i></p> <p>1106 <i>Salmo salar</i></p> <p>1355 <i>Lutra lutra</i></p> <p>1421 <i>Trichomanes speciosum</i></p> <p>1990 <i>Margaritifera durrovensis</i></p>	<p>While none of the proposed works are located within the SAC boundary (with exception of overhead line oversail) therefore potential for habitat loss within the SAC has been ruled out. The transmission line does not cross any areas where woodland qualifying interests are present.</p> <p>Habitat degradation – water quality – due to the location of the structures at Great Island and the Estuary crossing, there is potential for pathways of impact to the estuarine habitats for which the SAC is designated (mudflats, Salicornia). There is also potential for pathways of impact to receiving habitats, freshwater habitats and species in particular.</p> <p>Mortality risk – pollution of water courses during construction (associated with sediment runoff and/or accidental spillage) could impact sensitive aquatic species (1016) (1029) (1092) and migrating fish (1095) (1096) (1103) (1106) (1990) and restrict access to up-river spawning or foraging habitat.</p> <p>Disturbance – disturbance (noise and visual) of foraging otter during construction works (1355).</p>	<p>Also, the approach to mitigation outlined Section 7.5.2, Box 7S in relation to habitat degradation and species mortality (hydrogeology/ water quality) and the approach to mitigation outlined in Section 7.5.2 in relation to species disturbance (otter) See Box 7N.</p>	<p>Following the implementation of appropriate mitigation (where required) and following the key principles for protecting European sites, there will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.</p>	N

Table D1.10: Source-Pathway- Receptor Analysis – potential impact pathways from of the **Great Island to Kilkenny 100Kv uprate project** to SPAs and mitigation measures. Unless otherwise stated impacts are considered direct impacts.

European Sites	Distance from Proposed Project (Km)	Qualifying Interests +++ indicates Annex I species with high susceptibility to collision with OHLs ++ indicates medium susceptibility + indicates low susceptibility (EirGrid, 2012)	Breeding (Breed)/ Non-breeding (Non-b)	Potential Impact Pathway	Mitigation Measures	Conclusion	Adverse Effects on Site Integrity (Y/N)
River Nore SPA	0.00 km (within proposed study area)	A229 Kingfisher <i>Alcedo atthis</i> +	Breed	The existing transmission line oversails the River Nore at point where it is designated SPA for Kingfisher. The SPA follows the river channel and its banks. Examination of the crossing point at this location (for the AA screening) shows clearly that the pole sets to be replaced are outside of the SPA and the replacement of these structures would be unlikely to cause any potential impact on the habitat requirements of Kingfisher or their nest sites. While the overhead line oversails the river, it is at an elevated position, and does not pose any treat to individual kingfisher birds through collision or displacement. There is no requirement for bankside works, instream works or vegetation clearance at this point. Potential impacts to the River Nore SPA and the conservation objective to maintain the favourable conservation status of breeding Kingfisher are highly unlikely.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Bannow Bay SPA	11.9km	A046 Light-bellied Brent Goose <i>Branta bernicla hrot</i> +++ A048 Shelduck <i>Tadorna tadorna</i> +++ A054 Pintail <i>Anas acuta</i> +++ A130 Oystercatcher <i>Haematopus ostralegus</i> ++ A140 Golden Plover <i>Pluvialis apricaria</i> ++ A141 Grey Plover <i>Pluvialis squatarola</i> ++ A142 Lapwing <i>Vanellus vanellus</i> ++ A143 Knot <i>Calidris canutus</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A156 Black-tailed Godwit <i>Limosa limosa</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ A160 Curlew <i>Numenius arquata</i> ++ A162 Redshank <i>Tringa totanus</i> ++ A999 Wetland and Waterbirds	Non-b	This project comprises the uprating of an existing line, this will involve the replacement of a number support structures including angle masts and wooden pole setover. This SPA is over 11km from the proposed works and as such impacts relating to loss of supporting habitat, disturbance and or habitat degradation have been ruled out.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N
Tramore Back Strand SPA	13km	A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> +++ A140 Golden Plover <i>Pluvialis apricaria</i> ++ A141 Grey Plover <i>Pluvialis squatarola</i> ++ A142 Lapwing <i>Vanellus vanellus</i> ++ A149 Dunlin <i>Calidris alpina</i> ++ A156 Black-tailed Godwit <i>Limosa limosa</i> ++ A157 Bar-tailed Godwit <i>Limosa lapponica</i> ++ A160 Curlew <i>Numenius arquata</i> ++ A999 Wetland and Waterbirds	Non-b	This project comprises the uprating of an existing line, this will involve the replacement of a number support structures including angle masts and wooden pole sets. This SPA is over 11km from the proposed works and as such impacts relating to loss of supporting habitat, disturbance and or habitat degradation have been ruled out.	N/A	No potential impact pathways identified. No potential for LSEs. There will be no adverse effects on the integrity of this European site, either alone or in-combination with other plans or projects.	N

Appendix E. QIs and SCIs of Affected European Site and their SSCOs

Table E1.1: Conservation Objectives (CO) for Qualifying Interest (QI) – Otter

1355 Otter <i>Lutra lutra</i> To maintain the favourable conservation condition of otter, which is defined by the following list of attributes and targets. To note: Specific CO for otter are taken from the River Moy SAC (002298) and thus are applicable to this area only. (NPWS, 2016a)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution	% positive survey sites.	No significant decline.	M	-	F	-	WQ	D	
Extent of terrestrial habitat	Hectares.	No significant decline. Area mapped and calculated as 1068.8ha.	-	-	F	-	WQ	-	
Extent of freshwater (river) habitat	Kilometres.	No significant decline. Length mapped and calculated as 479.4km	-	-	F	-	WQ	-	
Extent of freshwater (lake) habitat	Kilometres.	No significant decline. Area mapped and calculated as 1248.2ha.	-	-	F	-	WQ	-	
Couching sites and holts	Number.	No significant decline.	-	-	-	-	-	-	
Fish biomass available	Kilograms.	No significant decline.	-	-	-	-	WQ	-	
Barriers to connectivity	Number.	No significant increase.	-	-	F	-	-	-	

* No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex SAC, Lough Melvin SAC, Unshin River SAC

Table E1.2: Conservation Objectives (CO) for Qualifying Interest (QI) – Sea lamprey

1095 Sea lamprey <i>Petromyzon marinus</i> To maintain the favourable conservation condition of sea lamprey, which is defined by the following list of attributes and targets. To note: Specific CO for sea lamprey are taken from the River Moy SAC (002298), Lower River Shannon SAC (002165) and River Barrow and River Nore SAC (002162) and thus are applicable to these areas only (NPWS, 2016a)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution: extent of anadromy	% of river accessible.	Greater than 75% of main stem length of rivers accessible from estuary.	-	L	-	-	WQ	-	
Population structure of juveniles	Number of age/size groups.	At least three age/size groups present.	M	-	-	-	WQ	-	
Juvenile density in fine sediment	Juveniles/m ² .	Mean catchment juvenile density at least 1/m ² .	M	-	-	-	WQ	-	
Extent and distribution of spawning habitat	m ² and occurrence.	No decline in extent and distribution of spawning beds.	-	L	-	-	WQ	-	
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas.	More than 50% of sample sites positive.	-	L	-	-	WQ	-	

* No detailed Conservation Objectives for Lough Gill SAC

**Detailed Conservation Objective for Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627] but Attribute only for 'Distribution: extent of anadromy'. Not representative of majority of SAC therefore River Moy SAC Conservation Objectives used.

Table E1.3: Conservation Objectives (CO) for Qualifying Interest (QI) – White-clawed Crayfish

1092 White-clawed crayfish <i>Austropotamobius pallipes</i> To maintain the favourable conservation condition of white-clawed crayfish, which is defined by the following list of attributes and targets. To note: Specific CO for white-clawed crayfish are taken from the River Moy SAC (002298), Lough Hoe Bog SAC (000633) and River Barrow and River Nore SAC (002162) and thus are applicable to these areas only (NPWS, 2016a)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution	Occurrence.	No reduction from baseline.	M	L	-	-	WQ		
Population structure: recruitment	Occurrence of juveniles and females with eggs.	Juveniles and/or females with eggs in all occupied tributaries.	M	-	-	-	WQ		
Negative indicator species	Occurrence.	No alien crayfish species.	-	-	-	-	-		
Disease	Occurrence.	No instances of disease.	-	-	-	-	-		
Water quality	EPA Q value.	At least Q3-4 at all sites sampled by EPA.	-	-	-	H	WQ		
Habitat quality: heterogeneity	Occurrence of positive habitat features.	No decline in heterogeneity or habitat quality.	-	L	-	-	WQ		

* No detailed Conservation Objectives for Glenade Lough SAC. Lough Gill SAC

Table E1.4: Conservation Objectives (CO) for Qualifying Interest (QI) – Brook/river lamprey

1096 Brook lamprey <i>Lampetra planeri</i> To maintain the favourable conservation condition of brook lamprey, which is defined by the following list of attributes and targets. To note: Specific CO for brook lamprey are taken from the River Moy SAC (002298), Lower River Shannon SAC (002165) and River Barrow and River Nore SAC and thus are applicable to these areas only (NPWS, 2016a)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution: extent of anadromy	% of river accessible.	Access to all watercourses down to first order streams.	-	L	-	-	WQ	-	
Population structure of juveniles	Number of age/size groups.	At least three age/size groups present of brook/river lamprey present (as it is impossible to distinguish between brook and river lamprey juveniles in the field they are considered together in this target).	M	-	-	-	WQ	-	
Juvenile density in fine sediment	Juveniles/m ² .	Mean catchment juvenile density of brook/river lamprey at least 2/m ² .	M	-	-	-	WQ	-	
Extent and distribution of spawning habitat	m ² and occurrence.	No decline in extent and distribution of spawning beds.	-	L	-	-	WQ	-	
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas.	More than 50% of sample sites positive.	-	L	-	-	WQ	-	

* No detailed Conservation Objectives for Lough Gill SAC

**Detailed Conservation Objective for Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627] but Attribute only for 'Distribution: extent of anadromy'. Not representative of majority of SAC therefore River Moy SAC Conservation Objectives used.

Table E1.5: Conservation Objectives (CO) for Qualifying Interest (QI) –Atlantic Salmon

1106 Salmon <i>Salmo salar</i> To maintain the favourable conservation condition of salmon, which is defined by the following list of attributes and targets. To note: Specific CO for salmon are taken from the River Moy SAC (002298), Lower River Shannon SAC (002165) and River Barrow and River Nore SAC and thus are applicable to these areas only (NPWS, 2016a)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution: extent of anadromy	% of river accessible.	100% of river channels down to second order accessible from estuary.	-	L	-	-	WQ	-	
Adult spawning fish	Number.	Conservation Limit (CL) for each system consistently exceeded.	M	-	-	-	WQ	-	
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.	M	-	-	-	WQ	-	
Out-migrating smolt abundance	Number.	No significant decline.	M	-	-	-	WQ	-	
Number and distribution of redds	Number and occurrence.	No decline in number and distribution of spawning redds due to anthropogenic causes.	-	L	-	-	WQ	-	
Water quality	EPA Q value.	At least Q4 at all sites sampled by EPA.	-	-	-	-	WQ	-	

* No detailed Conservation Objectives for Lough Eske and Ardnamona Wood SAC, Lough Gill SAC, Lough Melvin SAC, Unshin River SAC

Table E1.6: Conservation Objectives (CO) for Qualifying Interest (QI) – Freshwater Pearl Mussel

1029 Freshwater pearl mussel <i>Margaritifera margaritifera</i> To restore the favourable conservation condition of freshwater pearl mussel, which is defined by the following list of attributes and targets. To note: Specific CO for freshwater pearl mussel are taken from the Lower Shannon SAC (002165) and Blackwater River (Cork/Waterford) SAC (002170) and thus are applicable to these areas only (NPWS, 2012a).									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution	Kilometres.	Maintain at 7km.	M	-	-	-	WQ	-	
Population size	Number of adult mussels.	Restore to 10,000 adult mussels.	M	-	-	-	WQ	-	
Population structure: recruitment	% per size class.	Restore to least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length.	M	-	-	-	WQ	-	

1029 Freshwater pearl mussel <i>Margaritifera margaritifera</i>								
To restore the favourable conservation condition of freshwater pearl mussel, which is defined by the following list of attributes and targets.								
To note: Specific CO for freshwater pearl mussel are taken from the Lower Shannon SAC (002165) and Blackwater River (Cork/Waterford) SAC (002170) and thus are applicable to these areas only (NPWS, 2012a).								
Population structure: adult mortality	%	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution.	M	-	-	-	WQ	-
Habitat extent	Kilometres.	Restore suitable habitat in more than 3.3km and any additional stretches necessary for salmonid spawning.	-	-	-	-	WQ	-
Water quality: macroinvertebrate and phytobenthos (diatoms)	Ecological quality ratio (EQR).	Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93.	-	-	-	-	WQ	-
Substratum quality: filamentous algae (macroalgae), macrophytes (rooted higher plants)	%	Restore substratum quality-filamentous algae: absent or trace (<5%); macrophytes: absent or trace (<5%)	-	-	-	-	WQ	-
Substratum quality: sediment	Occurrence.	Restore substratum quality-stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.	-	-	-	-	WQ	-
Substratum quality: oxygen availability	Redox potential.	Restore to no more than 20% decline from water column to 5cm depth in substrate.	-	-	-	-	WQ	-
Hydrological regime: flow variability	Metres per second.	Restore appropriate hydrological regimes.	-	-	-	-	-	-
Host fish	Number.	Maintain sufficient juvenile salmonids to host glochidial larvae.	-	-	-	-	WQ	-

* No detailed Conservation Objectives for Lough Eske and Ardnamona Wood/ River Barrow and River Nore/ Newport River/ Lower River Suir SAC

Table E1.7: Conservation Objectives (CO) for Qualifying Interest (QI) – Geyer’s whorl snail

1013 Geyer’s whorl snail <i>Vertigo geyeri</i>								
To maintain the favourable conservation condition of Geyer’s whorl snail, which is defined by the following list of attributes and targets.								
To note: Specific CO for Geyer’s whorl snail are taken from the West of Ardra/Maas Road SAC (000197) and thus are applicable to this area only (NPWS, 2015)								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution: occupied sites	Number.	No decline. There is one known site for this species in this SAC within the 1km square G6995.	M	L	-	-	-	-
Presence in suitable habitat	Occurrence.	Snails (living or recently dead adults and/or juveniles) are present in all polygons of suitable habitat defined as at least sub-optimal and in 60% of samples defined as optimal and 20% of samples defined as suboptimal.	M	L	-	-	-	-
Habitat area	Hectares.	Stable or increasing, subject to natural processes and at least 14ha. Suitable habitat is defined as areas of flushed fen with small sedges and saturated mosses.	-	L	-	H	WQ	-
Habitat quality: optimal habitat	% area.	At least 15% of the suitable habitat should be classed as optimal.	-	L	-	H	WQ	-
Habitat quality: soil wetness	% of monitoring transect; % of a representative number of monitoring stops.	75% of transect should be classified as optimal wetness or 75% of a representative number of sampling stops in areas of optimal habitat should be classified as optimal wetness as defined by (Moorkens and Killeen 2011 ¹⁹).	-	-	-	H	-	-

*No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex SAC

¹⁹Moorkens. & Killeen, I.J. (2011) Monitoring and Condition Assessment of Populations of *Vertigo geyeri*, *Vertigo angustior* and *Vertigo moulinsiana* in Ireland. Irish Wildlife Manuals, No. 55. National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht, Dublin, Ireland.

Table E1.8: Conservation Objectives (CO) for Qualifying Interest (QI) – Slender naiad

1833 Slender naiad <i>Najas flexilis</i>									
To restore the favourable conservation condition of slender naiad <i>Najas flexilis</i> , which is defined by the following list of attributes and targets.									
To note: Specific CO for slender naiad <i>Najas flexilis</i> are taken from the Lough Corrib SAC (000297) and thus are applicable to this area only (NPWS, 2017).									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population extent	Hectares; distribution.	Restore the spatial extent of <i>Najas flexilis</i> within the lake, subject to natural processes.	-	-	-	-	WQ	-	
Population depth	Metres.	Restore the depth range of <i>Najas flexilis</i> within the lake, subject to natural processes.	-	-	-	-	WQ	-	
Population viability	Plant traits.	Restore plant fitness, subject to natural processes.	-	-	-	-		-	
Population abundance	Square metres.	Restore the cover abundance of <i>Najas flexilis</i> , subject to natural processes.	-	-	-	-	WQ	-	
Species distribution	Occurrence.	Restore to at least the north-western bay, subject to natural processes.	-	-	-	-	WQ	-	
Habitat extent	Hectares.	Restore, subject to natural processes.	-	-	-	-	WQ	-	
Hydrological regime: water level fluctuations	Metres.	Maintain appropriate natural hydrological regime necessary to support the habitat for the species.	-	-	-	-	-	-	
Lake substratum quality	Various.	Restore appropriate substratum type, extent and chemistry to support the population of the species.	-	-	-	-	WQ	-	
Water quality	Various.	Restore appropriate water quality to support the population of the species.	-	-	-	-	WQ	-	
Acidification status	pH units; mg/l.	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the population of <i>Najas flexilis</i> , subject to natural processes	-	-	-	-	WQ	-	
Water colour	mg/l PtCo.	Restore/maintain appropriate water colour to support the population of <i>Najas flexilis</i> .	-	-	-	-	-	-	
Associated species	Species composition and abundance.	Restore appropriate associated species and vegetation communities to support the population of <i>Najas flexilis</i> .	-	-	-	-	-	-	
Fringing habitat: area and condition	Hectares.	Maintain the area and condition of fringing habitats necessary to support the population of <i>Najas flexilis</i> .	-	-	-	-	-	-	

* No detailed Conservation Objectives for Glenade Lough SAC

Table E1.9: Conservation Objectives (CO) for Qualifying Interest (QI) – Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*

3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>									
To restore the favourable conservation condition of oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> , which is defined by the following list of attributes and targets.									
To note: Specific CO for oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> are taken from the Lough Corrib SAC (000297) and thus are applicable to this area only (NPWS, 2017)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	-	-	-	WQ	-	
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	-	-	-	WQ	-	
Typical species	Occurrence.	Typical species present, in good condition, and demonstrating typical abundances and distribution.	-	-	-	-	WQ	-	
Vegetation composition: characteristic zonation	Occurrence.	All characteristic zones should be present, correctly distributed and in good condition.	-	-	-	-	WQ	-	
Vegetation distribution: maximum depth	Metres.	Restore maximum depth of vegetation, subject to natural processes.	-	-	-	-	WQ	-	

3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>								
To restore the favourable conservation condition of oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> , which is defined by the following list of attributes and targets.								
To note: Specific CO for oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> are taken from the Lough Corrib SAC (000297) and thus are applicable to this area only (NPWS, 2017)								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Hydrological regime: water level fluctuations	Metres.	Maintain appropriate natural hydrological regime necessary to support the habitat.	-	-	-	-	-	-
Lake substratum quality	Various.	Restore appropriate substratum type, extent and chemistry to support the vegetation.	-	-	-	-	WQ	-
Water quality: transparency	Metres.	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency.	-	-	-	-	WQ	-
Water quality: nutrients	ug/l P; mg/l N.	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species.	-	-	-	-	WQ	-
Water quality: phytoplankton biomass	ug/l Chlorophyll a.	Restore appropriate water quality to support the habitat, including high chlorophyll a status.	-	-	-	-	WQ	-
Water quality: phytoplankton composition	EPA phytoplankton composition metric.	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status.	-	-	-	-	WQ	-
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric.	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status.	-	-	-	-	WQ	-
Water quality: macrophyte status	EPA macrophyte metric (The Free Index).	Maintain high macrophyte status.	-	-	-	-	WQ	-
Acidification status	pH units; mg/l.	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes.	-	-	-	-	WQ	-
Water colour	mg/l PtCo.	Restore/maintain appropriate water colour to support the habitat.	-	-	-	-	WQ	-
Dissolved organic carbon (DOC)	mg/l.	Restore/maintain appropriate organic carbon levels to support the habitat.	-	-	-	-	WQ	-
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units.	Restore/maintain appropriate turbidity to support the habitat.	-	-	-	-	WQ	-
Fringing habitat: area and condition	Hectares.	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130.	-	-	-	-	WQ	-

* No detailed Conservation Objectives for Lough Eske and Ardnamona Wood SAC, Lough Melvin SAC

Table E1.10: Conservation Objectives (CO) for Qualifying Interest (QI) – Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation

3150 Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation								
To restore the favourable conservation condition of natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation, which is defined by the following list of attributes and targets.								
To note: Specific CO for natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation are taken from the Lough Ree SAC (000440) and thus are applicable to this area only (NPWS, 2016b)								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	-	-	-	WQ	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	-	-	-	WQ	-
Typical species	Occurrence.	Typical species present, in good condition, and demonstrating typical abundances and distribution.	-	-	-	-	WQ	-
Vegetation composition: characteristic zonation	Occurrence.	All characteristic zones should be present, correctly distributed and in good condition.	-	-	-	-	WQ	-
Vegetation distribution: maximum depth	Metres.	Maintain maximum depth of vegetation, subject to natural processes.	-	-	-	-	WQ	-
Hydrological regime: water level fluctuations	Metres.	Maintain appropriate natural hydrological regime necessary to support the habitat.	-	-	-	-	-	-

3150 Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation								
To restore the favourable conservation condition of natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation, which is defined by the following list of attributes and targets.								
To note: Specific CO for natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation are taken from the Lough Ree SAC (000440) and thus are applicable to this area only (NPWS, 2016b)								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Lake substratum quality	Various.	Maintain appropriate substratum type, extent and chemistry to support the vegetation.	-	-	-	-	WQ	-
Water quality: transparency	Metres.	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency.	-	-	-	-	WQ	-
Water quality: nutrients	ug/l P; mg/l N.	Maintain the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species.	-	-	-	-		-
Water quality: phytoplankton biomass	ug/l Chlorophyll a.	Maintain appropriate water quality to support the habitat, including high chlorophyll a status.	-	-	-	-	WQ	-
Water quality: phytoplankton composition	EPA phytoplankton composition metric.	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status.	-	-	-	-	WQ	-
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric.	Maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status.	-	-	-	-	WQ	-
Water quality: macrophyte status	EPA macrophyte metric (The Free Index).	Restore high macrophyte status.	-	-	-	-	WQ	-
Acidification status	pH units; mg/l.	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes.	-	-	-	-	WQ	-
Water colour	mg/l PtCo.	Maintain appropriate water colour to support the habitat.	-	-	-	-		-
Dissolved organic carbon (DOC)	mg/l.	Maintain appropriate organic carbon levels to support the habitat.	-	-	-	-	WQ	-
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units.	Maintain appropriate turbidity to support the habitat.	-	-	-	-	WQ	-
Fringing habitat: area and condition	Hectares.	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130.	-	-	-	-	-	-

* No detailed Conservation Objectives for Glenade Lough/ Lough Gill/ Ben Bulbin, Gleniff and Glenade Complex/ Unshin River SAC

Table E1.11: Conservation Objectives (CO) for Qualifying Interest (QI) – Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation

3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation								
To maintain the favourable conservation condition of water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation, which is defined by the following list of attributes and targets.								
To note: Specific CO for water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation are taken from the Lough Corrib SAC (000297) and thus are applicable to this area only (NPWS, 2016b).								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Kilometres.	Area stable or increasing, subject to natural processes.	-	-	-	H	WQ	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	-	-		WQ	-
Hydrological regime: river flow	Metres per second.	Maintain appropriate hydrological regimes.	-	-	-	H	-	-
Hydrological regime: groundwater discharge	Metres per second.	Maintain appropriate hydrological regime.	-	-	-	H	-	-
Substratum composition: particle size range	Millimetres.	Maintain appropriate water quality to support the natural structure and functioning of the habitat.	-	-	-	-	WQ	-
Vegetation composition: typical species	Occurrence.	Typical species of the relevant habitat sub-type should be present and in good condition.	-	-	-	-	WQ	-
Floodplain connectivity: area	Hectares.	The area of active floodplain at and upstream of the habitat should be maintained.	-	-	-	H	-	-
Riparian habitat: area	Hectares.	Maintain the area and condition of fringing habitats necessary to support	-	-	-	H	-	-

3260 Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation								
To maintain the favourable conservation condition of water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation, which is defined by the following list of attributes and targets.								
To note: Specific CO for water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation are taken from the Lough Corrib SAC (000297) and thus are applicable to this area only (NPWS, 2016b).								
		the habitat and its sub-types.						

* No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex SAC, Unshin River/ Templehouse and Cloonacleigha Loughs SAC

Table E1.12: Conservation Objectives (CO) for Qualifying Interest (QI) – Killarney Fern

1421 Killarney Fern <i>Trichomanes speciosum</i>								
To maintain the favourable conservation condition of Killarney Fern <i>Trichomanes speciosum</i> , which is defined by the following list of attributes and targets.								
To note: Specific CO for Killarney Fern <i>Trichomanes speciosum</i> are taken from the Blackwater River (Cork/Waterford) SAC [9002170] and River Barrow and River Nore SAC [002162] and thus are applicable to this area only (NPWS, 2012b).								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution	Location.	No decline. Two locations known within the SAC.	-	-	-	-	WQ	-
Population size	Number.	Maintain size and extent of existing colonies, including sporophyte frond counts and number of gametophyte patches.	-	-	-	-	WQ	-
Habitat extent	m ² .	No loss of suitable habitat, such as shaded rock crevices, caves or gullies in, or near to, known colonies. No loss of woodland canopy at or near to known locations.	-	-	-	-		-
Hydrological conditions: visible water	Occurrence.	Maintain hydrological conditions at the locations so that all colonies are in dripping or damp seeping habitats, and water is visible at all locations.	-	-	-	-	WQ	-
Hydrological conditions: humidity	Number of desiccated fronds.	No increase. Presence of desiccated sporophyte fronds or gametophyte mats indicates conditions are unsuitable.	-	-	-	-	WQ	-
Light levels: shading	Percentage.	No changes due to anthropogenic impacts.	-	-	-	-		-
Invasive species	Occurrence.	Absent or under control.	-	-	-	-	-	-

* No detailed Conservation Objectives for Lough Eske and Ardnamona Wood SAC

Table E1.13: Conservation Objectives (CO) for Qualifying Interest (QI) – Petrifying springs and tufa formation (*Cratoneurion*)

7220 Petrifying springs and tufa formation (<i>Cratoneurion</i>)								
To maintain the favourable conservation condition of Petrifying springs and tufa formation (<i>Cratoneurion</i>), in Arroo Mountain SAC and River Barrow and River Nore SAC, which is defined by the following list of attributes and targets.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Square metres.	Area stable or increasing, subject to natural processes.	-	L	-	H	-	-
Habitat distribution	Occurrence.	No decline from current distribution.	-	L	-	H	-	-
Hydrological regime: height of water table; water flow	Metres; metres per second.	Maintain appropriate hydrological regimes.	-	-	-	H	-	-
Water quality	Water chemistry measures.	Maintain oligotrophic and calcareous conditions.	-	-	-	-	-	-
Vegetation composition: typical species	Occurrence.	Maintain typical species.	-	-	-	H	-	-

* No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, West Fermanagh Scarplands (UK0030300), Lough Eske and Ardnamona Wood SAC

Table E1.14: Conservation Objectives (CO) for Qualifying Interest (QI) – Oligotrophic waters containing very few minerals of sandy plains

3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)								
To restore the favourable conservation condition of oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>), which is defined by the following list of attributes and targets.								
To note: Specific CO for oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) are taken from the Lough Corrib SAC (000297) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					

			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	-	-	-	-	-
Habitat distribution	Occurrence.	No decline subject to natural processes.	-	-	-	-	WQ	-
Typical species	Occurrence.	Typical species present, in good condition, and demonstrating typical abundances and distribution.	-	-	-	-	WQ	-
Vegetation composition: characteristic zonation	Occurrence.	All characteristic zones should be present, correctly distributed and in good condition.	-	-	-	-	WQ	-
Vegetation distribution: maximum depth	Metres.	Restore maximum depth of vegetation, subject to natural processes.	-	-	-	-	WQ	-
Hydrological regime: water level fluctuations	Metres.	Maintain appropriate natural hydrological regime necessary to support the habitat.	-	-	-	H	-	-

* No detailed Conservation Objectives for Lough Eske and Ardnamona Wood SAC

Table E1.15: Conservation Objectives (CO) for Qualifying Interest (QI) – Turloughs

3180 Turloughs To maintain the favourable conservation condition of turloughs, which is defined by the following list of attributes and targets. To note: Specific CO for turloughs are taken from the Galway Bay SAC (000268) and thus are applicable to this area only (NPWS, 2013c).								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable at c.59ha or increasing, subject to natural processes.	-	-	-	-	-	-
Habitat distribution	Occurrence	No decline, subject to natural processes.	-	-	-	-	-	-
Hydrological regime: flood duration, frequency, area, depth; permanently flooded area	Various.	Appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat.	-	-	-	H	WQ	-
Soil type: area	Hectares.	Variety, area and extent of soil types necessary to support turlough vegetation and other biota.	-	-	-	-	-	-
Soil nutrient status: nitrogen and phosphorous	N and P concentration in soil.	Nutrient status appropriate to soil types.	-	-	-	-	-	-
Physical structure: bare ground	Presence.	Sufficient wet bare ground, as appropriate.	-	-	-	-	-	-
Chemical processes: calcium carbonate deposition and concentration	CaCO ₃ deposition rate/soil concentration.	Appropriate CaCO ₃ deposition rates and concentration in soil.	-	-	-	-	-	-
Water quality: nutrients; colour; phytoplankton; epiphyton	Various.	Appropriate water quality to support the natural structure and functioning of the habitat.	-	-	-	-	-	-
Active peat formation	Flood duration.	Active peat formation, where appropriate.	-	-	-	-	-	-
Vegetation composition: area of vegetation communities	Hectares.	Maintain area of sensitive and high conservation value vegetation communities/units at each turlough.	-	-	-	H	-	-
Vegetation composition: vegetation zonation	Distribution.	Maintain vegetation zonation/mosaic characteristic of each turlough.	-	-	-	H	-	-
Vegetation structure: sward height	Centimetres.	Sward heights appropriate to the vegetation unit, and a variety of sward heights across each turlough.	-	-	-	-	-	-
Typical species: terrestrial, wetland and aquatic plants, invertebrates and birds	Presence.	Maintain typical species within and across all turloughs.	-	-	-	H	-	-
Fringing habitats: area	Hectares.	Maintain marginal fringing habitats that support turlough vegetation, invertebrate, mammal and/or bird populations.	-	-	-	H	-	-
Vegetation structure: turlough woodland	Species diversity and woodland structure.	Maintain appropriate turlough woodland diversity and structure.	-	-	-	-	-	-

* No detailed Conservation Objectives for Dunmuckrum Turloughs SAC

Table E1.16: Conservation Objectives (CO) for Qualifying Interest (QI) –Active raised bogs

7110 Active raised bogs									
To restore the favourable conservation condition of active raised bogs, which is defined by the following list of attributes and targets.									
To note: Specific CO for active raised bogs are taken from the River Moy SAC (002298), Callow Bog SAC (000595) and Tullagher Lough and Bog SAC (002343) and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Restore area of active raised bog to 132.4ha, subject to natural processes.	-	L	-	H	-	-	-
Habitat distribution	Occurrence.	Restore the distribution and variability of active raised bog across the SAC.	-	L	-	H	-	-	-
High bog area	Hectares.	No decline in extent of high bog necessary to support the development and maintenance of active raised bog.	-	L	-	H	-	-	-
Hydrological regime: water levels	Centimetres.	Restore appropriate water levels throughout the site.	-	-	-	H	-	-	-
Hydrological regime: flow patterns	Flow direction; slope.	Restore, where possible, appropriate high bog topography, flow directions and slopes.	-	-	-	H	-	-	-
Transitional areas between high bog and adjacent mineral soils (including cutover areas)	Hectares; distribution.	Restore adequate transitional areas to support/protect active raised bog and the services it provides.	-	L	-	H	-	-	-
Vegetation quality: central ecotope, active flush, soaks, bog woodland	Hectares.	Restore 66.2ha of central ecotope/active flush/soaks/bog woodland as appropriate.	-	L	-	H	-	-	-
Vegetation quality: microtopographical features	Hectares.	Restore adequate cover of high quality microtopographical features.	-	L	-	H	-	-	-
Vegetation quality: bog moss (<i>Sphagnum</i>) species	% cover.	Restore adequate cover of bog moss (<i>Sphagnum</i>) species to ensure peat forming capacity.	-	L	-	H	-	-	-
Typical ARB species: flora	Occurrence.	Restore, where appropriate, typical active raised bog flora.	-	L	-	H	-	-	-
Typical ARB species: fauna	Occurrence.	Restore, where appropriate, typical active raised bog flora.	-	L	-	H	-	-	-
Elements of local distinctiveness	Occurrence.	Maintain features of local distinctiveness, subject to natural processes.	-	L	-	H	-	-	-
Negative physical indicators	% cover.	Negative physical features absent or insignificant.	-	-	-	H	-	-	-
Vegetation composition: native negative indicator species	% cover.	Native negative indicator species at insignificant levels.	-	-	-	H	-	-	-
Vegetation composition: non-native invasive species	% cover.	Non-native invasive species at insignificant levels and not more than 1% cover.	-	-	-	-	-	-	-
Air quality: nitrogen deposition	kg N/ha/year.	Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr.	-	-	-	-	-	-	-
Water quality	Hydrochemical measures.	Water quality on the high bog and in transitional areas close to natural reference conditions.	-	-	-	-	WQ	-	-

* No detailed Conservation Objectives for Tullaghanrock Bog/ Derrinea Bog/ Lough Dahybaun SAC (002354).

** No detailed Conservation Objectives for Degraded raised bogs still capable of natural regeneration rather the CO for this habitat is inherently linked to that of Active raised bogs (7110) and a separate CO has not been set in the River Moy SAC.

Table E1.17: Conservation Objectives (CO) for Qualifying Interest (QI) – Great Northern Diver

A003 Great Northern Diver <i>Gavia immer</i>									
To maintain the favourable conservation condition of great norther diver, which is defined by the following list of attributes and targets taken from Donegal Bay SPA (004151) (NPWS, 2012c)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution trend	% change.	Long term population trend stable or increasing.	M	-	-	-	-	-	D
Distribution	Range, timing and intensity of use of areas.	There should be no significant decrease in the range, timing or intensity of use of areas by great northern diver, other than that occurring from natural	M	-	-	-	-	-	D

A003 Great Northern Diver <i>Gavia immer</i> To maintain the favourable conservation condition of great northern diver, which is defined by the following list of attributes and targets taken from Donegal Bay SPA (004151) (NPWS, 2012c)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
		patterns of variation.							

Table E1.18: Conservation Objectives (CO) for Qualifying Interest (QI) – Light-bellied Brent Goose

A046 Light-bellied Brent Goose <i>Branta bernicla hrota</i> To maintain the favourable conservation condition of light-bellied brent goose, which is defined by the following list of attributes and targets taken from Donegal Bay SPA (004151), Ballysadare SPA (004129), River Shannon and River Fergus Estuaries SPA (004077), Ballyteige Burrow SPA (004020), Tramore Back Strand SPA (004027), Bannow Bay SPA (004033), Wexford Harbour and Slobbs SPA (4076) and Cummeen Strand SPA (004035) which all have the same measures and targets for this species.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	% change.	Long term population trend stable or increasing.	M	-	F	H	WQ	D	
Distribution	Range, timing and intensity of use of areas.	There should be no significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation.	M	-	F	H	WQ	D	

Table E1.19: Conservation Objectives (CO) for Qualifying Interest (QI) – Greenland White-fronted Goose

A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i> To maintain the favourable conservation condition of Greenland white-fronted goose, which is defined by the following list of attributes and targets taken from the Lough Swilly SPA (004075) (NPWS, 2011)									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution trend	% change.	Long term population trend stable or increasing.	M	-	-	-	-	D	
Distribution	Number and range of areas used by waterbirds.	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.	M	-	-	-	-	D	

* No detailed Conservation Objectives for Donegal Bay SPA (004151), Ballysadare Bay SPA (004129), Lough Conn (004228) and Cummeen Strand SPA (004035)

Table E1.20: Conservation Objectives (CO) for Qualifying Interest (QI) – Whooper Swan

A038 Whooper Swan <i>Cygnus cygnus</i> To maintain the favourable conservation condition of whooper swan, which is defined by the following list of attributes and targets taken from the River Shannon and River Fergus Estuaries SPA (004077) and Wexford Harbour and Slobbs SPA (NPWS, 2012d).									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution trend	% change.	Long term population trend stable or increasing.	M	-	-	-	-	D	
Distribution	Range, timing and intensity of use of areas.	There should be no significant decrease in the range, timing or intensity of use of areas by whooper swan other than that occurring from natural patterns of variation.	M	-	-	-	-	D	

* No detailed Conservation Objectives for Donegal Bay SPA (004151), Ballysadare Bay SPA (004129), Lough Gara (004048), Durmesh Lough SPA, Tacumshin Lake SPA and Cummeen Strand SPA (004035)

** Detailed Conservation Objectives for Wexford Harbour and Slobbs SPA for the same attributes

Table E1.21: Conservation Objectives (CO) for Qualifying Interest (QI) – Chough

A346 Chough <i>Pyrrhocorax pyrrhocorax</i> To maintain the favourable conservation condition of chough, which is defined by the following list of attributes and targets taken from the Trawbreaga Bay SPA (004034) (NPWs, 2014a).									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	

A346 Cough <i>Pyrhocorax pyrrhocorax</i> To maintain the favourable conservation condition of cough, which is defined by the following list of attributes and targets taken from the Trawbreaga Bay SPA (004034) (NPWs, 2014a).								
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution trend	% change.	Long term population trend stable or increasing.	M	-	-	-	-	D
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing and intensity of use of areas by cough, other than that occurring from natural patterns of variation.	M	L	-	-	-	D

* No detailed Conservation Objectives for Donegal Bay SPA (004151), Ballysadare Bay SPA (004129) and Cummeen Strand SPA (004035)

Table E1.22: Conservation Objectives (CO) for Qualifying Interest (QI) – Barnacle Goose

A045 Barnacle Goose <i>Branta leucopsis</i> To maintain the favourable conservation condition of barnacle goose, which is defined by the following list of attributes and targets taken from the Mid-Clare Coast SPA (004182) (NPWS, 2014b).								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution trend	% change.	Long term population trend stable or increasing.	M	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing and intensity of use of areas by cough, other than that occurring from natural patterns of variation.	M	-	-	-	-	-

* No detailed Conservation Objectives for Donegal Bay SPA (004151), Ballysadare Bay SPA (004129), Mid-Clare Coast SPA (004182), Ballintemple and Ballygilgan SPA (004234) and Cummeen Strand SPA (004035)

Table E1.23: Conservation Objectives (CO) for Qualifying Interest (QI) – Peregrine

A103 Peregrine <i>Falco peregrinus</i> Generic CO only are available for peregrin. 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. The objective is to maintain or restore the favourable conservation condition of a site.						
A species favourable conservation condition is achieved when:	Potential for Impact (none = blank space) and Impact Type (letter)					
	Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
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.	M	-	-	-	-	D
The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.	M	-	-	-	-	D
There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.	-	-	-	-	-	-

* No detailed Conservation Objectives for Donegal Bay SPA (004151), Ballysadare Bay SPA (004129) and Cummeen Strand SPA (004035)

Table E1.24: Conservation Objectives (CO) for Qualifying Interest (QI) – Merlin

A103 Merlin <i>Falco columbarius</i> Generic CO only are available for merlin. 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. The objective is to maintain or restore the favourable conservation condition of a site.						
A species favourable conservation condition is achieved when:	Potential for Impact (none = blank space) and Impact Type (letter)					
	Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
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.	M	-	-	-	-	-
The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.	M	-	-	-	-	-
There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.	-	-	-	-	-	-

* No detailed Conservation Objectives for Donegal Bay SPA (004151), Ballysadare Bay SPA (004129) and Cummeen Strand SPA (004035)

Table E1.25: Conservation Objectives (CO) for Qualifying Interest (QI) – Northern Atlantic wet heaths with *Erica tetralix*

4010 Northern Atlantic wet heaths with <i>Erica tetralix</i>								
To restore the favourable conservation condition of Northern Atlantic wet heaths with <i>Erica tetralix</i> in Aroo Mountain SAC (NPWS,2016c), Tamur Bog SAC, River Finn SAC, Boleybrack Mountain SAC, Bellacorick Bog SAC and Dunragh Loughs/Pettigo Plateau SAC which are defined by the following list of attributes and targets:								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-
Habitat distribution	Occurrence.	No decline from current distribution, subject to natural processes.	-	L	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops.	Maintain soil nutrient status within natural range.	-	-	-	-	WQ	-
Community diversity	Abundance of variety of vegetation communities.	Maintain variety of vegetation communities, subject to natural processes.	-	-	-	-	-	-
Vegetation composition: cross-leaved heath	Occurrence within 20m of a representative number of 2m x 2m monitoring stops.	Cross-leaved heath (<i>Erica tetralix</i>) present near each monitoring stop.	-	L	-	-	-	-
Vegetation composition: positive indicator species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of positive indicator species at least 50%.	-	L	-	-	-	-
Vegetation composition: lichens and bryophytes	% cover at a representative number of 2m x 2m monitoring stops.	Total cover of <i>Cladonia</i> and <i>Sphagnum</i> species, <i>Racomitrium lanuginosum</i> and pleurocarpous mosses at least 10%.	-	L	-	-	-	-
Vegetation composition: ericoid species and crowberry	% cover at a representative number of 2m x 2m monitoring stops.	Cover of ericoid species and crowberry (<i>Empetrum nigrum</i>) at least 15%.	-	L	-	-	-	-
Vegetation composition: dwarf shrub species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of dwarf shrubs less than 75%	-	L	-	-	-	-
Vegetation composition: negative indicator species	% cover at a representative number of 2m x 2m monitoring stops.	Total cover of negative indicator species less than 1%.	-	-	-	-	-	-
Vegetation composition: non-native species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-
Vegetation composition: native trees and shrubs	% cover in local vicinity of a representative number of monitoring stops.	Cover of scattered native trees and shrubs less than 20%.	-	L	-	-	-	-
Vegetation composition: bracken	%cover in local vicinity of a representative number of monitoring stops.	Cover of bracken (<i>Pteridium aquilinum</i>) less than 10%.	-	L	-	-	-	-
Vegetation composition: soft rush	%cover in local vicinity of a representative number of monitoring stops.	Cover of soft rush (<i>Juncus effusus</i>) less than 10%.	-	L	-	-	-	-
Vegetation structure: <i>Sphagnum</i> condition	% cover at a representative number of 2m x 2m monitoring stops.	Less than 10% of the <i>Sphagnum</i> cover is crushed, broken and/or pulled up.	-	-	-	-	-	-
Vegetation structure: signs of browsing	% cover at a representative number of 2m x 2m monitoring stops.	Less than 33% collectively of the last complete growing season's shoots of ericoids, crowberry (<i>Empetrum nigrum</i>) and bog-myrtle (<i>Myrica gale</i>) showing signs of browsing.	-	-	-	-	-	-
Vegetation structure: burning	% cover at a representative number of 2m x 2m monitoring stops.	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	-	-	-	-	-	-
Physical structure: disturbed bare ground	% cover at a representative number of 2m x 2m monitoring stops.	Cover of disturbed bare ground less than 10%.	-	L	-	-	-	-
Physical structure: drainage	% cover in local vicinity of a representative number of monitoring stops.	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%.	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	L	-	-	-	-

* No detailed Conservation Objectives for Meenaguse Scragh SAC/ West Fermanagh Scarplands (UK0030300)

Table E1.26: Conservation Objectives (CO) for Qualifying Interest (QI) – European dry heaths

4030 European dry heaths								
To restore the favourable conservation condition of European dry heaths in Aroo Mountain SAC (NPWS,2016c) which is defined by the following list of attributes and targets:								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)

			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area increasing, subject to natural processes.	-	L	-	-	-	-
Habitat distribution	Occurrence.	No decline from current distribution, subject to natural processes.	-	L	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops.	Maintain soil nutrient status within natural range.	-	-	-	-	-	-
Community diversity	Abundance of variety of vegetation communities.	Maintain variety of vegetation communities, subject to natural processes.	-	-	-	-	-	-
Vegetation composition: cross-leaved heath	Occurrence within 20m of a representative number of 2m x 2m monitoring stops.	Cross-leaved heath (<i>Erica tetralix</i>) present near each monitoring stop.	-	L	-	-	-	-
Vegetation composition: positive indicator species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of positive indicator species at least 50%.	-	L	-	-	-	-
Vegetation composition: lichens and bryophytes	% cover at a representative number of 2m x 2m monitoring stops.	Total cover of <i>Cladonia</i> and <i>Sphagnum</i> species, <i>Racomitrium lanuginosum</i> and pleurocarpous mosses at least 10%.	-	L	-	-	-	-
Vegetation composition: ericoid species and crowberry	% cover at a representative number of 2m x 2m monitoring stops.	Cover of ericoid species and crowberry (<i>Empetrum nigrum</i>) at least 15%.	-	L	-	-	-	-
Vegetation composition: dwarf shrub species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of dwarf shrubs less than 75%.	-	L	-	-	-	-
Vegetation composition: negative indicator species	% cover at a representative number of 2m x 2m monitoring stops.	Total cover of negative indicator species less than 1%.	-	-	-	-	-	-
Vegetation composition: non-native species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-
Vegetation composition: native trees and shrubs	% cover in local vicinity of a representative number of monitoring stops.	Cover of scattered native trees and shrubs less than 20%.	-	L	-	-	-	-
Vegetation composition: bracken	%cover in local vicinity of a representative number of monitoring stops.	Cover of bracken (<i>Pteridium aquilinum</i>) less than 10%.	-	L	-	-	-	-
Vegetation composition: soft rush	%cover in local vicinity of a representative number of monitoring stops.	Cover of soft rush (<i>Juncus effusus</i>) less than 10%.	-	L	-	-	-	-
Vegetation structure: <i>Sphagnum</i> condition	% cover at a representative number of 2m x 2m monitoring stops.	Less than 10% of the <i>Sphagnum</i> cover is crushed, broken and/or pulled up.	-	-	-	-	-	-
Vegetation structure: signs of browsing	% cover at a representative number of 2m x 2m monitoring stops.	Less than 33% collectively of the last complete growing season's shoots of ericoids, crowberry (<i>Empetrum nigrum</i>) and bog-myrtle (<i>Myrica gale</i>) showing signs of browsing.	-	-	-	-	-	-
Vegetation structure: burning	% cover at a representative number of 2m x 2m monitoring stops.	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning.	-	-	-	-	-	-
Physical structure: disturbed bare ground	% cover at a representative number of 2m x 2m monitoring stops.	Cover of disturbed bare ground less than 10%.	-	L	-	-	-	-
Physical structure: drainage	% cover in local vicinity of a representative number of monitoring stops.	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%.	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	L	-	-	-	-

*Detailed Conservation Objectives for River Barrow and River Nore/ Boleybrack Mountain SAC for attributes 'Habitat area', 'Habitat distribution', 'Vegetation composition: non-native species', 'Vegetation composition: native trees and shrubs', 'Vegetation composition: bracken', 'Vegetation structure: signs of browsing', 'Vegetation structure: burning' and 'Physical structure: disturbed bare ground'

** Detailed Conservation Objectives for Ardmore Head SAC for attributes with the exception of 'Vegetation composition: cross-leaved heath', 'Vegetation composition: lichens and bryophytes', 'Vegetation composition: ericoid species and crowberry', 'Vegetation structure: Sphagnum condition' and 'Physical structure: drainage'

**No detailed Conservation Objectives for Ballintra/ Ben Bulbin, Gleniff and Glenade Complex SAC

Table E1.27: Conservation Objectives (CO) for Qualifying Interest (QI) – Alpine and Boreal heaths

4060 Alpine and Boreal heaths									
To maintain the favourable conservation condition of Alpine and Boreal heaths in Aroo Mountain SAC (NPWS,2016c) which is defined by the following list of attributes and targets:									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area increasing, subject to natural processes.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline from current distribution, subject to natural processes.	-	L	-	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops.	Maintain soil nutrient status within natural range.	-	-	-	-	-	-	-
Community diversity	Abundance of variety of vegetation communities.	Maintain variety of vegetation communities, subject to natural processes.	-	-	-	-	-	-	-
Vegetation composition: lichens and bryophytes	Number of species at a representative number of 2m x 2m monitoring stops.	Number of bryophyte or non-crustose lichen species present at each monitoring stop is at least three.	-	L	-	-	-	-	-
Vegetation composition: positive indicator species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of positive indicator species at least 66%.	-	L	-	-	-	-	-
Vegetation composition: dwarf shrub species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of dwarf shrubs less than 10%.	-	L	-	-	-	-	-
Vegetation composition: negative indicator species	% cover at a representative number of 2m x 2m monitoring stops.	Total cover of negative indicator species less than 10%.	-	-	-	-	-	-	-
Vegetation composition: non-native species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-	-
Vegetation structure: signs of grazing	% cover at a representative number of 2m x 2m monitoring stops.	Less than 10% collectively of the live leaves of specific graminoids showing signs of grazing.	-	-	-	-	-	-	-
Vegetation structure: signs of browsing	% cover at a representative number of 2m x 2m monitoring stops.	Less than 33% collectively of the last complete growing season's shoots of ericoids and crowberry (<i>Empetrum nigrum</i>) showing signs of browsing.	-	-	-	-	-	-	-
Vegetation structure: burning	Occurrence in local vicinity of a representative number of monitoring stops.	No signs of burning within the habitat.	-	-	-	-	-	-	-
Physical structure: disturbed bare ground	% cover at a representative number of 2m x 2m monitoring stops.	Cover of disturbed bare ground less than 10%.	-	L	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	L	-	-	-	-	-

*No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex SAC

Table E1.28: Conservation Objectives (CO) for Qualifying Interest (QI) – Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)

8120 Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>)									
To restore the favourable conservation condition of Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>) in Aroo Mountain SAC, which is defined by the following list of attributes and targets:									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline from current distribution, subject to natural processes.	-	L	-	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops.	Maintain soil nutrient status within natural range.	-	-	-	-	-	-	-
Vegetation composition: positive indicator fern and <i>Saxifraga</i> species	Number of species in local vicinity of a representative number of 2m x 2m monitoring stops.	Number of ferns and <i>Saxifraga</i> indicators at each monitoring stop at least one.	-	L	-	-	-	-	-
Vegetation composition: positive indicator species	Number of species in local vicinity of a representative number of monitoring stops.	Number of positive indicator species at each monitoring stop at least three.	-	L	-	-	-	-	-
Vegetation composition: grass species and dwarf shrubs	% cover at a representative number of 2m x 2m monitoring stops.	Cover of dwarf shrubs and grasses, excluding blue moor-grass (<i>Sesleria caerulea</i>) collectively less than 20%.	-	L	-	-	-	-	-
Vegetation composition: negative indicator species	% cover at a representative number of 2m x 2m monitoring stops.	Total cover of negative indicator species less than 1%.	-	-	-	-	-	-	-
Vegetation composition: non-native species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-	-

8120 Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolia</i>)									
To restore the favourable conservation condition of Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolia</i>) in Aroo Mountain SAC, which is defined by the following list of attributes and targets:									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Vegetation composition: bracken, native trees and shrubs	% cover in local vicinity of a representative number of monitoring stops.	Total cover of bracken (<i>Pteridium aquilinum</i>), native trees and scrub less than 25%.	-	L	-	-	-	-	-
Vegetation structure: grazing and browsing	% cover at a representative number of 2m x 2m monitoring stops.	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively less than 50%.	-	-	-	-	-	-	-
Physical structure: disturbance	% cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops.	Ground disturbed by human and animal paths, scree running, vehicles less than 10%.	-	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	L	-	-	-	-	-

*No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex/ Bricklieve Mountains & Keishcorran SAC

Table E1.29: Conservation Objectives (CO) for Qualifying Interest (QI) – Calcareous rocky slopes with chasmophytic vegetation

8210 Calcareous rocky slopes with chasmophytic vegetation									
To restore the favourable conservation condition of Calcareous rocky slopes with chasmophytic vegetation in Aroo Mountain SAC (NPWS, 2016c) which is defined by the following list of attributes and targets:									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline from current distribution, subject to natural processes.	-	L	-	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops.	Maintain soil nutrient status within natural range.	-	-	-	-	-	-	-
Vegetation composition: positive indicator fern and <i>Saxifraga</i> species	Number of species in local vicinity of a representative number of 2m x 2m monitoring stops.	Number of ferns and <i>Saxifraga</i> indicators at each monitoring stop at least one.	-	L	-	-	-	-	-
Vegetation composition: positive indicator species	Number of species in local vicinity of a representative number of monitoring stops.	Number of positive indicator species at each monitoring stop at least three.	-	L	-	-	-	-	-
Vegetation composition: non-native species	% cover at a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-	-
Vegetation composition: bracken, native trees and shrubs	% cover in local vicinity of a representative number of monitoring stops.	Total cover of bracken (<i>Pteridium aquilinum</i>), native trees and scrub less than 25%.	-	L	-	-	-	-	-
Vegetation structure: grazing and browsing	% cover at a representative number of 2m x 2m monitoring stops.	Live leaves of forbs and shoots of dwarf shrubs showing signs of grazing or browsing collectively less than 50%.	-	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	L	-	-	-	-	-

*No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex SAC

Table E1.30: Conservation Objectives (CO) for Qualifying Interest (QI) – *Juniperus communis* formations on heaths or calcareous grasslands

5130 Northern Atlantic wet heaths with <i>Erica tetralix</i>									
To restore the favourable conservation condition of <i>Juniperus communis</i> formations on heaths or calcareous grasslands, which is defined by the following list of attributes and targets targets.									
To note: Specific CO for <i>Juniperus communis</i> formations on heaths or calcareous grasslands are taken from the Galway Bay SAC (000268) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area stable or increasing, subject to natural processes. At least 1.4ha at mapped location.	-	L	-	-	-	-	-

5130 Northern Atlantic wet heaths with <i>Erica tetralix</i>								
To restore the favourable conservation condition of <i>Juniperus communis</i> formations on heaths or calcareous grasslands, which is defined by the following list of attributes and targets targets. To note: Specific CO for <i>Juniperus communis</i> formations on heaths or calcareous grasslands are taken from the Galway Bay SAC (000268) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat distribution	Occurrence.	No decline.	-	L	-	-	-	-
Juniper population size	Number.	At least 50 plants.	-	L	-	-	-	-
Formation structure: cover and height	% and metres.	Well-developed structure with an open to closed cover of juniper up to or exceeding 0.5 m in height with associated species.	-	L	-	-	-	-
Formation structure: community diversity and extent	Hectares.	Appropriate diversity and extent of formation.	-	L	-	-	-	-
Formation structure: cone-bearing plants	%	At least 10% of plants bearing cones.	-	-	-	-	-	-
Formation structure: seedling recruitment	%	At least 10% of juniper plants within the formation are seedlings.	-	-	-	-	-	-
Formation structure: dead plants	%	Not more than 10% of plants dead.	-	-	-	-	-	-
Vegetation composition: typical species	Occurrence.	A variety of typical native species with a minimum of 10 species present (excluding negative indicator species).	-	-	-	-	-	-
Vegetation composition: negative indicator species	Occurrence.	Negative indicator species, particularly non-native invasive species, absent or under control.	-	-	-	-	-	-

*No detailed Conservation Objectives for Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC

**Detailed Conservation Objectives for Bunduff Lough and Machair/ Trawalua/Mullaghmore SAC for attributes with the exception of 'Formation structure: cover and height' and 'Formation structure: community diversity and extent'

Table E1.31: Conservation Objectives (CO) for Qualifying Interest (QI) – Limestone pavements

8240 Limestone pavements								
To maintain the favourable conservation condition of Limestone pavements, which is defined by the following list of attributes and targets. To note: Specific CO for Limestone pavements are taken from the Lough Corrib SAC (000297) and St. John's Point SAC (000191) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-
Distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-
Vegetation composition: typical species	Number at a representative number of monitoring stops.	At least seven positive indicator species present.	-	L	-	-	-	-
Vegetation composition: bryophyte layer	% at a representative number of monitoring stops.	Bryophyte cover at least 50% on wooded pavement.	-	L	-	-	-	-
Vegetation composition: negative indicator species	% at a representative number of monitoring stops.	Collective cover of negative indicator species on exposed pavement not more than 1%.	-	-	-	-	-	-
Vegetation composition: non-native species	% at a representative number of monitoring stops.	Cover of non-native species not more than 1% on exposed pavement; on wooded pavement, not more than 10% with no regeneration.	-	-	-	-	-	-
Vegetation composition: scrub	% at a representative number of monitoring stops.	Scrub cover no more than 25% of exposed pavement.	-	-	-	-	-	-
Vegetation composition: bracken cover	% at a representative number of monitoring stops.	Bracken (<i>Pteridium aquilinum</i>) cover no more than 10% on exposed pavement.	-	L	-	-	-	-
Vegetation structure: woodland canopy	% at a representative number of monitoring stops.	Canopy cover on wooded pavement at least 30%.	-	L	-	-	-	-
Vegetation structure: dead wood	Occurrence in a representative number of monitoring stops.	Sufficient quantity of dead wood on wooded pavement to provide habitat for saproxylic organisms.	-	-	-	-	-	-
Physical structure: disturbance	Occurrence in a representative number of monitoring stops.	No evidence of grazing pressure on wooded pavement.	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence.	Indicators of local distinctiveness are maintained.	-	-	-	-	-	-

*No detailed Conservation Objectives for West Fermanagh Scarplands (UK0030300)

Table E1.32: Conservation Objectives (CO) for Qualifying Interest (QI) – Old sessile oak woods

91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles To maintain the favourable conservation condition of Old sessile oak woods with Ilex and Blechnum in the British Isles, which is defined by the following list of attributes and targets. To note: Specific CO for Old sessile oak woods with Ilex and Blechnum in the British Isles are taken from the Lough Corrib SAC (000297), River Moy SAC (002298), Blackwater River (Cork/Waterford) SAC (002170), Lower River Suir SAC (002137) and River Barrow and River Nore SAC (002162) and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	H	WQ	-
Habitat distribution	Occurrence.	No decline.	-	L	-	-	WQ	-
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.	-	L	-	-	-	-
Woodland structure: cover and height	% and metres.	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer.	-	L	-	-	-	-
Woodland structure: community diversity and extent	Hectares.	Maintain diversity and extent of community types.	-	L	-	-	-	-
Woodland structure: natural regeneration	Seedling: sapling: pole ratio.	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter.	-	-	-	-	-	-
Woodland structure: veteran trees	Number per hectare.	No decline.	-	L	-	-	-	-
Woodland structure: indicators of local distinctiveness	Occurrence.	No decline.	-	L	-	-	-	-
Vegetation composition: native tree cover	%	No decline. Native tree-cover not less than 95%.	-	L	-	-	-	-
Vegetation composition: typical species	Occurrence.	A variety of typical native species present, depending on woodland type, including oak (<i>Quercus petraea</i>) and birch (<i>Betula pubescens</i>).	-	L	-	-	-	-
Vegetation composition: negative indicator species	Occurrence.	Negative indicator species, particularly non-native invasive species, absent or under control.	-	-	-	-	-	-

* No detailed Conservation Objectives for Lough Eske and Ardnamona Wood/ Lough Gill/ Union Wood SAC and River Foyle and Tributaries (UK0030320), Monawilkin (UK0016619) and Largalinn (UK0030045)

Table E1.33: Conservation Objectives (CO) for Qualifying Interest (QI) – Alluvial forests

91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) To maintain the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) in River Moy SAC, River Barrow and River Nore SAC, Lower River Suir SAC, Lower River Shannon SAC and Blackwater River (Cork/Waterford) SAC, which is defined by the following list of attributes and targets:								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	H	WQ	-
Habitat distribution	Occurrence.	No decline from current distribution, subject to natural processes.	-	L	-	-	-	-
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.	-	L	-	-	-	-
Woodland structure: cover and height	% and metres.	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer.	-	L	-	-	-	-
Woodland structure: community diversity and extent	Hectares.	Maintain diversity and extent of community types.	-	L	-	-	-	-
Woodland structure: natural regeneration	Seedling: sapling: pole ratio.	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.	-	-	-	-	-	-

91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)									
To maintain the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) in River Moy SAC, River Barrow and River Nore SAC, Lower River Suir SAC, Lower River Shannon SAC and Blackwater River (Cork/Waterford) SAC, which is defined by the following list of attributes and targets:									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Hydrological regime: Flooding depth/height of water table	Metres.	Appropriate hydrological regime necessary for maintenance of alluvial vegetation.	-	-	-	H	-	-	-
Woodland structure: dead wood	m ³ per hectare; number per hectare.	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder).	-	-	-	-	-	-	-
Woodland structure: veteran trees	Number per hectare.	No decline.	-	L	-	-	-	-	-
Woodland structure: indicators of local distinctiveness	Occurrence.	No decline.	-	L	-	-	-	-	-
Vegetation composition: native tree cover	%	No decline. Native tree cover not less than 95%	-	L	-	-	-	-	-
Vegetation composition: typical species	Occurrence.	A variety of typical native species present, depending on woodland type, including alder (<i>Alnus glutinosa</i>), willows (<i>Salix</i> spp.), oak (<i>Quercus robur</i>) and ash (<i>Fraxinus excelsior</i>).	-	L	-	-	-	-	-
Vegetation composition: negative indicator species	Occurrence.	Negative indicator species, particularly non-native invasive species, absent or under control.	-	-	-	-	-	-	-

* No detailed Conservation Objectives for Lough Gill/ Unshin River SAC

Table E1.34: Conservation Objectives (CO) for Qualifying Interest (QI) – Molinia meadows on calcareous, peaty or clayey-silt-laden soils

6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)									
To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae), which is defined by the following list of attributes and targets.									
To note: Specific CO for Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) are taken from the Lough Corrib SAC (000297), St. John's Point SAC (000191) and Bolevack Mountain SAC (002032) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area stable or increasing, subject to natural processes	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-	-
Vegetation composition: typical species	Number at a representative number of monitoring stops.	At least seven positive indicator species present, including one "high quality" species.	-	L	-	-	-	-	-
Vegetation composition: negative indicator species	% at a representative number of monitoring stops.	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%.	-	-	-	-	-	-	-
Vegetation composition: non-native species	% at a representative number of monitoring stops.	Cover of non-native species not more than 1%.	-	-	-	-	-	-	-
Vegetation composition: moss species	% at a representative number of monitoring stops.	Hair mosses (<i>Polytrichum</i> spp.) not more than 25% cover.	-	L	-	-	-	-	-
Vegetation structure: woody species and bracken	% at a representative number of monitoring stops.	Cover of woody species and bracken (<i>Pteridium aquilinum</i>) not more than 5%.	-	L	-	-	-	-	-
Vegetation structure: broadleaf herb: grass ratio	% at a representative number of monitoring stops.	Broadleaf herb component of vegetation between 40% and 90%.	-	L	-	-	-	-	-
Vegetation structure: sward height	% at a representative number of monitoring stops.	At least 30% of sward between 10cm and 80cm tall.	-	-	-	-	-	-	-
Vegetation structure: litter	% at a representative number of monitoring stops.	Litter cover not more than 25%.	-	-	-	-	-	-	-
Physical structure: bare soil	% at a representative number of monitoring stops.	Not more than 10% bare soil.	-	-	-	-	-	-	-
Physical structure: disturbance	Square metres.	No evidence of grazing pressure on wooded pavement.	-	-	-	-	-	-	-

* Detailed Conservation Objectives for Lower River Shannon with the exception of 'Vegetation composition: non-native species' 'Vegetation structure: litter', 'Physical structure: bare soil' and 'Physical structure: disturbance' and for Durnesh Lough with the exception of 'Vegetation structure: litter' and 'Physical structure: disturbance'.

**No detailed Conservation Objectives for River Foyle and Tributaries (UK0030320)/ West Fermanagh Scarplands (UK0030300)

Table E1.35: Conservation Objectives (CO) for Qualifying Interest (QI) – Harbour Seal

1365 Harbour Seal (<i>Phoca vitulina</i>)									
To maintain the favourable conservation condition of Harbour Seal (<i>Phoca vitulina</i>) which is defined by the following list of attributes and targets.									
To note: Specific CO for Harbour Seal (<i>Phoca vitulina</i>) are taken from the Killala Bay/ Moy Estuary SAC (000458) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Access to suitable habitat	Number of artificial barriers.	Species range within the site should not be restricted by artificial barriers to site use.	-	-	F	-	WQ	D	
Breeding behaviour	Breeding sites.	Conserve the breeding sites in a natural condition.	-	-	-	-	-	-	-
Moult behaviour	Moult haul-out sites.	Conserve the moult haul-out sites in a natural condition.	-	-	-	-	-	-	-
Resting behaviour	Resting haul-out sites.	Conserve the resting haul-out sites in a natural condition.	-	-	-	-	-	-	-
Disturbance	Level of impact.	Human activities should occur at levels that do not adversely affect the harbour seal population at the site.	-	-	-	-	WQ	D	

*No detailed Conservation Objectives for Cumeen Strand/ Drumcliff Bay SAC

Table E1.36: Conservation Objectives (CO) for Qualifying Interest (QI) – Humid dune slacks

2190 Humid dune slacks									
To maintain the favourable conservation condition of Humid dune slacks which is defined by the following list of attributes and targets.									
To note: Specific CO for Humid dune slacks are taken from the Killala Bay/ Moy Estuary SAC (000458), Ballysadare Bay SAC (000622) and Donegal Bay (Murvagh) SAC (000133) and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline or change in habitat distribution, subject to natural processes	-	L	-	-	-	-	-
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers.	Maintain natural circulation of sediment and organic matter, without any physical obstructions.	-	-	-	-	-	-	-
Physical structure: hydrological and flooding regime	Presence/ absence of water abstraction or drainage works.	Maintain natural hydrological regime.	-	-	-	-	-	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	-	-	-	-
Vegetation structure: bare ground	Percentage cover.	Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground.	-	-	-	-	-	-	-
Vegetation structure: vegetation height	Centimeters.	Maintain structural variation within sward.	-	-	-	-	-	-	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops.	Maintain range of sub- communities with typical species listed in Ryle et al. (2009).	-	-	-	-	-	-	-
Vegetation composition: cover of <i>S. repens</i>	% cover; centimetres.	Maintain more than 40% cover of creeping willow (<i>Salix repens</i>).	-	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	-	-	-
Vegetation composition: scrub/trees	Percentage cover.	No more than 5% cover or under control.	-	-	-	-	-	-	-

Table E1.37: Conservation Objectives (CO) for Qualifying Interest (QI) – Fixed coastal dunes with herbaceous vegetation ('grey dunes')

2130 Fixed coastal dunes with herbaceous vegetation ('grey dunes')									
To maintain the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') which is defined by the following list of attributes and targets. To note: Specific CO for Fixed coastal dunes with herbaceous vegetation ('grey dunes') are taken from the Killala Bay/ Moy Estuary SAC (000458) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline or change in habitat distribution, subject to natural processes	-	L	-	-	-	-	-
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers.	Maintain natural circulation of sediment and organic matter, without any physical obstructions.	-	-	-	-	-	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	-	-	-	-
Vegetation structure: bare ground	Percentage cover.	Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground.	-	-	-	-	-	-	-
Vegetation composition: sward height	Centimetres.	Maintain structural variation within sward.	-	-	-	-	-	-	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops.	Maintain range of sub- communities with typical species listed in Ryle et al. (2009).	-	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	-	-	-
Vegetation composition: scrub/trees	Percentage cover.	No more than 5% cover or under control.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Cummeen Strand/ Drumcliff Bay SAC

Table E1.38: Conservation Objectives (CO) for Qualifying Interest (QI) – Shifting dunes along the shoreline ('white dunes')

2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes')									
To maintain the favourable conservation condition of Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') which is defined by the following list of attributes and targets. To note: Specific CO for Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') are taken from the Killala Bay/ Moy Estuary SAC (000458) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline or change in habitat distribution, subject to natural processes.	-	L	-	-	-	-	-
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers.	Maintain natural circulation of sediment and organic matter, without any physical obstructions.	-	-	-	-	-	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	-	-	-	-
Vegetation composition: plant health of dune grasses	Percentage cover.	More than 95% of marram (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present).	-	-	-	-	-	-	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops.	Maintain range of sub- communities with typical species listed in Ryle et al. (2009).	-	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Cummeen Strand/ Drumcliff Bay SAC

Table E1.39: Conservation Objectives (CO) for Qualifying Interest (QI) – Embryonic shifting dunes

2110 Embryonic shifting dunes									
To restore the favourable conservation condition of Embryonic shifting dunes which is defined by the following list of attributes and targets.									
To note: Specific CO for Embryonic shifting dunes are taken from the Killala Bay/ Moy Estuary SAC (000458) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline or change in habitat distribution, subject to natural processes.	-	L	-	-	-	-	-
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers.	Maintain natural circulation of sediment and organic matter, without any physical obstructions.	-	-	-	-	-	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	-	-	-	-
Vegetation composition: plant health of dune grasses	Percentage cover.	More than 95% of marram (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present).	-	-	-	-	-	-	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops.	Maintain range of sub- communities with typical species listed in Ryle et al. (2009).	-	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Ballysadare Bay SAC and Cummeen Strand/ Drumcliff Bay SAC

Table E1.40: Conservation Objectives (CO) for Qualifying Interest (QI) – Atlantic salt meadows

1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)									
To maintain the favourable conservation condition of Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) which is defined by the following list of attributes and targets.									
To note: Specific CO for Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) are taken from the Killala Bay/ Moy Estuary SAC (000458), Lower River Shannon SAC (002165), River Barrow and River Nore SAC (002162), Streedagh Point Dunes SAC (001680), Killala Bay/ Moy Estuary SAC (004036), Ballymacoda (Clonpriest and Pillmore) SAC (000077), Blackwater River (Cork/Waterford) SAC (002170), Tramore Dunes and Backstrand SAC (000671), Ballyteige Burrow SAC (000696), Bannow Bay SAC (004033) and Lower River Suir SAC (002137) and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	H	WQ	-	-
Habitat distribution	Occurrence.	No decline or change in habitat distribution, subject to natural processes.	-	L	-	-	-	-	-
Physical structure: sediment supply	Presence/ absence of physical barriers.	Maintain natural circulation of sediment and organic matter, without any physical obstructions.	-	-	-	H	-	-	-
Physical structure: creeks and pans	Occurrence.	Maintain creek and pan structure/ allow to develop, subject to natural processes, including erosion and succession.	-	-	-	H	-	-	-
Physical structure: flooding regime	Hectares flooded; frequency.	Maintain natural tidal regime.	-	-	-	H	-	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	H	-	-	-
Vegetation structure: vegetation height	Centimetres.	Maintain structural variation within sward.	-	-	-	-	-	-	-
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops.	Maintain more than 90% of the area outside of the creeks vegetated.	-	-	-	-	-	-	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops.	Maintain range of sub- communities with typical species listed in Ryle et al. (2009).	-	-	-	-	WQ	-	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	WQ	-	-

*No detailed Conservation Objectives for Great Island Channel SAC

Table E1.41: Conservation Objectives (CO) for Qualifying Interest (QI) – Salicornia and other annuals colonizing mud and sand

1310 Salicornia and other annuals colonizing mud and sand								
To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand which is defined by the following list of attributes and targets.								
To note: Specific CO for Salicornia and other annuals colonizing mud and sand are taken from the Killala Bay/ Moy Estuary SAC (000458) and Lower River Shannon SAC (002165) and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	H	WQ	-
Habitat distribution	Occurrence.	No decline or change in habitat distribution, subject to natural processes.	-	L	-	H	WQ	-
Physical structure: sediment supply	Presence/ absence of physical barriers.	Maintain natural circulation of sediment and organic matter, without any physical obstructions.	-	-	-	H	-	-
Physical structure: creeks and pans	Occurrence.	Maintain creek and pan structure/ allow to develop, subject to natural processes, including erosion and succession.	-	-	-	H	-	-
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime.	-	-	-	H	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	H	-	-
Vegetation structure: vegetation height	Centimetres.	Maintain structural variation within sward.	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	WQ	-

*Detailed Conservation Objectives for River Barrow and River Nore/ Ballymacoda (Clonpriest and Pillmore)/ Blackwater River (Cork/Waterford)/ Tramore Dunes and Backstrand/ Ballyteige Burrow/ Bannow Bay SAC for all attributes with the addition of 'vegetation structure: vegetation cover' and vegetation composition: typical species and sub-communities'

Table E1.42 Conservation Objectives (CO) for Qualifying Interest (QI) – Annual vegetation of drift lines

1210 Annual vegetation of drift lines								
To maintain the favourable conservation condition of Annual vegetation of drift lines which is defined by the following list of attributes and targets.								
To note: Specific CO for Annual vegetation of drift lines are taken from the Killala Bay/ Moy Estuary SAC (000458), Ballyteige Burrow SAC (000696), Bannow Bay SAC (000697) and Tramore Dunes and Back Strand SAC (000671) and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	-	-	-
Habitat distribution	Occurrence.	No decline or change in habitat distribution, subject to natural processes.	-	L	-	-	-	-
Physical structure: functionality sediment supply	Presence/ absence of physical barriers.	Maintain the natural circulation of sediment and organic matter, without any physical obstructions.	-	-	-	H	WQ	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	-	WQ	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops.	Maintain the presence of species-poor communities with typical species: sea rocket (<i>Cakile maritima</i>), sea sandwort (<i>Honckenya peploides</i>), prickly saltwort (<i>Salsola kali</i>) and Orache (<i>Atriplex</i> spp.).	-	-	-	-	WQ	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	-	-

*No detailed Conservation Objectives for Tacumshin Lake SAC

Table E1.43 Conservation Objectives (CO) for Qualifying Interest (QI) – Mudflats and sandflats not covered by seawater at low tide

1140 Mudflats and sandflats not covered by seawater at low tide									
To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide which is defined by the following list of attributes and targets.									
To note: Specific CO for Mudflats and sandflats not covered by seawater at low tide are taken from the Killala Bay/ Moy Estuary SAC (000458) and Ballysadare Bay SAC (000622), Blackwater (Cork/Waterford) SAC (002170) and Tramore Dunes Back Strand SAC (000671) and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes including erosion and succession.	-	L	-	H	WQ	-	-
Community extent	Hectares.	Maintain the extent of the Zostera-dominated community, subject to natural processes.	-	L	-	H	-	-	-
Community structure: Zostera density	Shoots per m ² .	Conserve the high quality of the Zostera-dominated community, subject to natural processes.	-	L	-	H	-	-	-
Community distribution	Hectares.	Conserve the following community types in a natural condition: Muddy sand to fine sand dominated by <i>Hydrobia ulvae</i> , <i>Pygospio elegans</i> and <i>Tubificoides benedii</i> community complex; Estuarine muddy sand dominated by <i>Hediste diversicolor</i> and <i>Heterochaeta costata</i> community complex and Fine sand dominated by <i>Nephtys cirrosa</i> community complex.	-	L	-	H	-	-	-

*Detailed Conservation Objectives for Great Island Channel/ Lower River Shannon/ River Barrow and River Nore/ Donegal Bay (Murvagh)/ Streedagh Point Dunes/ Ballymacode (Clonpriest and Pillmore)/ Ballyteige Burrow SAC but only for attributes 'Habitat area' and 'Community distribution'.

** Detailed Conservation Objectives for Saltee Islands SAC but only for attributes 'Habitat area' and 'Community extent'.

***No detailed Conservation Objectives for Cummeen Strand/ Drumcliff Bay (Sligo Bay)/ Bannow Bay SAC

Table E1.44 Conservation Objectives (CO) for Qualifying Interest (QI) – Estuaries

1130 Estuaries									
To maintain the favourable conservation condition of Estuaries which is defined by the following list of attributes and targets.									
To note: Specific CO for Estuaries are taken from the Killala Bay/ Moy Estuary SAC (000458) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	The permanent habitat area is stable or increasing, subject to natural processes.	-	L	-	H	WQ	-	-
Community extent	Hectares.	Maintain the extent of the Zostera-dominated community, subject to natural processes.	-	L	-	-	WQ	-	-
Community structure: Zostera density	Shoots per m ² .	Conserve the high quality of the Zostera-dominated community, subject to natural processes	-	L	-	-	WQ	-	-
Community distribution	Hectares.	Conserve the following community types in a natural condition: Muddy sand to fine sand dominated by <i>Hydrobia ulvae</i> , <i>Pygospio elegans</i> and <i>Tubificoides benedii</i> community complex; Estuarine muddy sand dominated by <i>Hediste diversicolor</i> and <i>Heterochaeta costata</i> community complex and Fine sand dominated by <i>Nephtys cirrosa</i> community complex.	-	L	-	-	WQ	-	-

*Detailed Conservation Objectives for Cummeen Strand/ Drumcliff Bay (Sligo Bay)/ Ballysadare Bay/ Killala Bay/ Moy Estuary/ Blackwater River (Cork/Waterford) SAC

**Detailed Conservation Objectives for Lower River Shannon/ Ballymacode (Clonpriest and Pillmore)/ Ballyteige Burrow/ Bannow Bay SAC but only for attributes 'Habitat area' and 'Community distribution'.

***Detailed Conservation Objectives for Lower River Shannon/ River Barrow and River Nore SAC but only for attributes 'Habitat area', 'Community distribution' and 'Community extent'.

Table E1.45 Conservation Objectives (CO) for Qualifying Interest (QI) – Blanket bogs (* if active)

7130 Blanket bogs (* if active bogs)									
To maintain the favourable conservation condition of Blanket bogs (* if active bogs) which is defined by the following list of attributes and targets. To note: Specific CO for Blanket bogs (* if active bogs) are taken from the Lough Hoe Bog SAC [000633] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops.	Maintain soil nutrient status within natural range.	-	-	-	-	-	-	-
Ecosystem function: peat formation	Active blanket bog as a proportion of the total area of Annex I blanket bog habitat.	At least 99% of the total Annex I blanket bog area is active.	-	-	-	-	-	-	-
Ecosystem function: hydrology	Flow direction, water levels, occurrence of drains and erosion gullies.	Natural hydrology unaffected by drains and erosion.	-	-	-	H	-	-	-
Community diversity	Abundance of variety of vegetation communities.	Maintain variety of vegetation communities, subject to natural processes.	-	-	-	-	-	-	-
Vegetation composition: positive indicator species	Number of species at a representative number of 2m x 2m monitoring stops.	Number of positive indicator species present at each monitoring stop is at least seven.	-	-	-	-	-	-	-
Vegetation composition: lichens and bryophytes	Percentage cover at a representative number of 2m x 2m monitoring stops.	Cover of bryophytes or lichens, excluding Sphagnum fallax, at least 10%.	-	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops.	Total cover of negative indicator species less than 1%.	-	-	-	-	-	-	-
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-	-
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops.	Cover of scattered native trees and shrubs less than 10%.	-	-	-	-	-	-	-
Vegetation composition: potential dominant species	Percentage cover at a representative number of 2m x 2m monitoring stops.	Cover of each of the potential dominant species less than 75%.	-	-	-	-	-	-	-
Vegetation structure: signs of browsing	Percentage of shoots browsed at a representative number of 2m x 2m monitoring stops.	Last complete growing season's shoots of ericoids, crowberry (<i>Empetrum nigrum</i>) and bog-myrtle (<i>Myrica gale</i>) showing signs of browsing collectively less than 33%.	-	-	-	-	-	-	-
Vegetation structure: burning	Occurrence in local vicinity of a representative number of monitoring stops.	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning.	-	-	-	-	-	-	-
Vegetation structure: Sphagnum condition	Condition at a representative number of 2m x 2m monitoring stops.	Less than 10% of the Sphagnum cover is crushed, broken and/or pulled up.	-	-	-	-	-	-	-
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops.	Cover of disturbed bare ground less than 10%.	-	-	-	-	-	-	-
Physical structure: drainage	Percentage area in local vicinity of a representative number of monitoring stops.	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%.	-	-	-	H	-	-	-
Physical structure: erosion	Percentage area in local vicinity of a representative number of monitoring stops.	Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas.	-	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for West Fermanagh Scarplands (UK0030300) and Bellacorick Bog SAC

Table E1.46 Conservation Objectives (CO) for Qualifying Interest (QI) – Natural dystrophic lakes and ponds

3160 Natural dystrophic lakes and ponds									
To maintain the favourable conservation condition of Natural dystrophic lakes and ponds which is defined by the following list of attributes and targets.									
To note: Specific CO for Natural dystrophic lakes and ponds are taken from the Bellacorick Bog SAC [001922] and Boleybrack Mountain SAC (002032) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes.	-	-	-	-	-	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	-	-	-	-	-	-
Typical species	Occurrence.	Typical species present, in good condition, and demonstrating typical abundances and distribution.	-	-	-	-	-	-	-
Vegetation composition: characteristic zonation	Occurrence.	All characteristic zones should be present, correctly distributed and in good condition.	-	-	-	-	-	-	-
Vegetation distribution: maximum depth	Metres.	Maintain maximum depth of vegetation, subject to natural processes.	-	-	-	-	-	-	-
Hydrological regime: water level fluctuations	Metres.	Maintain appropriate natural hydrological regime necessary to support the habitat.	-	-	-	H	-	-	-
Lake substratum quality	Various.	Maintain appropriate substratum type, extent and chemistry to support the vegetation.	-	-	-	-	WQ	-	-
Water quality: transparency	Metres.	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency.	-	-	-	-	WQ	-	-
Water quality: nutrients	Njg/l P; mg/l N.	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species.	-	-	-	-	WQ	-	-
Water quality: phytoplankton biomass	Njg/l Chlorophyll a.	Maintain appropriate water quality to support the habitat, including high chlorophyll a status.	-	-	-	-	WQ	-	-
Water quality: phytoplankton composition	EPA phytoplankton composition metric.	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status.	-	-	-	-	WQ	-	-
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric.	Maintain trace/absent attached algal biomass.	-	-	-	-	WQ	-	-
Water quality: macrophyte status	EPA macrophyte metric (The Free Index).	Maintain high macrophyte status.	-	-	-	-	WQ	-	-
Acidification status	pH units; mg/l.	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes.	-	-	-	-	WQ	-	-
Water colour	mg/l PtCo.	Maintain appropriate water colour to support the habitat.	-	-	-	-	WQ	-	-
Dissolved organic carbon (DOC)	mg/l.	Maintain appropriate organic carbon levels to support the habitat.	-	-	-	-	WQ	-	-
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units.	Maintain appropriate turbidity to support the habitat.	-	-	-	-	WQ	-	-
Fringing habitat: area and condition	Hectares.	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3160.	-	-	-	-	WQ	-	-

Table E1.47 Conservation Objectives (CO) for Qualifying Interest (QI) – Depressions on peat substrates of the *Rhynchosporion*

7150 Depressions on peat substrates of the Rhynchosporion									
To restore the favourable conservation condition of Depressions on peat substrates of the Rhynchosporion which is defined by the following list of attributes and targets.									
To note: Specific CO for Depressions on peat substrates of the Rhynchosporion are taken from the Bellacorick Bog SAC [001922] and Tamur Bog SAC (001992) and thus are applicable to these area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of	Maintain soil nutrient status within natural range.	-	-	-	H	WQ	-	-

7150 Depressions on peat substrates of the Rhynchosporion								
To restore the favourable conservation condition of Depressions on peat substrates of the Rhynchosporion which is defined by the following list of attributes and targets.								
To note: Specific CO for Depressions on peat substrates of the Rhynchosporion are taken from the Bellacorick Bog SAC [001922] and Tamur Bog SAC (001992) and thus are applicable to these area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
	monitoring stops.							
Vegetation composition: positive indicator species	Number of species at a representative number of 2m x 2m monitoring stops.	Number of positive indicator species at each monitoring stop is at least five.	-	-	-	-	-	-
Vegetation composition: Rhynchospora spp.	Percentage cover at a representative number of 2m x 2m monitoring stops.	Total cover of white beaked sedge (<i>Rhynchospora alba</i>) and brown beaked sedge (<i>R. fusca</i>) at least 10%.	-	-	-	-	-	-
Vegetation composition: potential dominant species	Percentage cover at a representative number of 2m x 2m monitoring stops.	Cover of each of the potential dominant species individually less than 35%.	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops.	Total cover of negative indicator species less than 1%.	-	-	-	-	-	-
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops.	Cover of scattered native trees and shrubs less than 10%.	-	-	-	-	-	-
Vegetation structure: Sphagnum condition	Condition at a representative number of 2m x 2m monitoring stops.	Less than 10% of the <i>Sphagnum</i> cover is crushed, broken and/or pulled up.	-	-	-	-	-	-
Vegetation structure: signs of browsing	Percentage of shoots browsed at a representative number of 2m x 2m monitoring stops.	Last complete growing season's shoots of ericoids, crowberry (<i>Empetrum nigrum</i>) and bog-myrtle (<i>Myrica gale</i>) showing signs of browsing collectively less than 33%.	-	-	-	-	-	-
Vegetation structure: burning	Occurrence in local vicinity of a representative number of monitoring stops.	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning.	-	-	-	-	-	-
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops.	Cover of disturbed bare ground less than 10%.	-	-	-	-	-	-
Physical structure: drainage	Percentage area in local vicinity of a representative number of monitoring stops.	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%.	-	-	-	H	-	-
Physical structure: erosion	Percentage area in local vicinity of a representative number of monitoring stops.	Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas.	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	-	-	-	-	-

*No detailed Conservation Objectives for Callow Bog/ River Moy/ Tullaghanrock Bog/ Lough Dahybaun/ Tullaher Lough and Derrinea Bog SAC

Table E1.48 Conservation Objectives (CO) for Qualifying Interest (QI) – Alkaline Fens

7230 Alkaline Fens								
To restore the favourable conservation condition of Alkaline Fens which is defined by the following list of attributes and targets.								
To note: Specific CO for Alkaline Fens which are taken from the Bellacorick Bog SAC [001922] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat Area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops.	Maintain soil nutrient status within natural range.	-		-	-	-	-

7230 Alkaline Fens								
To restore the favourable conservation condition of Alkaline Fens which is defined by the following list of attributes and targets. To note: Specific CO for Alkaline Fens which are taken from the Bellacorick Bog SAC [001922] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Ecosystem function: peat formation	Flood duration.	Maintain active peat formation, where appropriate.	-	L	-	-	-	-
Ecosystem function: hydrology	Metres.	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat.	-	-	-	H	-	-
Ecosystem function: water quality	Water chemistry measures.	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat.	-	-	-	-	WQ	-
Community diversity	Abundance of variety of vegetation communities.	Maintain variety of vegetation communities, subject to natural processes.	-	L	-	-	-	-
Vegetation composition: number of positive indicator species (brown mosses)	Number of species at a representative number of 2m x 2m monitoring stops.	Number of brown moss species present at each monitoring stop is at least one.	-	L	-	-	-	-
Vegetation composition: number of positive indicator species (vascular plants)	Number of species at a representative number of 2m x 2m monitoring stops.	Number of positive vascular plant indicator species present at each monitoring stop is at least two for small-sedge flushes and at least three for black bog-rush (<i>Schoenus nigricans</i>) flush and bottle sedge (<i>Carex rostrata</i>) fen.	-	L	-	-	-	-
Vegetation composition: cover of positive indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops.	Total cover of brown moss species and positive vascular plant indicator species at least 20% for small-sedge flushes and at least 75% cover for black bog-rush (<i>Schoenus nigricans</i>) flush and bottle sedge (<i>Carex rostrata</i>) fen.	-	L	-	-	-	-
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of negative indicator species less than 1%.	-	-	-	-	-	-
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops.	Cover of non-native species less than 1%.	-	-	-	-	-	-
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops.	Cover of scattered native trees and shrubs less than 10%.	-	-	-	-	-	-
Vegetation composition: soft rush and common reed cover	Percentage cover in local vicinity of a representative number of monitoring stops.	Total cover of soft rush (<i>Juncus effusus</i>) and common reed (<i>Phragmites australis</i>) less than 10%.	-	-	-	-	-	-
Vegetation structure: height	Percentage of leaves/shoots at a representative number of 2m x 2m monitoring stops.	Proportion of live leaves and/or flowering shoots of vascular plants that are more than 5cm above the ground surface should be at least 50%.	-	-	-	-	-	-
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops.	Cover of disturbed bare ground less than 10%.	-	-	-	-	-	-
Physical structure: drainage	Percentage area in local vicinity of a representative number of monitoring stops.	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%.	-	-	-	H	-	-
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of 2m x 2m monitoring stops.	Disturbed proportion of vegetation cover where tufa is present is less than 1%.	-	-	-	-	-	-
Indicators of local distinctiveness	Occurrence and population size.	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat.	-	-	-	-	-	-

*No detailed Conservation Objectives for West Fermanagh Scarplands (UK0030300)

Table E1.49 Conservation Objectives (CO) for Qualifying Interest (QI) – Marsh Saxifrage

1528 Marsh Saxifrage (<i>Saxifraga hirculus</i>)								
To maintain the favourable conservation condition of Marsh Saxifrage (<i>Saxifraga hirculus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Marsh Saxifrage (<i>Saxifraga hirculus</i>) which are taken from the Bellacorick Bog SAC [001922] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)

			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution	Number and geographical spread of populations.	No loss in geographical spread and number of populations, subject to natural processes.	-	-	-	-	-	-
Population size: number of rosettes	Number.	Maintain the size of the known populations, subject to natural processes. The target numbers of rosettes are: at least 136 in Formoyle, at least 288 in Sheskin A, at least 93 in Sheskin B, at least 800 in Sheskin C and at least 1,600 in Croaghaun East.	-	-	-	-	-	-
Population size: area of occupancy	Hectares.	Maintain the areas of occupancy of the known populations, subject to natural processes. The target areas are: at least 0.0066ha in Formoyle, at least 0.0014ha in Sheskin A, at least 0.0071ha in Sheskin B, at least 0.09ha in Sheskin C and at least 0.1093ha in Croaghaun East.	-	-	-	-	-	-
Hydrological conditions: water level	Occurrence of high or fluctuating water levels.	Maintain the appropriate natural hydrological regime necessary to support the habitat for the species.	-	-	-	H	-	-
Vegetation composition: positive indicator species	Occurrence in a representative number of 1m x 1m monitoring stops.	Knotted pearlwort (<i>Sagina nodosa</i>) should be present in at least two of five 1m x 1m monitoring stops.	-	-	-	-	WQ	-
Vegetation composition: negative indicator species	Mean percentage cover in five 1m x 1m monitoring stops.	Mean percentage cover of purple moor-grass (<i>Molinia caerulea</i>) should not exceed 5%; mean percentage cover of Yorkshire fog (<i>Holcus lanatus</i>) should not exceed 15%.	-	-	-	-	-	-
Vegetation structure: grazing level	Evidence of grazing.	Maintain grazing at light to moderate levels to ensure an open vegetation structure and to allow flowering to occur.	-	-	-	-	-	-

Table E1.50 Conservation Objectives (CO) for Qualifying Interest (QI) – Ringed Plover

A137 Ringed Plover (<i>Charadrius hiaticula</i>)									
To maintain the favourable conservation condition of Ringed Plover (<i>Charadrius hiaticula</i>) which is defined by the following list of attributes and targets.									
To note: Specific CO for Ringed Plover (<i>Charadrius hiaticula</i>) which are taken from the Killala Bay/ Moy Estuary SPA [004036], Mid-Clare Coast SPA [004182] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change	Long term population trend stable or increasing.	M	L	-	-	WQ	D	
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by ringed plover, other than that occurring from natural patterns of variation.	M	L	F	H	WQ	D	

*No detailed Conservation Objectives for Ballycotton Bay SPA [004022]

Table E1.51 Conservation Objectives (CO) for Qualifying Interest (QI) – Golden Plover

A140 Golden Plover (<i>Pluvialis apricaria</i>)									
To maintain the favourable conservation condition of Golden Plover (<i>Pluvialis apricaria</i>) which is defined by the following list of attributes and targets.									
To note: Specific CO for Golden Plover (<i>Pluvialis apricaria</i>) which are taken from the Killala Bay/ Moy Estuary SPA [004036], Bannow Bay SPA [004033], Tramore Back Strand SPA [004027], Ballycotton Bay SPA [004022], Ballyteige Burrow SPA [004020], Cork Harbour SPA [004030], Wexford Harbour SPA [004076], Blackwater Estuary SPA [004028] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	-	H	WQ	D	
Distribution	Number, range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by golden plover, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D	

*No detailed Conservation Objectives for Owenduff/ Nephin Complex

Table E1.52 Conservation Objectives (CO) for Qualifying Interest (QI) – Grey Plover

A141 Grey Plover (<i>Pluvialis squatarola</i>) To maintain the favourable conservation condition of Grey Plover (<i>Pluvialis squatarola</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Grey Plover (<i>Pluvialis squatarola</i>) which are taken from the Killala Bay/ Moy Estuary SPA [004036], Bannow Bay SPA [004033], Tramore Back Strand SPA [004027], Wexford Harbour and Slob SPA [004076], The Raven SPA [004019], Ballycotton Bay SPA [004022], Ballyteige Burrow SPA [004020], Cork Harbour SPA [004030] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	-	H	WQ	D	
Distribution	Number, range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by grey plover, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D	

*No detailed Conservation Objectives for Ballysadare Bay/ Tacumshin Lake SPA

Table E1.53 Conservation Objectives (CO) for Qualifying Interest (QI) – Sanderling

A144 Sanderling (<i>Calidris alba</i>) To maintain the favourable conservation condition of Sanderling (<i>Calidris alba</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Sanderling (<i>Calidris alba</i>) which are taken from the Killala Bay/ Moy Estuary SPA [004036] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	-	-	WQ	D	
Distribution	Number, range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by sanderling, other than that occurring from natural patterns of variation.	-	L	-	-	WQ	D	

Table E1.54 Conservation Objectives (CO) for Qualifying Interest (QI) – Dunlin

A149 Dunlin <i>Calidris (alpina alpina)</i> To maintain the favourable conservation condition of Dunlin <i>Calidris (alpina alpina)</i> which is defined by the following list of attributes and targets. To note: Specific CO for Dunlin <i>Calidris (alpina alpina)</i> which are taken from the Killala Bay/ Moy Estuary SPA [004036], Mid-Clare Coast SPA [004182], Bannow Bay SPA [004033], Blackwater Estuary SPA [004028], Cork Harbour SPA [004030], Wexford Harbour and Slob SPA [004076], Tramore Back Strand SPA [004027] and River Shannon and River Fergus SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	-	H	WQ	D	
Distribution	Number, range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by dunlin, other than that occurring from natural patterns of variation.	M	L	F	H	WQ	D	

*No detailed Conservation Objectives for Lough Nillan Bog SPA and Ballysadare Bay SPA

Table E1.55 Conservation Objectives (CO) for Qualifying Interest (QI) – Curlew

A160 Curlew (<i>Numenius arquata</i>) To maintain the favourable conservation condition of Curlew (<i>Numenius arquata</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Curlew (<i>Numenius arquata</i>) which are taken from the Killala Bay/ Moy Estuary SPA [004036], Bannow Bay SPA [004033], Tramore Back Strand SPA [004027], Ballycotton Bay SPA [004022], Blackwater Estuary SPA [004028], Cork Harbour SPA [004030], Wexford Harbour and Slob SPA [004076] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	-	-	WQ	D	
Distribution	Number, range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by curlew, other than that occurring from natural patterns of variation.	M	L	F	H	WQ	D	

Table E1.56 Conservation Objectives (CO) for Qualifying Interest (QI) – Redshank

A162 Redshank (<i>Tringa totanus</i>) To maintain the favourable conservation condition of Redshank (<i>Tringa totanus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Redshank (<i>Tringa totanus</i>) which are taken from the Killala Bay/ Moy Estuary SPA [004036], Bannow Bay SPA [004033], Blackwater Estuary SPA [004028], Cork Harbour SPA [004030], Wexford Harbour and Slob SPA [004076] and River Shannon and River Fergus SPA [004077] and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	-	-	WQ	D
Distribution	Number, range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by redshank, other than that occurring from natural patterns of variation.	M	L	F	-	WQ	D

*No detailed Conservation Objectives for Cummeen Strand SPA and Ballysadare Bay SPA

Table E1.57 Conservation Objectives (CO) for Qualifying Interest (QI) – Wetlands

A999 Wetlands To maintain the favourable conservation condition of Wetlands which is defined by the following list of attributes and targets. To note: Specific CO for Wetlands which are taken from the Killala Bay/ Moy Estuary SPA [004036] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 3, 204 hectares, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D

*No detailed Conservation Objectives for Lough Mask/ Tacumshin Lake/ Lady's Island Lake SPA

**Detailed Conservation Objectives for River Shannon and River Fergus SPA [004077], Mid-Clare Coast SPA [004182], Bannow Bay SPA [004033], Tramore Back Strand SPA [004027], Ballycotton Bay SPA [004022], Blackwater Estuary SPA [004028], Cork Harbour SPA [004030], Ballyteige Burrow SPA [004020], Wexford Harbour and Slob SPA [004076] and The Raven SPA [004019] for the same attribute. However, an area of 32,261ha, 4,641ha, 1,364ha, 676ha, 281ha, 871ha, 2,587ha, 559ha, 4,241ha and 4,207ha are specified for these SPA's respectively

Table E1.58 Conservation Objectives (CO) for Qualifying Interest (QI) – Mediterranean salt meadows

1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) To maintain the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Mediterranean salt meadows (<i>Juncetalia maritimi</i>) which are taken from the Lower River Shannon SAC [002165] and River Barrow and River Nore SAC [002162], Streedagh Point Dunes SAC [001680], Tramore Dunes and Back Strand SAC [000671], Ballyteige Burrow SAC [000696], Bannow Bay SAC [000697] and Lower River Suir SAC [002137] and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes, including erosion and succession.	-	L	-	H	WQ	-
Habitat distribution	Occurrence.	No decline, or change in habitat distribution, subject to natural processes.	-	L	-	-	WQ	-
Physical structure: sediment supply	Presence/ absence of physical barriers.	Maintain natural circulation of sediments and organic matter, without any physical obstructions.	-	-	-	H	-	-
Physical structure: creeks and pans	Occurrence.	Maintain creek and pan structure, subject to natural processes, including erosion and succession.	-	-	-	H	-	-
Physical structure: flooding regime	Hectares flooded; frequency.	Maintain natural tidal regime.	-	-	-	H	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	-	-	H	-	-
Vegetation structure: vegetation height	Centimetres.	Maintain structural variation within sward.	-	-	-	-	WQ	-
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops.	Maintain more than 90% of area outside creeks vegetated.	-	-	-	-	WQ	-
Vegetation composition: typical species	Percentage cover.	Maintain range of sub- communities with typical species listed in	-	L	-	-	-	-

1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)									
To maintain the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Mediterranean salt meadows (<i>Juncetalia maritimi</i>) which are taken from the Lower River Shannon SAC [002165] and River Barrow and River Nore SAC [002162], Streedagh Point Dunes SAC [001680], Tramore Dunes and Back Strand SAC [000671], Ballyteige Burrow SAC [000696], Bannow Bay SAC [000697] and Lower River Suir SAC [002137] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
		Saltmarsh Monitoring Project (McCorry and Ryle, 2009).							
Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares.	No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1%.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Ballymacoda (Clonpriest and Pillmore) SAC

** Detailed Conservation Objectives for Blackwater River (Cork/Waterford) SAC for all attributes with the exception of 'Vegetation composition: typical species' and 'Vegetation structure: negative indicator species – *Spartina anglica*'

Table E1.59 Conservation Objectives (CO) for Qualifying Interest (QI) – River Lamprey

1099 River Lamprey (<i>Lampetra fluviatilis</i>)									
To maintain the favourable conservation condition of River Lamprey (<i>Lampetra fluviatilis</i>) which is defined by the following list of attributes and targets. To note: Specific CO for River Lamprey (<i>Lampetra fluviatilis</i>) which are taken from the Blackwater River (Cork/ Waterford) SAC [002170], Lower River Shannon SAC [002165] and River Barrow and River Nore SAC [002162] and Lower River Suir SAC [002137] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution	% of river accessible.	Access to all water courses down to first order streams.	-	-	-	-	-	-	-
Population structure of juveniles	Number of age/size groups.	At least three age/size groups of river/brook lamprey present.	M	-	-	-	-	WQ	-
Juvenile density in fine sediment	Juveniles/m ² .	Mean catchment juvenile density of brook/river lamprey at least 2/m ² .	M	-	-	-	-	-	-
Extent and distribution of spawning habitat	m ² and occurrence.	No decline in extent and distribution of spawning beds.	-	-	-	-	-	WQ	-
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas.	More than 50% of sample sites positive. See map 10 for recorded locations of brook/river lamprey juveniles.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Cumeen/ Drumcliff Bay (Sligo Bay) SAC and Lough Gill SAC

Table E1.60 Conservation Objectives (CO) for Qualifying Interest (QI) – Twaite Shad

1103 Twaite Shad (<i>Alosa fallax</i>)									
To maintain the favourable conservation condition of Twaite Shad (<i>Alosa fallax</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Twaite Shad (<i>Alosa fallax</i>) which are taken from the Blackwater River (Cork/ Waterford) SAC [002170], Lower River Suir SAC (002137) and River Barrow and River Nore SAC (002162) and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution: extent of anadromy	% of river accessible.	Greater than 75% of main stem length of rivers accessible from estuary.	-	L	-	-	-	-	-
Population structure: age classes	Number of age classes.	More than one age class present.	M	-	-	-	-	-	-
Extent and distribution of spawning habitat	m ² and occurrence.	No decline in extent and distribution of spawning habitats.	-	L	-	-	-	-	-
Water quality: oxygen levels	Milligrams per litre.	No lower than 5mg/l.	-	-	-	-	-	-	-
Spawning habitat quality: Filamentous algae; macrophytes; sediment	Occurrence.	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plant) growth.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Lower River Shannon SAC

Table E1.61 Conservation Objectives (CO) for Qualifying Interest (QI) – Vegetated sea cliffs of the Atlantic and Baltic coasts

1230 Vegetated sea cliffs of the Atlantic and Baltic coasts									
To maintain the favourable conservation condition of Vegetated sea cliffs of the Atlantic and Baltic coasts which is defined by the following list of attributes and targets.									
To note: Specific CO for Vegetated sea cliffs of the Atlantic and Baltic coasts which are taken from the Ardmore Head SAC [002123], Lower River Shannon SAC [002165], Hook Head SAC [000764] and Saltee Islands SAC [000707] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat length	Kilometres.	Area stable, subject to natural processes, including erosion. For the sub-site (Ardmore) mapped, total length of cliff sections.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-	-
Physical structure: functionality and hydrological regime	Occurrence of artificial barriers.	No alteration to natural functioning of geomorphological and hydrological processes, including groundwater quality, due to artificial structures.	-	-	-	H	-	-	-
Vegetation structure: zonation	Occurrence.	Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession.	-	-	-	H	-	-	-
Vegetation structure: vegetation height	Centimetres.	Maintain structural variation within sward.	-	-	-	-	-	-	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops.	Maintain range of sub-communities with typical species listed in the Irish Sea Cliff Survey.	-	-	-	-	-	-	-
Vegetation composition: negative indicator species	Percentage.	Negative indicator species (including non-native species) to represent less than 5% cover.	-	-	-	-	-	-	-
Vegetation composition: bracken and woody species	Percentage.	Cover of bracken (<i>Pteridium aquilinum</i>) on grassland and/or heath less than 10%. Cover of woody species on grassland and or heath less than 20%.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Killala Bay/ Moy Estuary SAC

Table E1.62 Conservation Objectives (CO) for Qualifying Interest (QI) – Teal

A052 Teal (<i>Anas crecca</i>)									
To maintain the favourable conservation condition of Teal (<i>Anas crecca</i>) which is defined by the following list of attributes and targets.									
To note: Specific CO for Teal (<i>Anas crecca</i>) which are taken from the Ballycotton Bay SPA [004022], River Shannon and River Fergus Estuaries SPA [004077] and Wexford Harbour and Slob SPA [4076] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by teal, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D	

*No detailed Conservation Objectives for Tacumshin Lake SPA

Table E1.63 Conservation Objectives (CO) for Qualifying Interest (QI) – Lapwing

A142 Lapwing (<i>Vanellus vanellus</i>)									
To maintain the favourable conservation condition of Lapwing (<i>Vanellus vanellus</i>) which is defined by the following list of attributes and targets.									
To note: Specific CO for Lapwing (<i>Vanellus vanellus</i>) which are taken from the Ballycotton Bay SPA [004022], Bannow Bay SPA [004033], Tramore Back Strand SPA [004027], Blackwater Estuary SPA [004028], Ballyteige Burrow SPA [004020], Wexford Harbour and Slob SPA [004076], Cork Harbour SPA [004030] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	

A142 Lapwing (<i>Vanellus vanellus</i>)		To maintain the favourable conservation condition of Lapwing (<i>Vanellus vanellus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Lapwing (<i>Vanellus vanellus</i>) which are taken from the Ballycotton Bay SPA [004022], Bannow Bay SPA [004033], Tramore Back Strand SPA [004027], Blackwater Estuary SPA [004028], Ballyteige Burrow SPA [004020], Wexford Harbour and Slobbs SPA [004076], Cork Harbour SPA [004030] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.						
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	H	WQ	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by lapwing, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D

*No detailed Conservation Objectives for Tacumshin Lake SPA

Table E1.64 Conservation Objectives (CO) for Qualifying Interest (QI) – Black-tailed Godwit

A156 Black-tailed Godwit (<i>Limosa limosa</i>)		To maintain the favourable conservation condition of Black-tailed Godwit (<i>Limosa limosa</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Black-tailed Godwit (<i>Limosa limosa</i>) which are taken from the Ballycotton Bay SPA [004022], Bannow Bay SPA [004033], Blackwater Estuary SPA [004028], Wexford Harbour and Slobbs SPA [004076], Tramore Back Strand SPA [004027], Cork Harbour SPA [004030], Ballyteige Burrow SPA [004020], Tramore Back Strand SPA [004027] and River Shannon and River Fergus SPA [004077] and thus are applicable to these areas only.						
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	H	WQ	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by black-tailed godwit, other than that occurring from natural patterns of variation.	M	L	F	H	WQ	D

*No detailed Conservation Objectives for Drumcliff Bay/ Tacumshin Lake SPA

Table E1.65 Conservation Objectives (CO) for Qualifying Interest (QI) – Bar-tailed Godwit

A157 Bar-tailed Godwit (<i>Limosa lapponica</i>)		To maintain the favourable conservation condition of Bar-tailed Godwit (<i>Limosa lapponica</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Bar-tailed Godwit (<i>Limosa lapponica</i>) which are taken from the Ballycotton Bay SPA [004022], Bannow Bay SPA [004033], Tramore Back Strand SPA [004027], Blackwater Estuary SPA [004028], Cork Harbour SPA [004030], Ballyteige Burrow SPA [004020], Wexford Harbour and Slobbs SPA [004076] and River Shannon and River Fergus SPA [004077] and thus are applicable to these areas only.						
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	H	WQ	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by bar-tailed godwit, other than that occurring from natural patterns of variation.	M	L	F	H	WQ	D

*No detailed Conservation Objectives for Ballysadare Bay SPA

Table E1.66 Conservation Objectives (CO) for Qualifying Interest (QI) – Turnstone

A169 Turnstone (<i>Arenaria interpres</i>)		To maintain the favourable conservation condition of Turnstone (<i>Arenaria interpres</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Turnstone (<i>Arenaria interpres</i>) which are taken from the Ballycotton Bay SPA [004022] and thus are applicable to this area only.						
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	--	-	-

A169 Turnstone (<i>Arenaria interpres</i>) To maintain the favourable conservation condition of Turnstone (<i>Arenaria interpres</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Turnstone (<i>Arenaria interpres</i>) which are taken from the Ballycotton Bay SPA [004022] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by turnstone, other than that occurring from natural patterns of variation.	M	-	F	H	WQ	D	

Table E1.67 Conservation Objectives (CO) for Qualifying Interest (QI) – Common Gull

A182 Common Gull (<i>Larus canus</i>) To maintain the favourable conservation condition of Common Gull (<i>Larus canus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Common Gull (<i>Larus canus</i>) which are taken from the Ballycotton Bay SPA [004022] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by common gull, other than that occurring from natural patterns of variation.	-	-	F	H	WQ	D	

*No detailed Conservation Objectives for Lough Conn and Lough Cullin SPA, Lough Mask SPA and Lough Carra SPA

Table E1.68 Conservation Objectives (CO) for Qualifying Interest (QI) – Lesser Black-backed Gull

A183 Lesser Black-backed Gull (<i>Larus fuscus</i>) To maintain the favourable conservation condition of Lesser Black-backed Gull (<i>Larus fuscus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Lesser Black-backed Gull (<i>Larus fuscus</i>) which are taken from the Ballycotton Bay SPA [004022] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by lesser black-backed gull, other than that occurring from natural patterns of variation.	-	-	F	H	WQ	D	

*No detailed Conservation Objectives for Lough Derg (Donegal) SPA and Lough Mask SPA

Table E1.69 Conservation Objectives (CO) for Qualifying Interest (QI) – Wigeon

A050 Wigeon (<i>Anas penelope</i>) To maintain the favourable conservation condition of Wigeon (<i>Anas penelope</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Wigeon (<i>Anas penelope</i>) which are taken from the Blackwater Estuary SPA [004028], Wexford Harbour and Slob SPA [4076] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	--
Distribution	Range, timing and intensity of use of areas.	There should be no significant decrease in the range, timing or intensity of use of areas by Wigeon, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D	

*No detailed Conservation Objectives for Tacumshin Lake SPA

Table E1.70 Conservation Objectives (CO) for Qualifying Interest (QI) – Little Grebe

A004 Little Grebe (<i>Tachybaptus ruficollis</i>) To maintain the favourable conservation condition of Little Grebe (<i>Tachybaptus ruficollis</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Little Grebe (<i>Tachybaptus ruficollis</i>) which are taken from the Cork Harbour SPA [004030] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M		-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by little grebe, other than that occurring from natural patterns of variation.	-	-	F	H	WQ	D	

*No detailed Conservation Objectives for Lough Arrow SPA

Table E1.71 Conservation Objectives (CO) for Qualifying Interest (QI) – Great Crested Grebe

A005 Great Crested Grebe (<i>Podiceps cristatus</i>) To maintain the favourable conservation condition of Great Crested Grebe (<i>Podiceps cristatus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Great Crested Grebe (<i>Podiceps cristatus</i>) which are taken from the Cork Harbour SPA [004030] and Wexford Harbour and Slobs SPA [004076] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by great crested grebe, other than that occurring from natural patterns of variation.	-	-	F	H	WQ	D	

Table E1.72 Conservation Objectives (CO) for Qualifying Interest (QI) – Cormorant

A017 Cormorant (<i>Phalacrocorax carbo</i>) To maintain the favourable conservation condition of Cormorant (<i>Phalacrocorax carbo</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Cormorant (<i>Phalacrocorax carbo</i>) which are taken from the River Shannon and River Fergus Estuaries SPA [004077], Wexford Harbour and Slobs SPA [004076], The Raven SPA [004019] and Mid-Clare SPA [004182] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Breeding population abundance: apparently occupied nests (AONs)	Number.	No significant decline.	M	L	-	-	-	-	D
Productivity rate	Mean number.	No significant decline.	M		-	-	-	-	-
Distribution: breeding colonies	Number; location; area (hectares).	No significant decline.	-	L	-	-	-	-	-
Prey biomass available	Kilogrammes.	No significant decline.	-	-	-	-	-	-	-
Barriers to connectivity	Number; location; shape; area (hectares).	No significant increase.	-	-	F	-	-	-	D
Disturbance at the breeding site	Level of impact.	Human activities should occur at levels that do not adversely affect the breeding cormorant population.	-	-	F	-	-	-	D
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by cormorant, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D	

*No detailed Conservation Objectives for Lough Derg (Donegal)/ Sovereign Islands/ Helvick Head to Ballyguin/ Keeragh Islands/ Saltee Islands/ Mid Waterford Coast SPA

**Detailed Conservation Objectives for Cork Harbour SPA but only for 'Population Trend' and 'Distribution' attributes

Table E1.73 Conservation Objectives (CO) for Qualifying Interest (QI) – Grey Heron

A028 Grey Heron (<i>Ardea cinerea</i>) To maintain the favourable conservation condition of Grey Heron (<i>Ardea cinerea</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Grey Heron (<i>Ardea cinerea</i>) which are taken from the Cork Harbour SPA [004030] and Wexford Harbour and Slobbs SPA [004076], and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by grey heron, other than that occurring from natural patterns of variation.	-	--	F	H	WQ	D	

Table E1.74 Conservation Objectives (CO) for Qualifying Interest (QI) – Shelduck

A048 Shelduck (<i>Tadorna tadorna</i>) To maintain the favourable conservation condition of Shelduck (<i>Tadorna tadorna</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Shelduck (<i>Tadorna tadorna</i>) which are taken from the Cork Harbour SPA [004030] and River Shannon, Bannow Bay SPA [004033], Ballyteige Burrow SPA [004020], Wexford Harbour and Slobbs SPA [4076] and River Fergus Estuaries [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	H	WQ	--	
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by shelduck, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D	

Table E1.75 Conservation Objectives (CO) for Qualifying Interest (QI) – Pintail

A054 Pintail (<i>Anas acuta</i>) To maintain the favourable conservation condition of Pintail (<i>Anas acuta</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Pintail (<i>Anas acuta</i>) which are taken from the Cork Harbour SPA [004030], Bannow Bay SPA [004033], Wexford Harbour and Slobbs SPA [004076] and River Shannon and River Fergus SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by pintail, other than that occurring from natural patterns of variation.	-	L	F	H	WQ	D	

*No detailed Conservation Objectives for Tacumshin Lake SPA

Table E1.76 Conservation Objectives (CO) for Qualifying Interest (QI) – Shoveler

A056 Shoveler (<i>Anas clypeata</i>) To maintain the favourable conservation condition of Shoveler (<i>Anas clypeata</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Shoveler (<i>Anas clypeata</i>) which are taken from the Cork Harbour SPA [004030] and River Shannon and River Fergus SPA [004077] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by shoveler, other than that occurring from natural patterns of variation.	--	L	F	H	WQ	D	

*No detailed Conservation Objectives for Tacumshin Lake SPA

Table E1.77 Conservation Objectives (CO) for Qualifying Interest (QI) – Red-breasted Merganser

A069 Red-breasted Merganser (<i>Mergus serrator</i>) To maintain the favourable conservation condition of Red-breasted Merganser (<i>Mergus serrator</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Red-breasted Merganser (<i>Mergus serrator</i>) which are taken from the Cork Harbour SPA [004030] and Wexford Harbour and Slobs SPA [004076] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by red-breasted merganser, other than that occurring from natural patterns of variation.	-	-	F	H	WQ	D	

Table E1.78 Conservation Objectives (CO) for Qualifying Interest (QI) – Oystercatcher

A130 Oystercatcher (<i>Haematopus ostralegus</i>) To maintain the favourable conservation condition of Oystercatcher (<i>Haematopus ostralegus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Oystercatcher (<i>Haematopus ostralegus</i>) which are taken from the Cork Harbour SPA [004030] and Bannow Bay SPA [004033] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	-
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing and intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation.	-	-	F	H	WQ	D	

*No detailed Conservation Objectives for Cummeen Strand SPA

Table E1.79 Conservation Objectives (CO) for Qualifying Interest (QI) – Black-headed Gull

A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) To maintain the favourable conservation condition of Black-headed Gull (<i>Chroicocephalus ridibundus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Black-headed Gull (<i>Chroicocephalus ridibundus</i>) which are taken from the Cork Harbour SPA [004030] and Wexford Harbour and Slobs SPA [004076] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-	D
Distribution	Range, timing and intensity of use of areas.	No significant decrease in the range, timing or intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation.	M	L	F	H	WQ	D	

*No detailed Conservation Objectives for Lough Mask/ Lady's Island Lake SPA

Table E1.80 Conservation Objectives (CO) for Qualifying Interest (QI) – Common Tern

A193 Common Tern (<i>Sterna hirundo</i>) To maintain the favourable conservation condition of Common Tern (<i>Sterna hirundo</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Common Tern (<i>Sterna hirundo</i>) which are taken from the Cork Harbour SPA [004030] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Breeding population abundance: apparently occupied nests (AONs)	Number.	No significant decline.	M	-	-	-	-	-	-

A193 Common Tern (<i>Sterna hirundo</i>)								
To maintain the favourable conservation condition of Common Tern (<i>Sterna hirundo</i>) which is defined by the following list of attributes and targets.								
To note: Specific CO for Common Tern (<i>Sterna hirundo</i>) which are taken from the Cork Harbour SPA [004030] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Productivity rate: fledged young per breeding pair	Mean number.	No significant decline.	M	-	-	-	-	-
Distribution: breeding colonies	Number; location; area (hectares).	No significant decline.	-	-	F	H	WQ	D
Prey biomass available	Kilogrammes.	No significant decline.	-	-	F	-	-	D
Barriers to connectivity	Number; location; shape; area (hectares).	No significant increase.	-	-	F	-	-	D
Disturbance at the breeding site	Level of impact.	Human activities should occur at levels that do not adversely affect the breeding common tern population.	-	-	F	-	-	D

*No detailed Conservation Objectives for Lough Derg (Donegal) SPA and Lough Mask SPA

Table E1.81 Conservation Objectives (CO) for Qualifying Interest (QI) – Mallard

A053 Mallard (<i>Anas platyrhynchos</i>)								
To maintain the favourable conservation condition of Mallard (<i>Anas platyrhynchos</i>) which is defined by the following list of attributes and targets.								
To note: Specific CO for Mallard (<i>Anas platyrhynchos</i>) which are taken from the Wexford Harbour and Slobs SPA [4076] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-
Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.	M	-	-	-	-	-

Table E1.82 Conservation Objectives (CO) for Qualifying Interest (QI) – Scaup

A062 Scaup (<i>Aythya marila</i>)								
To maintain the favourable conservation condition of Scaup (<i>Aythya marila</i>) which is defined by the following list of attributes and targets.								
To note: Specific CO for Scaup (<i>Aythya marila</i>) which are taken from the Wexford Harbour and Slobs SPA [4076], Wexford Harbour and Slobs SPA [004076] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-
Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.	M	-	-	-	-	-

Table E1.83 Conservation Objectives (CO) for Qualifying Interest (QI) – Goldeneye

A067 Goldeneye (<i>Bucephala clangula</i>)								
To maintain the favourable conservation condition of Goldeneye (<i>Bucephala clangula</i>) which is defined by the following list of attributes and targets.								
To note: Specific CO for Goldeneye (<i>Bucephala clangula</i>) which are taken from the Wexford Harbour and Slobs SPA [4076] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-

A067 Goldeneye (<i>Bucephala clangula</i>) To maintain the favourable conservation condition of Goldeneye (<i>Bucephala clangula</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Goldeneye (<i>Bucephala clangula</i>) which are taken from the Wexford Harbour and Slobs SPA [4076] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.	M	-	-	-	-	-

*No detailed Conservation Objectives for Lough Derg (Donegal) SPA

Table E1.84 Conservation Objectives (CO) for Qualifying Interest (QI) – Hen Harrier

A082 Hen Harrier (<i>Circus cyaneus</i>) To maintain the favourable conservation condition of Hen Harrier (<i>Circus cyaneus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Hen Harrier (<i>Circus cyaneus</i>) which are taken from the Wexford Harbour and Slobs SPA [4076] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Roost attendance: individual hen harriers	Number.	No significant decline.	M	-	-	-	-	-
Suitable foraging habitat	Hectares.	No significant decline.	-	L	-	-	-	-
Roost site: condition	Area (hectares); structure.	The roost site should be maintained in a suitable condition.	-	L	-	-	-	-
Disturbance at the roost site	Level of impact.	Human activities should occur at levels that do not adversely affect the Hen Harrier winter roost population.	-	L	-	-	-	-

*No detailed Conservation Objectives for Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

Table E1.85 Conservation Objectives (CO) for Qualifying Interest (QI) – Coot

A125 Coot (<i>Fulica atra</i>) To maintain the favourable conservation condition of Coot (<i>Fulica atra</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Coot (<i>Fulica atra</i>) which are taken from the Wexford Harbour and Slobs SPA [4076] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-
Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.	M	-	-	-	-	-

Table E1.86 Conservation Objectives (CO) for Qualifying Interest (QI) – Knot

A143 Knot (<i>Calidris canutus</i>) To maintain the favourable conservation condition of Knot (<i>Calidris canutus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Knot (<i>Calidris canutus</i>) which are taken from the Wexford Harbour and Slobs SPA [4076], Bannow Bay SPA [004033], Wexford Harbour and Slobs SPA [004076] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	D
Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns	M	L	F	-	-	D

A143 Knot (<i>Calidris canutus</i>) To maintain the favourable conservation condition of Knot (<i>Calidris canutus</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Knot (<i>Calidris canutus</i>) which are taken from the Wexford Harbour and Slobs SPA [4076], Bannow Bay SPA [004033], Wexford Harbour and Slobs SPA [004076] and River Shannon and River Fergus Estuaries SPA [004077] and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
		of variation.						

*No detailed Conservation Objectives for Bannow Bay SPA

Table E1.87 Conservation Objectives (CO) for Qualifying Interest (QI) – Little Tern

A195 Little Tern (<i>Sterna albifrons</i>) To maintain the favourable conservation condition of Little Tern (<i>Sterna albifrons</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Little Tern (<i>Sterna albifrons</i>) which are taken from the Wexford Harbour and Slobs SPA [4076] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Breeding population abundance: apparently occupied nests (AONs)	Number.	No significant decline.	M	-	-	-	-	-
Productivity rate: fledged young per breeding pair	Mean number.	No significant decline.	M	-	-	-	-	-
Distribution: breeding colonies	Number; location; area (Hectares).	No significant decline.	M	-	-	-	-	-
Prey biomass available	Kilogrammes.	No significant decline.	-	-	-	-	-	-
Barriers to connectivity	Number; location; shape; area (hectares).	No significant increase.	-	-	-	-	-	-
Disturbance at the breeding site	Level of impact.	Human activities should occur at levels that do not adversely affect the breeding little tern population.	-	-	-	-	-	-

Table E1.88 Conservation Objectives (CO) for Qualifying Interest (QI) – Red-throated Diver

A001 Red-throated Diver (<i>Gavia stellate</i>) To maintain the favourable conservation condition of Red-throated Diver (<i>Gavia stellate</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Red-throated Diver (<i>Gavia stellate</i>) which are taken from the Raven SPA [4019] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	-	-	-	-	-
Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.	M	-	-	-	-	-

Table E1.89 Conservation Objectives (CO) for Qualifying Interest (QI) – Common Scoter

A065 Common Scoter (<i>Melanitta nigra</i>) To maintain the favourable conservation condition of Common Scoter (<i>Melanitta nigra</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Common Scoter (<i>Melanitta nigra</i>) which are taken from the The Raven SPA [4019] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	M	L	F	-	-	D
Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas	M	L	F	-	WQ	D

A065 Common Scoter (<i>Melanitta nigra</i>)								
To maintain the favourable conservation condition of Common Scoter (<i>Melanitta nigra</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Common Scoter (<i>Melanitta nigra</i>) which are taken from the The Raven SPA [4019] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
		used by waterbird species, other than that occurring from natural patterns of variation.						

*No detailed Conservation Objectives for Lough Conn and Lough Cullin SPA

Table E1.90 Conservation Objectives (CO) for Qualifying Interest (QI) – Reefs

1170 Reefs								
To maintain the favourable conservation condition of Reefs which is defined by the following list of attributes and targets. To note: Specific CO for Reefs which are taken from the The Lower River Shannon SAC [002165] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat distribution	Occurrence.	The distribution of Reefs is stable, subject to natural processes.	-	L	-	H	-	-
Habitat area	Hectares.	The permanent habitat area is stable, subject to natural processes.	-	L	-	H	-	-
Community distribution	Hectares.	Conserve the following reef community types in a natural condition: Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria- dominated community complex.	-	L	-	H	-	-

*No detailed Conservation Objectives for River Barrow and River Nore SAC

**Detailed Conservation Objective for Bundiff Lough and Machair/ Trawalua/ Mullaghmore/ St. John's Point/ Saltee Islands/ Hook Head SAC but Attribute only for 'Distribution: extent of anadromy'. Not representative of majority of SAC therefore River Moy SAC Conservation Objectives used.

Table E1.91 Conservation Objectives (CO) for Qualifying Interest (QI) – Sandbanks

1110 Sandbanks which are slightly covered by sea water all the time								
To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time which is defined by the following list of attributes and targets. To note: Specific CO for Sandbanks which are slightly covered by sea water all the time which are taken from the The Lower River Shannon SAC [002165] and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat distribution	Occurrence.	The distribution of sandbanks is stable, subject to natural processes.	-	L	-	-	-	-
Habitat area	Hectares.	The permanent habitat area is stable or increasing, subject to natural processes.	-	L	-	-	-	-
Community distribution	Hectares.	Conserve the following community type in a natural condition: Subtidal sand to mixed sediment with Nephys spp. community complex.	-	L	-	-	-	-

Table E1.92 Conservation Objectives (CO) for Qualifying Interest (QI) – Coastal lagoons

1150 Coastal lagoons					
To restore the favourable conservation condition of Coastal lagoons which is defined by the following list of attributes and targets. To note: Specific CO for Coastal lagoons which are taken from the The Lower River Shannon SAC [002165] and Durnesh Lough SAC [000138], and Ballyteige Burrow SAC [000696] and thus are applicable to these areas only.					
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)		
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)

1150 Coastal lagoons									
To restore the favourable conservation condition of Coastal lagoons which is defined by the following list of attributes and targets.									
To note: Specific CO for Coastal lagoons which are taken from the The Lower River Shannon SAC [002165] and Durnesh Lough SAC [000138], and Ballyteige Burrow SAC [000696] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area stable or increasing, subject to natural processes. Favourable reference area 33.4ha- Shannon Airport Lagoon 24.2ha; Cloonconeen Pool 3.9ha; Scatterry Lagoon 2.8ha; Quayfield and Poulaweala Loughs 2.5ha.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-	-
Salinity regime	Practical Salinity Units (psu).	Median annual salinity and temporal variation within natural ranges.	-	-	-	-	-	-	-
Hydrological regime	Metres.	Annual water level fluctuations and minima within natural ranges.	-	-	-	-	-	-	-
Barrier: connectivity between lagoon and sea	Permeability.	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management.	-	-	-	-	-	-	-
Water quality: chlorophyll a	µg/L.	Annual median chlorophyll a within natural ranges and less than 5µg/L.	-	-	-	-	-	-	-
Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L.	Annual median MRP within natural ranges and less than 0.1mg/L.	-	-	-	-	-	-	-
Water quality: Dissolved Inorganic Nitrogen (DIN)	mg/L.	Annual median DIN within natural ranges and less than 0.15mg/L.	-	-	-	-	-	-	-
Depth of macrophyte colonisation	Metres.	Macrophyte colonisation to maximum depth of lagoons.	-	-	-	-	-	-	-
Typical plant species	Number and m ² .	Maintain number and extent of listed lagoonal specialists, subject to natural variation.	-	-	-	-	-	-	-
Typical animal species	Number.	Maintain listed lagoon specialists, subject to natural variation.	-	-	-	-	-	-	-
Negative indicator species	Number and % cover.	Negative indicator species absent or under control.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Tacumshin Lake SAC

Table E1.93 Conservation Objectives (CO) for Qualifying Interest (QI) – Large shallow inlets and bays

1160 Large shallow inlets and bays									
To maintain the favourable conservation condition of Large shallow inlets and bays which is defined by the following list of attributes and targets.									
To note: Specific CO for Large shallow inlets and bays which are taken from the St. John's Point SAC [000191] and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	The permanent habitat area is stable or increasing, subject to natural processes.	-	L	-	-	-	--	-
Community extent	Hectares.	Maintain the extent of the Maërl-dominated community, subject to natural processes.	-	L	-	-	-	WQ	-
Community structure	Biological composition.	Conserve the high quality of the Maërl-dominated community, subject to natural processes.	-	L	-	-	-	WQ	-
Community distribution	Hectares.	Conserve the following community types in a natural condition: Intertidal sand with Scolelepis squamata and Pontocrates spp. community; Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Subtidal sand to mixed sediment with Nucula nucleus community complex; Subtidal sand to mixed sediment with Nephtys spp. community complex; Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria- dominated community complex.	-	L	-	-	-	WQ	-

*Detailed Conservation Objectives for Bunduff Lough and Machair/ Trawalua/ Mullaghmore/ Lower River Shannon SAC for the attributes 'Habitat area' and 'Community distribution'.

**Detailed Conservation Objectives for Saltee Islands/ Hook Head SAC for the attributes 'Habitat area' and 'Community extent'.

Table E1.94 Conservation Objectives (CO) for Qualifying Interest (QI) – Perennial vegetation of stony banks

1220 Perennial vegetation of stony banks									
To maintain the favourable conservation condition of Perennial vegetation of stony banks which is defined by the following list of attributes and targets.									
To note: Specific CO for Perennial vegetation of stony banks which are taken from the The Lower River Shannon SAC [002165], Streedagh Point Dunes SAC [001680], Blackwater River (Cork/Waterford) SAC [002170], Tramore Dunes and Backstrand SAC [000671], Ballyteige Burrow SAC [000696] and Bannow Bay SAC [000697] and thus are applicable to these areas only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Hectares.	Area stable or increasing, subject to natural processes, including erosion and succession.	-	L	-	-	-	-	-
Habitat distribution	Occurrence.	No decline, or change in habitat distribution, subject to natural processes.	-	L	-	H	-	-	-
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers.	Maintain the natural circulation of sediment and organic matter, without any physical obstructions.	-	L	-	H	WQ	-	-
Vegetation structure: zonation	Occurrence.	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	-	L	-	H	-	-	-
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops.	Maintain the typical vegetated shingle flora including the range of sub-communities within the different zones.	-	L	-	-	WQ	-	-
Vegetation composition: negative indicator species	Percentage cover.	Negative indicator species (including non-natives) to represent less than 5% cover.	-	-	-	-	-	-	-

*No detailed Conservation Objectives for Tacumshin Lake SAC

Table E1.95 Conservation Objectives (CO) for Qualifying Interest (QI) – Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

3260 Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation									
To maintain the favourable conservation condition of water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation, which is defined by the following list of attributes and targets.									
To note: Specific CO for water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation are taken from the River Barrow and River Nore SAC (002162) and thus are applicable to this area only.									
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)						
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)	
Habitat area	Kilometres.	Area stable or increasing, subject to natural processes.	-	L	-	H	WQ	-	-
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	WQ	-	-
Hydrological regime: river flow	Metres per second.	Maintain appropriate hydrological regimes.	-	-	-	H	-	-	-
Hydrological regime: groundwater discharge	Metres per second.	The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation.	-	-	-	H	-	-	-
Substratum composition: particle size range	Millimetres.	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (frequently sands, gravels and cobbles).	-	-	-	-	WQ	-	-
Water chemistry: minerals	Milligrams per litre.	The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits.	-	-	-	-	WQ	-	-
Water quality: suspended sediment	Milligrams per litre.	The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments.	-	-	-	-	WQ	-	-
Water quality: nutrients	Milligrams per litre.	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition.	-	-	-	-	WQ	-	-
Vegetation composition: typical species	Occurrence.	Typical species of the relevant habitat sub-type should be present and in good condition.	-	-	-	-	-	-	-
Floodplain connectivity	Area.	The area of active floodplain at and upstream of the habitat should be maintained.	-	-	-	H	-	-	-

*Detailed Conservation Objectives for Lower River Shannon SAC for the attributes, with the exception of 'tidal influence' instead of 'groundwater discharge'.
 ** Detailed Conservation Objectives for Blackwater River (Cork/Waterford) SAC for the attributes up to 'Substratum composition: particle size range', with the exception of 'tidal influence' instead of 'groundwater discharge'.
 ***Detailed Conservation Objectives for Lower River Suir SAC for the attributes up to 'Floodplain connectivity' with the exception of 'an additional attribute for 'fringing habitats'
 ****No detailed Conservation Objectives for Ben Bulbin, Gleniff and Glenade Complex/ Unshin River/ Templehouse And Cloonacleigha Loughs SAC

Table E1.96 Conservation Objectives (CO) for Qualifying Interest (QI) – Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) which is defined by the following list of attributes and targets. To note: Specific CO for Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) are taken from the Lower River Shannon SAC (002165), River Barrow and River Nore SAC [002162], River Moy SAC [002298], Blackwater River (Cork/Waterford) SAC [002170] and Lower River Suir SAC [002137] and thus are applicable to these areas only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat area	Hectares.	Area stable or increasing, subject to natural processes, at least c.8.5ha for sites surveyed.	-	L	-	-	-	-
Habitat distribution	Occurrence.	No decline.	-	L	-	-	-	-
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.	-	L	-	-	-	-
Woodland structure: cover and height	Woodland structure: cover and height.	Diverse structure with a relatively closed canopy containing mature trees; sub canopy layer with semi- mature trees and shrubs; and well-developed herb layer.	-	L	-	-	-	-
Woodland structure: community diversity and extent	Hectares.	Maintain diversity and extent of community types.	-	L	-	-	-	-
Woodland structure: natural regeneration	Seedling: sapling: pole ratio.	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.	-	L	-	-	-	-
Hydrological regime: flooding depth/height of water table	Metres.	Appropriate hydrological regime necessary for maintenance of alluvial vegetation.	-		-	-	-	-
Woodland structure: dead wood	m ³ per hectare; number per hectare.	At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder).	-	L	-	-	-	-
Woodland structure: veteran trees	Number per hectare.	No decline.	-	L	-	-	-	-
Woodland structure: indicators of local distinctiveness	Occurrence.	No decline.	-	L	-	-	-	-
Vegetation composition: native tree cover	Percentage.	No decline. Native tree cover not less than 95%.	-	-	-	-	-	-
Vegetation composition: typical species	Occurrence.	A variety of typical native species present, depending on woodland type, including alder (<i>Alnus glutinosa</i>), willows (<i>Salix</i> spp) and, locally, oak (<i>Quercus robur</i>) and ash (<i>Fraxinus excelsior</i>).	-	-	-	-	-	-
Vegetation composition: negative indicator species	Occurrence.	Negative indicator species, particularly non-native invasive species, absent or under control.	-	-	-	-	-	-

*No detailed Conservation Objectives for Lough Gill/ Unshin River SAC

Table E1.97 Conservation Objectives (CO) for Qualifying Interest (QI) – Bottlenose Dolphin

1349 Bottlenose Dolphin <i>Tursiops truncatus</i> To maintain the favourable conservation condition of Bottlenose Dolphin <i>Tursiops truncatus</i> , which is defined by the following list of attributes and targets. To note: Specific CO for Bottlenose Dolphin <i>Tursiops truncatus</i> are taken from the Lower River Shannon SAC (002165) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Access to suitable habitat	Number of artificial barriers.	Species range within the site should not be restricted by artificial barriers to site use.	-	-	F	H	WQ	-

1349 Bottlenose Dolphin <i>Tursiops truncatus</i>								
To maintain the favourable conservation condition of Bottlenose Dolphin <i>Tursiops truncatus</i> , which is defined by the following list of attributes and targets.								
To note: Specific CO for Bottlenose Dolphin <i>Tursiops truncatus</i> are taken from the Lower River Shannon SAC (002165) and thus are applicable to this area only.								
Habitat use: critical areas	Location and hectares.	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.	-	-	-	H	WQ	D
Disturbance	Level of impact.	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site.	M	-	F	-	WQ	D

Table E1.98 Conservation Objectives (CO) for Qualifying Interest (QI) – Otter

1355 Otter <i>Lutra lutra</i>								
To maintain the favourable conservation condition of Otter <i>Lutra lutra</i> , which is defined by the following list of attributes and targets.								
To note: Specific CO for Otter <i>Lutra lutra</i> are taken from the Lower River Shannon SAC (002165) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution	Percentage positive survey sites.	No significant decline.	M	-	F	-	-	-
Extent of terrestrial habitat	Hectares.	No significant decline. Area mapped and calculated as 596.8ha above high-water mark (HWM); 958.9ha along river banks/ around ponds.	-	L	F	-	-	-
Extent of marine habitat	Hectares.	No significant decline. Area mapped and calculated as 4,461.6ha.	-	L	F	-	-	-
Extent of freshwater (river) habitat	Kilometres.	No significant decline. Length mapped and calculated as 500.1km.	-	L	F	-	-	-
Extent of freshwater (lake/lagoon) habitat	Hectares.	No significant decline. Area mapped and calculated as 125.6ha.	-	L	-	-	-	-
Couching sites and holts	Number.	No significant decline.	-	L	-	-	-	D
Fish biomass available	Kilograms.	No significant decline.	-	-	F	-	-	D
Barriers to connectivity	Number.	No significant increase. For guidance.	-	-	F	-	-	D

*Detailed Conservation Objectives for River Barrow and River Nore SAC for attributes with the exception of 'Barriers to connectivity'

Table E1.99 Conservation Objectives (CO) for Qualifying Interest (QI) – Greenshank

A164 Greenshank <i>Tringa nebularia</i>								
To maintain the favourable conservation condition of Greenshank <i>Tringa nebularia</i> , which is defined by the following list of attributes and targets.								
To note: Specific CO for Greenshank <i>Tringa nebularia</i> are taken from the River Shannon and River Fergus SPA (004077) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Population trend	Percentage change.	Long term population trend stable or increasing.	-	-	-	-	-	D
Distribution	Range, timing and intensity of use of areas.	There should be no significant decrease in the range, timing or intensity of use of areas by greenshank other than that occurring from natural patterns of variation.	-	L	-	-	-	D

Table E1.100 Conservation Objectives (CO) for Qualifying Interest (QI) – Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels								
To maintain the favourable conservation condition of Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels which is defined by the following list of attributes and targets.								
To note: Specific CO for Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels are taken from the River Barrow and River Nore SAC (002162) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Habitat distribution	Occurrence.	No decline, subject to natural processes.	-	L	-	-	-	-

6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels								
To maintain the favourable conservation condition of Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels which is defined by the following list of attributes and targets.								
To note: Specific CO for Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels are taken from the River Barrow and River Nore SAC (002162) and thus are applicable to this area only.								
Habitat area	Hectares.	Area stable or increasing, subject to natural processes.	-	L	-	-	-	-
Hydrological regime: Flooding depth/height of water table	Metres.	Maintain appropriate hydrological regimes.	-	-	-	H	-	-
Vegetation structure: sward height	Centimetres.	30-70% of sward is between 40 and 150cm in height.	-	-	-	-	-	-
Vegetation composition: broadleaf herb: grass ratio	Percentage.	Broadleaf herb component of vegetation between 40 and 90%.	-	-	-	-	-	-
Vegetation composition: typical species	Number.	At least 5 positive indicator species present.	-	-	-	-	-	-
Vegetation composition: negative indicator species	Occurrence.	Negative indicator species, particularly non-native invasive species, absent or under control- NB Indian balsam (<i>Impatiens glandulifera</i>), monkeyflower (<i>Mimulus guttatus</i>), Japanese knotweed (<i>Fallopia japonica</i>) and giant hogweed (<i>Heracleum mantegazzianum</i>).	-	-	-	-	-	-

*Detailed Conservation Objectives for Lower River Suir SAC for attributes 'Habitat distribution', 'Habitat area' and 'Hydrological regime: Flooding depth/height of water table'

Table E1.101 Conservation Objectives (CO) for Qualifying Interest (QI) – Desmoulin's whorl snail

1016 Desmoulin's whorl snail <i>Vertigo moulinsiana</i>								
To maintain the favourable conservation condition of Desmoulin's whorl snail <i>Vertigo moulinsiana</i> which is defined by the following list of attributes and targets.								
To note: Specific CO for Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels are taken from the River Barrow and River Nore SAC (002162) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution: occupied sites	Number.	No decline. Two known sites: Borris Bridge, Co. Carlow S711503; Boston Bridge, Kilnaseer S338774, Co. Laois.	-	-	-	-	WQ	-
Population size: adults	Number per positive sample.	At least 5 adult snails in at least 50% of samples.	M	-	-	-	WQ	-
Population density	Percentage positive samples.	Adult snails present in at least 60% of samples per site.	M	-	-	-	WQ	-
Area of occupancy	Hectares.	Minimum of 1ha of suitable habitat per site.	-	-	-	-	WQ	-
Habitat quality: vegetation	Percentage of samples with suitable vegetation.	90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011).	-	-	-	-	-	-
Habitat quality: soil moisture levels	Percentage of samples with appropriate soil moisture levels.	90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011).	-	-	-	-	-	-

Table E1.102 Conservation Objectives (CO) for Qualifying Interest (QI) – Nore freshwater pearl mussel

1990 Nore freshwater pearl mussel <i>Margaritifera durrovensis</i>								
To restore the favourable conservation condition of Nore freshwater pearl mussel <i>Margaritifera durrovensis</i> which is defined by the following list of attributes and targets.								
To note: Specific CO for Nore freshwater pearl mussel <i>Margaritifera durrovensis</i> are taken from the River Barrow and River Nore SAC (002162) and thus are applicable to this area only.								
Attribute	Measure	Target	Potential for Impact (none = blank space) and Impact Type (letter)					
			Mortality (M)	Habitat: Loss (L)	Habitat: Fragmentation (F)	Habitat Degradation: Hydrogeology (H)	Habitat Degradation: Water Quality (WQ)	Disturbance (D)
Distribution	Kilometres.	Maintain at 15.5km.	-	-	-	-	-	-
Population size: adult mussels	Number.	Restore to 5,000 adult mussels.	M	-	-	-	-	-
Population structure: recruitment	Percentage per size class.	Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length.	M	-	-	-	-	-
Population structure: adult mortality	Percentage.	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in	M	-	-	-	-	-

1990 Nore freshwater pearl mussel <i>Margaritifera durrovensis</i> To restore the favourable conservation condition of Nore freshwater pearl mussel <i>Margaritifera durrovensis</i> which is defined by the following list of attributes and targets. To note: Specific CO for Nore freshwater pearl mussel <i>Margaritifera durrovensis</i> are taken from the River Barrow and River Nore SAC (002162) and thus are applicable to this area only.								
		distribution.						
Habitat extent	Kilometres.	Restore suitable habitat in length of river corresponding to distribution target (15.5km; see map 7) and any additional stretches necessary for salmonid spawning.	-	-	-	-	WQ	-
Water quality: Macroinvertebrates and phytobenthos (diatoms)	Ecological Quality Ratio (EQR).	Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93.	-	-	-	-	WQ	-
Substratum quality: Filamentous algae (macroalgae), macrophytes (rooted higher plants)	Percentage.	Restore substratum quality- filamentous algae: absent or trace (<5%).	-	-	-	-	WQ	-
Substratum quality: sediment	Occurrence.	Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.	-	-	-	-	WQ	-
Substratum quality: oxygen availability	Redox potential.	Restore to no more than 20% decline from water column to 5cm depth in substrate.	-	-	-	-	WQ	-
Hydrological regime: flow variability	Metres per second.	Restore appropriate hydrological regimes.	-	-	-	-	-	--
Host fish	Number.	Maintain sufficient juvenile salmonids to host glochidial larvae.	M	-	-	-	WQ	-

Appendix F. Assessment of In-Combination Effects with Other Plans or projects

Table F1.1: In-combination assessment of Likely Significant Effects with other Relevant Plans (including directives and strategies)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
EU Directive/Strategy: Water Framework Directive (2000/60/EC), Groundwater Directive (2006/118/EC), Surface Water Directive (75/440/EC), Freshwater Fish Directive (78/569/EEC), Urban Wastewater Treatment Directive (91/271/EEC), Integrated Pollution Prevention Control Directive (96/61/EC), A Blueprint to Safeguard Europe’s Water Resources, Habitats Directive (92/43/EEC), Birds Directive (2009/147/EC), SEA Directive (2001/42/EC), EIA Directive (2001/92/EU as amended by 2014/52/EU), European Union Biodiversity Strategy to 2020, Bathing Water Directive (2006/7/EC), Marine Strategy Framework Directive (2008/56/EC) and Shellfish Waters Directive (2006/113/EC).	<ul style="list-style-type: none"> Changes to hydrology Reduction in water quality Loss of habitat 	Directives improve environmental quality therefore no in-combination effects are predicted.	N	N
EU Directive/Strategy: EU Floods Directive (2007/60/EC), Renewable Energy Strategy (2009/28/EC) and EU 2020 Climate and Energy Strategy.	<ul style="list-style-type: none"> Changes to hydrology Loss of habitat Disturbance 	<p>There is potential for Likely Significant Effects (LSEs) through implementation of these directive/strategies through construction of flood defense projects and/or development of renewable energy schemes.</p> <p>The policies, objectives and projects within the Grid IP were screened for their potential to give rise to LSEs which could lead to adverse effects on the integrity of European sites. All of the policies and objectives were screened out as having potential for LSEs because they either intended to protect the natural environment (including European sites), because they were general policy statements or because the particular policy or objective did not identify any locations for development or detail what that development might be. There were however, projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Grid IP. However, given the general provisions to protect the environment identified within the EU legislation and/or associated documents, together with the proposed mitigation measures within this NIS as detailed in Section 7, no Adverse Effects on Site Integrity (AESI) are predicted.</p>	Y	N
<p>Project Ireland 2040 National Planning Framework²⁰</p> <p>The purpose of the long-term strategy is to provide a framework for the growth of Ireland’s cities and towns over the next twenty years in an environmentally sustainable way. It is envisaged that the NPF will be detailed in Regional Spatial and Economic Strategies to ensure proper planning and sustainable development in the long term, at local, regional and nation levels.</p>	<ul style="list-style-type: none"> Loss of habitat Changes to hydrology Reduction in water quality Disturbance/disruption resulting in a reduction of key specie/species density during construction and operation Alien invasive species introduction Mortality 	<p>The Project Ireland 2040 National Planning Framework, including a Strategic Flood Risk Assessment (SFRA) were subject to Strategic Environmental Assessment (SEA) and Stage 1 Screening for Appropriate Assessment (AA). The Screening for AA concluded that given the uncertainty as to what the policy objectives may include the potential for LSEs could not be ruled out. Consequently, a Stage 2 AA was undertaken²¹. Potential LSEs identified from land use change from development and an increase in jobs and associated work force could cause disturbance, habitat fragmentation and pollution (National Policy Objective (NPO) 1a-c, NPO 2a-c, NPO 3a-c, NPO 12). In relation to ensuring future capacity of the all-island electricity grid and in relation to ensuring communications infrastructure there is the potential for LSEs to European sites (NPO 49 and NPO 50 respectively). Potential for LSEs though enhancing regional accessibility was also identified (National Strategic Outcome (NSO) 2.1, NSO 2.2, NSO 4, NSO 6, NSO 7).</p> <p>The policies, objectives and projects within the Grid IP were screened for their potential to give rise to LSEs which could lead to adverse effects on the integrity of European sites. All of the policies and objectives were screened out as having potential for LSEs because they either intended to protect the natural environment (including European sites), because they were general policy statements or because the particular policy or objective did not identify any locations for development or detail what that development might be. There were however, projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Project Ireland 2040 Our Plan National Planning Framework and the Grid IP. However, given the environmental and sustainability goals identified in the NPF (for example NPO 54) together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Offshore Renewable Energy Development Plan (OREDPA); A Framework for the Sustainable Development of Ireland’s Offshore Renewable Energy Resource, February 2014²²</p> <p>The purpose of the OREDPA is to set out a vision for sustainable growth of Ireland</p>	<ul style="list-style-type: none"> Mortality Habitat loss Habitat degradation/ 	In light of data knowledge and information gaps, and to ensure that significant adverse effects do not occur from development of offshore renewable energy, plan level and project level mitigation measures have been developed. The latter will include increased coordination between all state bodies, increased collaborative between advisory groups and fisheries/ environmental groups, monitoring programmes to assess development effects and projects	Y	N

²⁰ <http://npf.ie/wp-content/uploads/Project-Ireland-2040-NPF.pdf> (Accessed March, 2018)

²¹ <http://npf.ie/wp-content/uploads/2017/09/Natura-Impact-Statement-%E2%80%93-Ireland-2040.pdf> (Accessed November, 2017)

²² <https://www.dccae.gov.ie/documents/20140204%20DCENR%20-%20Offshore%20Renewable%20Energy%20Development%20Plan.pdf> (accessed November, 2017)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
<p>economy and delivery of jobs in the green economy out to 2013. The vision is to form a link between renewable energy, the marine environment and green economy growth potential. The OREPD provides a mechanism for informing/coordinating policy and implementing across the areas of energy, economy and the environment.</p>	<ul style="list-style-type: none"> fragmentation Changes to water quality Changes to wave regime and tidal flow Scour/substrate change Disturbance/displacement to species breeding/migration routes 	<p>subject to consent must demonstrate comprehensively no LSEs on Natura 2000 site integrity. The SEA and AA concluded that the high scenario of 1500 Mega Watts (MW) from wave and tidal devices, and 4500MW from offshore wind was achievable without LSEs. However, LSEs were identified in Section 4 of the Offshore Renewable Energy Development Plan.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Offshore Renewable Energy Development Plan and the Grid IP. However, given the principles of the Offshore Renewable Energy Development Plan together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>		
<p>National Peatlands Strategy (NPS)²³ The objective this strategy is to guide government policy in relation to all peatlands through identifying a number of values and principles which can be used in sectoral plans, policies and actions adopted and undertaken for each policy area. The national strategy has been designed to manage and conserve Ireland's peatland with particular reference to SACs nominated for designation.</p>	<ul style="list-style-type: none"> Habitat loss Habitat degradation Changes to hydrology 	<p>A more sustainable network of SAC bogs would result from the implementation of the strategy which would in turn result in range of beneficial ecosystem service opportunities. Section 4.4 of the National Peatlands Strategy sets out the principles for ensuring nature conservation of peatland is achieved. For example, NPS A 12-20, NPS A 23-25, NPS A 27, NPS A 30, NPS A 32 and NPS P 29.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>However, as there are no LSEs with the NPS there is no potential for in-combination effects with the Grid IP.</p>	N	N
<p>Forestry Programme 2014 – 2020: IRELAND²⁴ The objective of the programme is to develop a 100% State funded sustainable and competitive forest sector to provide a full range of benefits to society, environmental, economic and social, which aligns with the Forest Europe definition of forest management in a sustainable manner.</p>	<ul style="list-style-type: none"> Habitat alteration and fragmentation Changes to water quality Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>All activities funded under the programme must adhere to the principles of Sustainable Forest Management (SFM) i.e. foresters and forest owners must adhere to the 'Code of Best Forest Practice – Ireland' and the suite of environmental guidelines (currently under review). Forestry is not listed as a key threat to protected habitats or annex species but is identified as a pressure on both. Adverse impacts on protected species such as hen harrier, otter and freshwater pearl mussel and sensitive habitats such as blanket and active raised bogs may arise from forestry activities.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Forestry Programme 2014 – 2020 plan and the Grid IP. However, following SEA mitigation measures for freshwater pearl mussel were included in the draft Catchment Forest Management Plans. Measures to protect Natura sites were also incorporated into the programme and all applications for forestry licences/approvals etc. will be subject to screening and where required AA. Taken together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>National Renewable Energy Action Plan IRELAND²⁵ Ireland's National Renewable Energy Action Plan ('NREAP') sets out the strategic approach and measures to deliver Ireland's 16% target under Directive 2009/28/EC.</p>	<ul style="list-style-type: none"> Loss of habitat Changes to hydrology Reduction in water quality Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>Ireland has high potential for the development of renewable energy particularly with regard to wind energy, both on and offshore, and wave energy. Many of the areas that are of importance in terms of high development potential for renewable energy are also in areas of biodiversity and nature conservation importance. In the promotion and use of energy from renewable resources there were two policies/measures with potential for LSEs (35 and 36).</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the National Renewable Energy Action Plan and the Grid IP. However, development will have regard for key environmental considerations which will facilitate a consistency of approach by planning authorities in choosing areas for development of wind farms which have regard for potential impacts, inter alia on diversity and nature. Taken together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N

²³ <https://www.npws.ie/sites/default/files/publications/pdf/NationalPeatlandsStrategy2015EnglishVers.pdf> (Accessed March, 2018)

²⁴ <https://www.agriculture.gov.ie/media/migration/forestry/forestryprogramme2014-2020/IRELANDForestryProgramme20142020230215.pdf> (Accessed May, 2017)

²⁵ <https://www.teagasc.ie/media/website/crops/crops/2010NREAP.pdf> (Accessed May, 2017)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Regional Planning Guidelines for the Midland Region 2010-2022²⁶ The region comprises Westmeath, Offaly, Longford and Laois counties and the RPG ensures balanced sustainable development within the Midlands Region taking into consideration and avoiding environmental impacts. Five strategic goals are set out in the guidelines.</p>	<ul style="list-style-type: none"> Loss of habitat Changes to hydrology Reduction in water quality Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>SEA and Screening for AA were carried out and reported in a separate (unobtainable) document. However, the implementation of Regional Planning Guidelines for the Midland Region 2010-2022 ensures sustainable management and protection of biodiversity resources, through for example implementation of policies EP13 to and including EP16.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>However, given the principles of the Regional Planning Guidelines for the Midland Region 2010-2022 and that there are no LSEs identified, there is no potential for in-combination effects with the Grid IP.</p>	<p>N</p>	<p>N</p>
<p>Regional Planning Guidelines for the West Region 2010-2022²⁷ The region comprises the counties of Galway, Mayo and Roscommon and the RPG ensures balanced sustainable development within the West Region taking into consideration and avoiding environmental impacts.</p>	<ul style="list-style-type: none"> Loss of habitat Changes to hydrology Reduction in water quality Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>Carried out as part of the Regional Planning Guidelines for the West Region 2010-2022, SEA, Regional Flood Risk Appraisal and Habitats Directive Assessment (HDA) will inform decision making and planning policy at the local level. LSEs associated with road/rail, land use, walking/cycling routes, marina, forestry and energy infrastructure developments were identified.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Regional Planning Guidelines for the West Region 2010-2022 and the Grid IP. However, the Regional Planning Guidelines for the West Region 2010-2022 ensures the sustainable management and protection of biodiversity resources through policies such as CP1 (the requirement for Habitat Directive Assessment to protect Natura 2000 sites), CP4 (sustainable development of the Atlantic Gateways Initiative) and CP33 (sustainable development of wind energy in suitable areas including HDA). Consequently, given the principles of the Regional Planning Guidelines for the West Region 2010-2022 together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	<p>Y</p>	<p>N</p>
<p>Regional Planning Guidelines for the Border Region 2010-2022²⁸ The region comprises the counties of Cavan, Donegal, Leitrim, Louth, Monaghan and Sligo. The RPG ensures proper planning and sustainable development within the West Region by protecting environmentally important locations.</p>	<ul style="list-style-type: none"> Loss of habitat Changes to hydrology Reduction in water quality Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>Screening for AA identified LSEs for Natura 2000 sites within the Border Authority Region and are detailed in Table 4.1 within the Draft Habitats Directive Assessment Report²⁹ for the Regional Planning Guidelines for the Border Region 2010-2022.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Regional Planning Guidelines for the Border Region 2010-2022 and the Grid IP. However, the policies and objectives of the Regional Planning Guidelines for the Border Region 2010-2022 have been subject to a systematic assessment through SEA and approved through a process of rejection, amendment or application of appropriate mitigation. The Draft Habitats Directive Assessment Report concluded no significant effects on Natura 2000 sites. Taken together with the with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	<p>Y</p>	<p>N</p>
<p>Regional Planning Guidelines for the South-East Region 2010-2022 The region comprises the counties of South Tipperary, Kilkenny, Carlow, Waterford and Wexford and the RPG ensures proper planning and sustainable development within the South East Region by protecting environmentally important locations.</p>	<ul style="list-style-type: none"> Loss of habitat Changes to hydrology Reduction in water quality Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>SEA and HDA have been carried out as part of the preparation and review processes of the Regional Planning Guidelines for the South-East Region 2010-2022. The Screening for AA report compiled in tandem with the Regional Planning Guidelines for the South-East Region 2010-2022 was not publicly available but it is assumed in the absence of this information and given the potential impacts from road/rail, land use, walking/cycling routes, marina, forestry and energy infrastructure developments identified within the 2010-2022 Plan on landscapes, habitats and protected species, river catchments and the maritime environment, there is potential for LSEs.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Regional Planning Guidelines for the Border Region 2010-2022 and the Grid IP. However, with the implementation of the following Planning Policy Objectives (PPO)</p>	<p>Y</p>	<p>N</p>

²⁶ <http://www.cua.ie/gorm/planning/Midland%20Region.pdf> (Accessed May, 2017)

²⁷ <http://www.cua.ie/gorm/planning/West%20Region.pdf> (Accessed May, 2017)

²⁸ <http://www.cua.ie/gorm/planning/Border%20Region.pdf>

²⁹ <https://monaghan.ie/planning/wp-content/uploads/sites/4/2016/11/DraftHabitatsDirectiveAssessmentReport.pdf> (Accessed May, 2017)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
		(PPO 4.15-4.16, PPO 5.19-5.20, PPO 8.1, PPO 8.5-8.9 and PPO 8.20 together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.		
<p>South West Regional Planning Guidelines 2010-2022³⁰</p> <p>The region comprises four main planning areas namely; Northern Area, Western Area, Tralee/Killarney and Greater Cork Area. The RPG sets out the overarching development strategy for the region such that there is a sustainable and strategic approach to future growth.</p>	<ul style="list-style-type: none"> • Loss of habitat • Alien invasive species introduction • Fragmentation • Changes to hydrology • Reduction in water quality • Disturbance 	<p>SEA and HDA have been carried out as part of the preparation and review processes of the RPG. Neither report was publicly available but it is assumed in the absence of this information and given the potential impacts from road/rail, land use, walking/cycling routes, marina, forestry and energy infrastructure developments identified within the 2010-2022 Plan, on landscapes, habitats and protected species, river catchments and the maritime environment, there is potential for LSEs.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the South West Regional Planning Guidelines 2010-2022 and the Grid IP. However, as stipulated in the plan "The endorsement of individual projects within these guidelines is subject to their EIA (Environmental Impact Assessment) and HDA / AA (Appropriate Assessment), where relevant." The plan states that at each stage of the development process from county to local area plans/projects, assessment is required to ensure that there is no negative impact on the integrity of Natura 2000 sites. Taken together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Mayo County Development Plan 2014-2020³¹</p> <p>The development plan covers a geographical area of 5560 km² and sets out the overall strategy, including a core strategy, for planning and sustainable development of Mayo county, at the strategic level. Objectives include, zoning of land for particular purposes and provision or facilitation of infrastructure. Conservation and protection of the environment is also taken into consideration. The plan includes all residential, commercial, recreational and infrastructural and most development will be directed to serviced and / or zoned lands, while concurrently aiming to protect vulnerable and sensitive landscapes from development.</p>	<ul style="list-style-type: none"> • Changes to water quality and quantity • Habitat loss/fragmentation • Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>The Mayo County Development Plan 2014-2020 has been subject to Screening for AA, reported in a 2013 Natura Impact Report (NIR)³². To ensure the protection and conservation of special conservation interests and their qualifying interests, changes were made to a number of policies and objectives to address their potential significant adverse effects and provide mitigation. All local area plans form part of the County Development Plan. Further AA Screening will be carried out at project level planning and application stages. However, LSEs were identified in Table 3.1 of the NIR.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the draft RPG for Mayo County and the Grid IP. However, as noted in the Environmental Report of Strategic Environmental Assessment "In all cases, infrastructural development will be undertaken only when it can be shown that no significant effects on the environment (including the integrity of the Natura 2000 network) are predicted." (SEA, 2013³³. Therefore, as concluded in the NIR with implementation of targeted and specific mitigation measures, and together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Renewable Energy Strategy for County Mayo 2011– 2020³⁴</p> <p>The strategy was written in the context of renewable energy targets at the national and European level and is underpinned by SEA and HDA. The strategy identifies how County Mayo can harness renewable energy, all major forms including micro renewables, in a sustainable way.</p>	<ul style="list-style-type: none"> • Mortality • Loss of habitat • Electromagnetic interference • Disturbance • Pollution 	<p>The Renewable Energy Strategy for County Mayo 2011– 2020 identifies negative effects on the environment such as impacts upon the landscape; bird life; noise; and electromagnetic interference from for example the development of on-shore wind therefore this is potential for LSEs.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>Therefore, there is potential for in-combination effects with the Renewable Energy Strategy for County Mayo 2011– 2020 and the Grid IP. The Renewable Energy Strategy for County Mayo 2011– 2020 has undergone HDA which concluded that with avoidance and mitigation where appropriate effects on Natura 2000 sites are precluded. However, HDA may be required for individual renewable developments. Therefore, with the implementation of mitigation measures and proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N

³⁰ http://www.southernassembly.ie/uploads/general-files/http---www.southernassembly.ie-images-uploads-SWRA_Planning_Guidelines_.pdf (Accessed November, 2017)

³¹ <http://www.mayococo.ie/en/Planning/MayoCountyDevelopmentPlan2014-2020/> (Accessed May, 2017)

³² <http://www.mayococo.ie/en/Planning/MayoCountyDevelopmentPlan2014-2020/Document2.24889.en.pdf> (Accessed May, 2017)

³³ <http://www.mayococo.ie/en/Planning/MayoCountyDevelopmentPlan2014-2020/Document2.24889.en.pdf> (Accessed December, 2017)

³⁴ <http://www.mayococo.ie/en/Planning/DevelopmentPlansandLocalAreaPlans/RenewableEnergyStrategy/Document1.16467.en.pdf> (Accessed May, 2017)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Ireland West Airport Knock Local Area Plan 2012-2018³⁵</p> <p>The development plan covers an area of 355 Ha around the existing airport and includes the lands within the airport campus. The Strategic Development Zone will primarily facilitate the development of an enterprise / business park.</p>	<ul style="list-style-type: none"> Indirect effects of disturbance and alteration to water quality/volume 	<p>Precise location and extent of the development under Ireland West Airport Knock Local Area Plan 2012-2018 is not known however associated individual projects and plans will be subject to Screening for Appropriate Assessment. As reported in the NIR³⁶, LSEs on habitats and species of the River Moy SAC were identified.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs the North Connacht project within the Grid IP could lead to LSEs for the River Moy SAC.</p> <p>Therefore, there is potential for in-combination effects with the West Airport Knock Local Area Plan 2012-2018 and the Grid IP. The NIR concludes that mitigation, core policies, objectives and specific, when implemented will result in no significant adverse effects on Natura 2000 sites. In addition, based on the Key Principles outlined in Box 7A, Section 7.1 (no direct loss of QI/Annex I habitats) and the approach to mitigation set out in Section 7.3, Box 7 specifically in relation to mitigating the loss of Annex I habitats) and the approach outlined in relation to habitat degradation (hydrogeology/water quality) affecting habitats and species set out in Section 7.3, Box 7F. Also, the approach to mitigation in relation to disturbance affecting species in Section 7.3, Box 7G, no AESI are predicted.</p>	<p>Y</p>	<p>N</p>
<p>Sligo County Development Plan 2017-2023³⁷</p> <p>The plan sets out the over-arching framework for the sustainable development for County Sligo. The plan presents mini-plans for 32 settlements, grouped by Municipal District, throughout County Sligo.</p>	<ul style="list-style-type: none"> None identified 	<p>Stage one Screening for AA was carried out in parallel with SEA. It was determined that Stage 2 AA was not required. However, within the SEA²¹ and reproduced from the unavailable Environmental Report, Table 10.1 identified the indicators and targets selected for monitoring the likely LSEs of implementing the Sligo County Development Plan 2017-2023 which included loss of connectivity between functional habitats.</p> <p>Therefore, there is potential for in-combination effects with the Sligo County Development Plan 2017-2023 and the Grid IP.</p> <p>However, in the conclusion to the Environmental Report Sligo County Development Plan 2017-2023 it is stated that 'with the integration of appropriate mitigation measures, potential adverse environmental effects, which could arise as a result of implementing the Plan, would be avoided, reduced or offset.' There was a focus during Screening on determining if the implementation of the Sligo County Development Plan 2017-2023 would give rise to any LSEs. Therefore, with the implementation of these measures and proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	<p>Y</p>	<p>N</p>
<p>Roscommon County Development Plan 2014 – 2020³⁸</p> <p>The plan sets out the strategy for the planning and sustainable development of area and includes Local Area Plans which zones land to be developed. The Renewable Energy Strategy for the county is incorporated into the development plan.</p>	<ul style="list-style-type: none"> Loss of habitat Changes to hydrology Reduction in water quality Disturbance/disruption resulting in a reduction of key species/species density during construction and operation 	<p>The county plan was subject to a Screening for AA and a Screening for AA for Proposed Variation No. 1 to the Roscommon County Development Plan 2014-2020³⁹. The latter concluded that no source for potential impacts on European sites existed⁴⁰. The Renewable Energy Strategy⁴¹ within the Roscommon County Development Plan 2014 – 2020 noted that "Negative impacts are generally accepted as minimal, however there are concerns associated with the onshore infrastructure associated with ocean energy, as well as potential impacts on marine activity and biodiversity." Also "A wind farm development may potentially have a significant impact upon the ecological and natural heritage of an area". Therefore, there is potential for LSEs.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with the Roscommon County Development Plan 2014 – 2020 and the Grid IP. However, Section 5 of Renewable Energy Strategy within the Roscommon County Development Plan 2014 – 2020 sets out mitigation measures which together the proposed mitigation measures within this NIS as detailed in Section 7, would result in no AESI.</p>	<p>Y</p>	<p>N</p>

³⁵ <http://www.mayococo.ie/en/Planning/DevelopmentPlansLocalAreaPlansandStrategies/LocalAreaPlans/IrelandWestAirportKnock/Document1.20385.en.pdf> (Accessed May, 2017)

³⁶ <http://www.mayococo.ie/en/Planning/DevelopmentPlansLocalAreaPlansandStrategies/LocalAreaPlans/IrelandWestAirportKnock/Document3.20385.en.pdf> (Accessed May, 2017)

³⁷ <http://www.sligococo.ie/media/SligoCountyCouncil2015/Services/Planning/Downloads/SCDP20172023/CDP%202017-2023-Vol1full24August2017.pdf> (Accessed December, 2017)

³⁸ http://www.roscommoncoco.ie/en/Services/Planning/Plans/County_Development_Plan_2014_-_2020/1b-Chapters-1-4.pdf (Accessed May, 2017)

³⁹ <http://www.roscommoncoco.ie/en/Services/Planning/Roscommon-County-Council-Planning-Publications/Roscommon-County-Council-Planning-Publications/Variations-No-1-Plans/>

⁴⁰ <http://www.roscommoncoco.ie/en/Services/Planning/Roscommon-County-Council-Planning-Publications/Roscommon-County-Council-Planning-Publications/Variations-No-1-Plans/SEA-AA/RCDP-Variation-AA-Screening.pdf> (Accessed, December, 2017)

⁴¹ http://www.roscommoncoco.ie/en/Services/Planning/Roscommon-County-Council-Planning-Publications/Roscommon-County-Council-Planning-Publications/County_Development_Plan_2014_-_2020/6-Renewable-Energy-Strategy.pdf (Accessed, December 2017)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
<p>County Donegal Development Plan 2018-2024⁴²</p> <p>The plan sets out the strategy for the planning and sustainable development of an area excluding the town council areas of Bundoran, Buncrana and Letterkenny which individual planning strategies.</p>	<ul style="list-style-type: none"> Habitat loss Disturbance Reduction in water quality/availability 	<p>The County Donegal Development Plan 2018-2024 was subject to a Screening for AA. Appendix 1 in the County Donegal Development Plan 2018-2024 identified the Natura 2000 sites where there was potential for LSEs. Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with the County Donegal Development Plan 2018-2024 and the Grid IP. However, with the implementation of Key Strategic Objectives detailed in Appendix 2 of the County Donegal Development Plan 2018-2024 together the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Bundoran & Environs Development Plan 2009 – 2015⁴³</p> <p>The plan sets out the overarching strategy for planning and sustainable development for Bundoran and its environs. The six-year plan does not appear to have been updated.</p>	<ul style="list-style-type: none"> None presented 	<p>The Bundoran & Environs Development Plan 2009 – 2015 was subject to SEA and Screening for AA. As stated in the SEA Statement (Appendix VII²⁵) an Environmental Report was prepared detailing LSEs on the environment if the Plan were implemented. Although this report was not publicly available and therefore identification of specific LSEs was not possible, Dunmuckrum Turloughs SAC and Donegal SPA were noted as requiring protection. Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs the North West project within the Grid IP could lead to LSEs for Dunmuckrum Turloughs SAC and Donegal SPA.</p> <p>There is therefore the potential for in-combination effects with the Bundoran & Environs Development Plan 2009 – 2015 and the Grid IP. However, with the implementation of the following Policies CH1-5 and CH13-20 and Objectives OCH-01, OHC-06, OHC-08-11, together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Variation No. 1 Galway County Development Plan 2015-2021⁴⁴</p> <p>The plan sets out the framework for future sustainable development of Galway, building on principles set out in the previous Galway County Development Plan 2009-2015. The plan incorporates the aims and measures of the Galway Transport Strategy (GTS). One of the Core Aims of the plan is that in the implementation of the Core Strategy and strategic aims and objectives, a high level of protection for the environment is ensured.</p>	<ul style="list-style-type: none"> Habitat loss, degradation or change Habitat fragmentation Mortality Disturbance Pollution Changes to hydrology 	<p>Variation No. 1 Galway County Development Plan 2015-2021, including SFRA, and the GTS were subject to SEA. Certain plans and policies with the Variation No. 1 Galway County Development Plan 2015-2021 were identified as having LSEs as identified in Table 9.1 of the SEA Environmental Report⁴⁵.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with Variation No. 1 Galway County Development Plan 2015-2021 and the Grid IP. However, with the implementation of mitigation measures set out in Table 9.1 in the Plan Environmental Report, together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Leitrim County Development Plan 2015-2021⁴⁶</p> <p>The plan sets out the over-arching framework for the proper planning and sustainable development for the county. The plan identifies the policies and specific objectives used to guide the council in the decision making process to provide infrastructure while protecting the environment.</p>	<ul style="list-style-type: none"> Habitat loss and degradation Alteration of hydrology Deterioration in water quality Disturbance Alien invasive species introduction 	<p>The NIR⁴⁷ states that the strategic goals would result in an overall positive impact on Natura 2000 sites and concluded that there were no LSEs on the network of Natura 2000 sites as a result of the Leitrim County Development Plan 2015-2021, as amended.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is no potential for in-combination effects with the Grid IP because no LSEs were identified for the Leitrim County Development Plan 2015-2021.</p>	N	N
<p>Longford County Development Plan 2015-2021⁴⁸</p> <p>The plan sets out the over-arching framework for the sustainable development for County Longford with due consideration for the protection and conservation of the natural and built environment. The policies, strategies and objectives</p>	<ul style="list-style-type: none"> Disturbance Pollution Changes to hydrology 	<p>The plan SEA, SFRA and Stage 2 AA were undertaken in tandem and the AA informed both the Longford County Development Plan 2015-2021 and the SEA⁴⁹. The SEA Environmental Report identified LSEs in Table 8.5 of said report, noting development of rural housing, agriculture, extractive industries, directly from the development and operation of roads and parking and indirectly from facilitating non-transport development, development infrastructure and indirectly from facilitating non-transport development, provision of waste water infrastructure,</p>	Y	N

⁴² <http://www.donegalcoco.ie/services/planning/developmentplansbuilttheheritageincludinggrants/draft%20county%20donegal%20development%20plan%202018-2024/> (Accessed December, 2017)

⁴³ <http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/developmentplanscountytandtownareas/bundoran/bundoranandenvironsdevelopmentplan2009-2015/Bundoran%20and%20Environs%20Development%20Plan%202009-2015.pdf> (Accessed May, 2017)

⁴⁴ <http://www.galway.ie/en/services/planning/developmentplansandpolicy/galwaycountydevelopmentplan2015-2021/> (Accessed December, 2017)

⁴⁵ <http://www.galway.ie/en/services/planning/developmentplansandpolicy/galwaycountydevelopmentplan2015-2021/> (Accessed December, 2017)

⁴⁶ http://www.leitrimcoco.ie/eng/Services_A-Z/Planning-and-Development/Planning-Archive/Vol-1-Written-Statement_.pdf (Accessed May, 2017)

⁴⁷ http://www.leitrimcoco.ie/eng/Services_A-Z/Planning-and-Development/Development-Plans/County_Development_Plan_2015-2021/Natura-Impact-Report.pdf (Accessed May, 2017)

⁴⁸ <http://www.longfordcoco.ie/Services/Planning/Development-Plan-2015-2021/SEA-AA-SFRA/SEA-Statement.pdf> (Accessed November, 2017)

⁴⁹ <http://www.longfordcoco.ie/Services/Planning/Development-Plan-2015-2021/SEA-AA-SFRA/SEA-Statement.pdf> (Accessed November, 2017)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
<p>identified within the plan will be in the decision making process to provide infrastructure while protecting the environment.</p>	<ul style="list-style-type: none"> Habitat loss, degradation or change Habitat fragmentation Mortality 	<p>implementation of the Midlands Waste Management Plan and renewable energy are likely to conflict with the protection of biodiversity and flora and fauna (SEOs B1 B2 B3).</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with the Longford County Development Plan 2015-2021 and the Grid IP. However, with the implementation of mitigation measures set out in Table 9.1 of the Longford County Development Plan 2015-2021 Environmental Report, together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>		
<p>Clare County Development Plan 2017-2023⁵⁰</p> <p>The plan sets out the six-year overall strategy for sustainable development though proper planning of the functional area of County Clare. It is the 7th development plan for the county. The plan comprises 10 Volumes and includes a renewable energy strategy, a wind energy strategy and a strategic integrated framework plan (SIFP) for the Shannon Estuary. The objectives set out in the Strategic Environmental Assessment formed the basis upon which to assess the plan.</p>	<ul style="list-style-type: none"> Disturbance Pollution Changes to hydrology Habitat loss, degradation or change Habitat fragmentation Alien invasive species spread 	<p>The SEA Environmental Report for the Clare County Development Plan 2017-2023 identified LSEs which were presented in Table 8.3 of said report from, for example, the Wind Energy and Renewable Energy Strategies.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with the Clare County Development Plan 2017-2023 and the Grid IP. However, with the implementation of mitigation measures set out in Section 9.2 of the Plan Environmental Report in the Clare County Development Plan 2017-2023, together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Shannon Integrated Framework Plan (SIFP) for the Shannon Estuary 2013-2020⁵¹</p> <p>The plan is a terrestrial and marine based planning strategy for the sustainable development and management of the Shannon Estuary. The plan is being taken forward by a steering group and is multi-jurisdictional and aims to identify the potential nature and location of future developments. Areas for development include but are not limited to; aquaculture, energy generation, shipment, port functions and leisure. The plan provides objectives to guide development of the estuary.</p>	<ul style="list-style-type: none"> Disturbance Pollution Changes to hydrology Habitat loss, degradation or change Habitat fragmentation 	<p>In preparation of the Shannon Integrated Framework Plan (SIFP) for the Shannon Estuary 2013-2020, both the SEA and Natura Impact Assessment were closely aligned with environmental appraisals informing site selection decisions. Through implementation of the plan both positive and negative effects were predicted. The Shannon Integrated Framework Plan (SIFP) for the Shannon Estuary 2013-2020 NIR⁵² assessed the final SIFP and identified eight Natura 2000 sites (SAC: Barrigone, Lower River Shannon, Kerry Head Shoal, Askeaton Fen Complex; SPA: River Shannon and River Fergus Estuaries, Loop Head, Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle, Kerry Head) that could be directly or indirectly impacted by the objectives of the plan.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs the Regional Solution (Shannon Crossing) project within the Grid IP could lead to LSEs for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.</p> <p>There is therefore the potential for in-combination effects with the Shannon Integrated Framework Plan (SIFP) for the Shannon Estuary 2013-2020 and the Grid IP. However, with the implementation of the myriad mitigation measures presented within the NIR for the Shannon Integrated Framework Plan (SIFP) for the Shannon Estuary 2013-2020, together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Kerry County Development Plan 2015-2021⁵³</p> <p>The plan sets out the over-arching framework for the sustainable development for County Kerry. The plan comprises policies, aims, objectives and guidelines to be used in the decision making process to provide infrastructure while protecting the environment. One of the seven main goals is to protect and enhance the natural and built environment.</p>	<ul style="list-style-type: none"> Habitat loss, degradation or change Mortality 	<p>The Kerry County Development Plan 2015-2021 was subject to SEA, a SFRA and Stage 1 and 2 AA. At the Screening for AA some of the proposed amendments to the Kerry County Development Plan 2015-2021 identified had the potential for LSEs on Natura 2000 sites through objectives for the development windfarm, siting of electricity lines, tourism amenity structure and greenway development.</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with the Kerry County Development Plan 2015-2021 and the Grid IP. However, with the implementation of mitigation measures are set out in Volume 4⁵⁴ of the Kerry County Development Plan 2015-2021, together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N

⁵⁰ <https://www.clarecoco.ie/planning/publications/clare-county-development-plan-2017-2023-volume-1-written-statement-24125.pdf> (Accessed November, 2017)

⁵¹ https://www.limerick.ie/sites/default/files/strategic_integrated_framework_plan_for_the_shannon_estuary_-_executive_summary.pdf

⁵² http://www.shannonestuariesifp.ie/wp-content/uploads/2016/03/nir_2211_2013.pdf

⁵³ http://cdp.kerrycoco.ie/wordpress/?page_id=28 (Accessed November, 2017)

⁵⁴ http://cdp.kerrycoco.ie/wordpress/wp-content/uploads/2015/12/vol_4_final.pdf (Accessed November, 2017)

Plan / Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites	In-combination Likely Significant Effects (Y/N)	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Cork County Development Plan 2014⁵⁵ The plan sets out the over-arching framework for the sustainable development for County Cork which is consistent with the South West Regional Planning Guidelines 2010-2022 and the National Spatial Strategy 2002-2020.</p>	<ul style="list-style-type: none"> • Changes in water quality • Habitat loss, degradation or change • Mortality 	<p>The Cork County Development Plan 2014 was subject to a SEA, Stage 1 and 2 AA⁵⁶. Table 3 within the Cork County Development Plan 2014 identifies Natura sites and QI potentially effected and planning requirement to protect/restore integrity. Objectives for renewable energy and development of tourism had potential to cause LSEs (as set out in Table 5 of the NIR⁴⁷).</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however, projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with the Cork County Development Plan 2014 and the Grid IP. However, with the implementation of, primarily Objective HE 2-1 which relates to the protection of sites designated or proposed for designation for the conservation of nature, including Natura 2000 sites and Natural Heritage Areas, and recommendations set out in Table 6 of the NIR⁴⁷, coupled with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Waterford County Development Plan 2014-2020⁵⁷ The plan sets out the over-arching framework for the sustainable development for County Waterford which is consistent with the Regional Planning Guidelines for the South East Region 2009 and the National Spatial Strategy 2002-2020.</p>	<ul style="list-style-type: none"> • Changes in water quality • Habitat loss, degradation or change 	<p>SEA and AA⁵⁸ of the policies and development objectives within the Waterford County Development Plan 2014-2020 identified the potential for LSEs</p> <p>Although policies and objectives within the Grid IP were screened out for their potential to give rise to LSEs there were however, projects within the Grid IP that could lead to LSEs for European sites (full details as set out in Table D1.1 to Table D1.10).</p> <p>There is therefore the potential for in-combination effects with the Waterford County Development Plan 2014-2020 and the Grid IP. However, with the implementation of mitigation in the Waterford County Development Plan 2014-2020 it was determined that there would be no significant adverse impacts and the policies proposed to protect wetlands and floodplains would result in positive impacts. Coupled with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Kilkenny County Development Plan 2014-2020⁵⁹ The plan sets out the overall six-year strategy for sustainable development though proper planning in Kilkenny County. The plan also has regard to the plans of adjoining authorities.</p>	<ul style="list-style-type: none"> • Changes in water quality • Habitat loss, degradation or change • Mortality • Alien invasive species spread 	<p>Environmental considerations identified in the SEA and NIR fed into the development of the Kilkenny County Development Plan 2014-2020. Appendix 2 of the NIR⁶⁰ identified sites likely effected by policies and objectives of the Plan. Sites overlapping with the Grid IP included the River Barrow and River Nore SAC, the Lower River Suir, Bannow Bay SPA and Tramore Dunes and Backstrand SPA.</p> <p>There is therefore the potential for in-combination effects with the Kilkenny County Development Plan 2014-2020 and the Grid IP. However, with the implementation of the mitigation objectives for protection of the environment listed in Section 4.3.1 of the NIR for the Kilkenny County Development Plan 2014-2020, coupled with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N
<p>Laois County Development Plan 2017-2023⁶¹ The plan sets out a clear vision for the development of the county over a six-year period which is sustainable and which will not compromise environmental integrity.</p>	<ul style="list-style-type: none"> • Habitat loss, degradation or change • Changes in water quality • Habitat loss, degradation or change • Disturbance 	<p>The Laois County Development Plan 2017-2023 was subject to SEA as detailed in the SEA Statement⁶² and Screening for AA as reported in the AA Conclusion Statement⁶³ and identified LSE from the implementation of the plan. The only site overlapping with the Grid IP is the River Barrow and River Nore SAC.</p> <p>There is therefore the potential for in-combination effects with the Laois County Development Plan 2017-2023 and the Grid IP. However, with the implementation of mitigation measures as detailed in Section 11 of the SEA, coupled with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.</p>	Y	N

⁵⁵ <http://corkcocodevplan.com/> (Accessed November, 2017)

⁵⁶ http://corkcocodevplan.com/wp-content/uploads/2017/10/CCDP_Volume_3.pdf (Accessed November, 2017)

⁵⁷ <http://www.waterfordcouncil.ie/media/plans-strategies/development-plan/county/index.htm> (Accessed November, 2017)

⁵⁸ <http://www.waterfordcouncil.ie/media/plans-strategies/development-plan/county/index.htm> (Accessed November, 2017)

⁵⁹ https://www.kilkennycoco.ie/eng/Services/Planning/Development-Plans/Development_Plans_2014-2020/Kilkenny-County-Development-Plan-2014-2020.html (Accessed November, 2017)

⁶⁰ https://www.kilkennycoco.ie/eng/Services/Planning/Development-Plans/Development_Plans_2014-2020/Kilkenny-County-Development-Plan-2014-2020.html (Accessed November, 2017)

⁶¹ <https://www.laois.ie/wp-content/uploads/VOLUME-1-2017-2023.pdf> (Accessed April 2018)

⁶² <https://www.laois.ie/wp-content/uploads/SEA-Statement-1.pdf> (Accessed April 2018)

⁶³ <https://www.laois.ie/wp-content/uploads/AA-Conclusion-Statement-Laois.pdf> (Accessed April 2018)

Table F1.2: In-combination of Likely Significant Effects with other Relevant Projects

Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites <i>Project being assessed against identified in bold and underlined</i>	Likely Significant Effects (Y/N)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Clogher and Mulreavy 110kV New Stations – New Wind Farm Connect</p> <p>This was a contestable project associated with Meenadreen Wind Farm Grid. The substations were completed in 2016. The 7.5km underground cable connection was also completed in 2016.</p>	<ul style="list-style-type: none"> Disturbance Mortality Pollution 	<p>The New Wind Farm Connection between Clogher and Mulreavy stations is within the North West project study area. No publicly available environmental reports were found but the initial energisation of Clogher 110kV substation, the 110kV cable, and the Mulreavy 110kV from the 1st loop-in was completed successfully on 23rd September 2016.</p> <p>Given that the connection is underground and that the works have been completed there is no potential for in-combination effects with the North West project.</p>	N	N/A	N
<p>Drumnahough/Lenalea to Clogher - proposed substation and associated underground cable connection</p> <p>In planning. Scheme from permitted Drumnahough and Lenalea Wind Farms to Clogher Substation, County Donegal.</p>	<ul style="list-style-type: none"> Pollution Habitat loss, degradation or change. Mortality Disturbance Changes to hydrology 	<p>The Drumnahough/Lenalea to Clogher project is in close proximity to the North West project study area. A planning application was lodged with ABP on 29.03.2016 on whether the Clogher substation was exempted development. ABP found on 20.10.16 that the development planning application did not fall within the scope of section 182A of the Planning and Development Act 2000, as amended and application should be made to Donegal County Council⁶⁴.</p> <p>The proposal entails the amalgamation of two previously permitted substations which were previously granted permission by the Planning Authority.</p> <ul style="list-style-type: none"> Extant permissions for the said substations. Proposed substation remains within the site of the previously permitted Drumnahough windfarm. Associated cable route connection is underground and predominantly follows the public road corridors and existing tracks. Substation will be accessed via the same roads as already permitted for the Drumnahough wind farm. <p>Permission for the development was refused 29.06.2017⁶⁵ therefore as the project is not being taken forward no in-combination effects are possible.</p>	N	N/A	N
<p>N56 Mountcharles to Inver (Building on Recovery CIP 2016-2022)</p> <p>The 4.9km scheme comprises upgrade of the existing N56 from the Mountcharles Bypass to Inver and will be approximately 50:50 online/offline improvements.</p>	<ul style="list-style-type: none"> Pollution Mortality Disturbance 	<p>The N56 Mountcharles to Inver project is in close proximity to the North West project study area. The project was approved by ABP in April 2008 and is being delivered in sections. Notice to treat has been served and the project is under design and no details are currently available for the project. Although construction related effects are predicted for the N56 Mountcharles to Inver project it is unlikely that the North West project will be constructed within the same timescales, and therefore there is no potential for in-combination effects.</p> <p>Given the nature of the two different projects in-combination effects at operational phase are not predicted.</p>	N	N/A	N
<p>Donegal Countywide Watermains Rehabilitation Scheme</p>	<ul style="list-style-type: none"> Spread of invasive species Pollution Disturbance Mortality 	<p>The Donegal Countywide Watermains Rehabilitation Scheme is in close proximity to the North West project study area. An AA Screening for the Donegal Countywide Water Mains Rehabilitation Scheme was undertaken (Jacobs Tobins, 2016). All existing pipelines will be upgraded and in some instances extended. All pipelines with the exception of one (Argery SR) are within existing roads. All rehabilitation and extension works will be entirely within existing carriageways, verges and/or areas of hardstanding. An exception to this may be at water crossings; in some instances, it may be possible to strap the replacement pipe onto a bridge. Works are expected to be completed by September 2018. The screening concluded that an AA of the proposed development(s) was not required as, on the basis of objective scientific information, and in light of the conservation objectives of relevant sites, the proposed development, either individually or in combination with other plans or projects, would not have LSEs on any European site. Therefore, there is no potential for in-combination effects with the North West project.</p>	N	N/A	N

⁶⁴ <http://www.pleanala.ie/documents/reports/VCO/RVC0097.pdf>

⁶⁵ http://www.donegalcdb.ie/eplan/internetenquiry/rpt_ViewApplicDetails.asp?validFileNum=1&app_num_file=1750543

Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project being assessed against identified in bold and underlined	Likely Significant Effects (Y/N)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Donegal Group B Sewerage Scheme</p> <p>In progress (tbc but likely to be spring 2018). The Donegal Group B project includes the development of new sewerage schemes in Killybegs, Bundoran, Glencolumbkille and Convoy. This project will ensure compliance with EU Directives and will provide wastewater treatment capacity in these areas supporting growth and economic development.</p>	<ul style="list-style-type: none"> • Pollution • Habitat or loss • Disturbance • Mortality 	<p>No publically available environmental reports were available for the Donegal Countywide Watermains Rehabilitation Scheme which constitutes the following components (not exclusive list):</p> <ul style="list-style-type: none"> • Killybegs: New waste water treatment works, three pumping stations, 5.5km upgrade of existing sewers and outfalls; including a major marine outfall constructed using directional drilling. • Bundoran: New waste water treatment works, two pumping stations, storm water holding tank, 2.2km foul sewers and marine outfall. • Glencolumbkille: New waste water treatment works, two pumping stations and 2.6km of new sewer network. • Convoy: Upgrade of existing treatment works, 350m sewer and upgrade of 3km existing sewer. <p>Only works associated with Bundoran could potentially result in in-combination effects (for example on Donegal Bay SPA or Lough Melvin SAC) as the remaining scheme sites are more than 20km from the North West project. However, it is unlikely that the North West will be built at the same time as the works associated with Bundoran because the completion date for the Donegal Countywide Watermains Rehabilitation Scheme is spring 2018. Therefore, in-combination construction impacts are not predicted.</p> <p>Given the nature of the two different schemes in-combination effects at operational phase are not predicted.</p>	N	N/A	N
<p>Sligo Water Conservation Stage 3 – Mains Rehabilitation Phase 2 Lough Talt.</p> <p>In progress. Involves the replacement of defective pipework.</p>	<ul style="list-style-type: none"> • Pollution • Disturbance • Mortality 	<p>The Sligo Water Conservation Stage 3 project is in close proximity to the North West project study area. The Sligo Water Conservation Stage 3 project involves the rehabilitation and replacement of approximately 20kms of water mains in Curry, Quarryfield, Killavel and Oldrock, primarily located through private lands, with 24kms of new polyethylene water mains to be located primarily on public roads. The project is due for completion in winter 2017. Although no environmental reports appeared to be publicly available the project is listed in the Sligo County Development Plan 2017-2023⁶⁶. In-combination effects from construction activities are not predicted as Stage 3 of the Sligo Water Conservation project will be completed before the North West project is progressed.</p> <p>Given the nature of the two different schemes in-combination effects at operational phase are not predicted.</p>	N	N/A	N
		<p>The Sligo Water Conservation Stage 3 project is within the North Connacht project study area. The Sligo Water Conservation Stage 3 project involves the rehabilitation and replacement of approximately 20kms of water mains in Curry, Quarryfield, Killavel and Oldrock, primarily located through private lands, with 24kms of new polyethylene water mains to be located primarily on public roads. The project is due for completion in winter 2017. Although no environmental reports appeared to be publicly available the project is listed in the Sligo County Development Plan 2017-2023⁶⁶. In-combination effects from construction activities are not predicted as Stage 3 of the Sligo Water Conservation project will be completed before the North Connacht project is progressed.</p> <p>Given the nature of the two different schemes in-combination effects at operational phase are not predicted.</p>	N	N/A	N
<p>Ballintra Quarry – planning application number SU0054</p> <p>Development of an existing quarry. Application granted by an Bord Pleanala in January 2017⁶⁶.</p>	<ul style="list-style-type: none"> • Habitat loss • Habitat degradation – spread of invasive species 	<p>The Ballintra Quarry project is within the North West project study area and involves the further development of an existing quarry. An Environmental Impact Statement and NIS were taken into consideration by ABP with particular regard to Ballintra SAC and Durnesh Lough SAC. The Board concluded that the development either alone or in-combination with other plans or projects would not have an adverse effect on the integrity of any European site. As it is unlikely that construction at Ballintra Quarry and of the North West project would be undertaken at the same time and that the Ballintra Quarry project is an upgrade to an existing quarry no in-combination effects are predicted.</p>	N	N/A	N
<p>Collooney Wastewater Treatment System – site upgrade</p> <p>Upgrade to existing water treatment plant.</p>	<ul style="list-style-type: none"> • Pollution • Habitat loss, degradation or change. • Mortality • Disturbance 	<p>The Collooney Wastewater Treatment System project is in close proximity to the North West project study area and is located in the north-eastern environs of Coollooney, immediately to the south of the Owenmore River which forms part of the boundary of the Unshin River SAC. The upgrade works comprises new inlet works, new tanks construction and new buildings, all within the existing footprint of the existing plant. Stage 1 Screening for AA concluded no significant impacts to Natura 2000 sites. In the planning decision from ABP⁶⁷ it was concluded that the development, individually or in-combination with other plans or projects, would not significantly affect the Unshin River SAC. Therefore, no construction or operational in-combination effects are predicted with the North West project.</p>	N	N/A	N

⁶⁶ <http://www.pleanala.ie/documents/directions/QD0/SQD0020.pdf> (Accessed December, 2017)

⁶⁷ <http://www.pleanala.ie/documents/reports/248/R248659.pdf> (Accessed December, 2017)

Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project being assessed against identified in bold and underlined	Likely Significant Effects (Y/N)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
N4 Collooney/Castlebaldwin The scheme is proposed for Sligo and will run south of the N4/N17 Toberbride Roundabout at Collooney to a tie-in point with the existing N4 at Cloghoge Lower townland, south of Castlebaldwin. It will involve construction of a new greenfield route with some online upgrades to the existing network.	<ul style="list-style-type: none"> Changes in water quality (construction and operation) Spread of invasive non-native species (construction) 	The N4 Collooney/Castlebaldwin project is in close proximity to the North West project study area. As reported in the NIS ⁶⁸ for the N4 Collooney/Castlebaldwin project the Screening for AA identified the potential for LSEs to floating river vegetation, Atlantic salmon and otter; QI of Unshin River SAC which is within 40m at the closest point during construction and operation (water quality). Advanced works have commenced ⁶⁹ on this scheme with the main construction works likely to be progressed in the near future (date not specified). Therefore, the N4 Collooney/Castlebaldwin project and the North West project are highly unlikely to be in construction at the same time and therefore in-combination effects during construction have been ruled out. There is potential for operational in-combination effects through changes to water quality affecting the QI species of the River Unshin SAC. However, with implementation of mitigation as detailed in the NIS for the N4 Collooney/Castlebaldwin project together with the proposed mitigation measures within this NIS as detailed in Section 7, no AESI are predicted.	Y	With the implementation of mitigation (see Section 7.2, Box 7B) there is no potential for AESI.	N
		The N4 Collooney/Castlebaldwin project is almost 19km from the general area of the North Connacht project study area. This scheme and the North Connacht scheme are highly unlikely to be construction at the same time and therefore in-combination effects during construction have been ruled out. No potential for operational in-combination effects were identified.	N	N/A	N
North West	<ul style="list-style-type: none"> Habitat loss, degradation or change Mortality Disturbance Pollution Changes to hydrology 	The project area lies within the North Connacht project study area. No construction effects are predicted as neither project will be progressed concurrently. At the operation phase there is potential for in-combination effects to SCI bird species through increased collision risk if OHLs are used.	Y	With the implementation of detailed ornithological survey and appropriate mitigation (Section 7.3, Box H) there is no potential for AESI.	N
Carrick-on-Shannon-Arigina T-Corderry 110kV Line uprate Uprate/Modify of an existing line over 35km. Project approved. Works are part complete and expected to continue through 2018.	<ul style="list-style-type: none"> Disturbance Habitat loss, degradation or change. 	The Carrick-on-Shannon Arigina T – Corderry project is 7km from the general area of the North Connacht project study area. No LSE were identified in the Stage 1 AA carried out by Eirgrid ⁷⁰ . In addition, this scheme and the North Connacht scheme are highly unlikely to be construction at the same time and therefore in-combination effects during construction have been ruled out. Given that this is an uprate of an existing line no potential for operational in-combination effects were identified.	N	N/A	N
		The Carrick-on-Shannon Arigina T – Corderry project is 8km from the general area of the North West project study area. No LSE were identified in the Stage 1 AA carried out by Eirgrid ⁷¹ . In addition, this scheme and the North Connacht scheme are highly unlikely to be construction at the same time and therefore in-combination effects during construction have been ruled out. Given that this is an uprate of an existing line no potential for operational in-combination effects were identified.	N	N/A	N
N4/N15 Sligo Urban Road Improvement This scheme is a continuation of the N4 Sligo Inner Relief Road north of Hughes Bridge. The scheme involves widening Hughes Bridge to six lanes of traffic and upgrading the at grade junctions to the Sligo Borough Boundary with online improvement to dual carriageway cross section. The widening of Hughes bridge to a six lane road is progressing as a Minor Improvement Scheme. This scheme is being delivered as a minor scheme and has been granted planning permission.	<ul style="list-style-type: none"> Pollution Disturbance Habitat loss, degradation or change 	The proposed road route lies within the North Connacht project study area. The boundary of the proposed development is centred on the existing N4-N15 carriageway, approximately 1km northwest of Sligo city centre. The proposed development comprises a c. 670m improvement section that passes adjacent to the Garavogue Estuary and the Garavogue River, and over the Copper River. The boundary of the proposed development overlaps the Cummeen Strand/Drumcliff SAC and Cummeen Strand SPA but there is no overlap of the permanent footprint of the proposed road and ancillary infrastructure with designated QI habitats. The AA Screening identified the potential for LSE. Pollution effects on estuaries, sea/river lamprey and wetland, and disturbance to redshank and oyster catcher were identified in the NIS ⁷¹ at both construction and operational stages. There is no potential for in-combination effects during construction as the projects will not be undertaken in tandem. There is no potential for in-combination effects during operation as no LSE from changes to water quality or disturbance from the operation of the North Connacht project have been predicted.	N	N/A	N
		The proposed road route is approximately 5km to the boundary within the North West project study area. The boundary of the proposed development is centered on the existing N4-N15 carriageway, approximately 1km	N	N/A	N

⁶⁸ <http://www.sligococo.ie/media/SligoCountyCouncil2015/Services/RoadsandParking/N4/Downloads/N4%20Natura%20Impact%20Statement.pdf> (Accessed May, 2017)

⁶⁹ <http://www.sligococo.ie/n4/> (Accessed May, 2017).

⁷⁰ EIRGRID (2014) Screening Report for Appropriate Assessment (Stage 1 AA). Carrick-on-Shannon – Arigna T – Cordeerry 110kV Overhead Transmission Line Uprate. Final Report.

⁷¹ http://www.sligococo.ie/N4-N15/N4-N15_NaturalImpactStatement.pdf

Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project being assessed against identified in bold and underlined	Likely Significant Effects (Y/N)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
		northwest of Sligo city centre. The proposed development comprises a c. 670m improvement section that passes adjacent to the Garavogue Estuary and the Garavogue River, and over the Copper River. The boundary of the proposed development overlaps the Cummeen Strand/Drumcliff SAC and Cummeen Strand SPA but there is no overlap of the permanent footprint of the proposed road and ancillary infrastructure with designated QI habitats. The AA Screening identified the potential for LSE. Effects to estuaries, sea/river lamprey, redshank, oyster catcher and wetlands were identified in the NIS ⁷² at both construction and operational stages. There is no potential for in-combination effects during construction as the projects will not be undertaken in tandem. There is no potential for in-combination effects during operation as no LSE from changes to water quality or disturbance from the operation of the North West project have been predicted.			
Bellacorick - Moy 110kV Line Uprate Uprate/Modify of an existing line over 8.4km. Project approved. Works expected to begin in 2018.	<ul style="list-style-type: none"> Changes to hydrology Significant effects to aquatic species due to the release of pollutants and sediments Mortality 	This existing line and permitted uprate Bellacorick - Moy project is within the North Connacht project study area. The NIS ⁷² for the Bellacorick - Moy project identified the River Moy SAC and Bellacorick Bog Complex SAC as having the potential to be impacted by the proposed development. Impacts to bird species associated with SPA's were considered unlikely as sites were located outside the study area and as the line will not cause any additional collision risk to bird species that are present in the area. There is no potential for in-combination effects during construction as the projects will not be undertaken in tandem. At the operational phase there will be no change in existing conditions for the Bellacorick – Moy line however regardless of the technology taken forward for the North Connacht project (OHL or UGC) future upgrade works could be undertaken at the same time therefore in-combination effects are possible on, for example, aquatic QI species of the River Moy SAC.	Y	With the implementation mitigation (see Section 7.3, Box F) there is no potential for AESI.	N
Bellacorick - Castlebar 110kV Line Uprate Uprate/Modify of an existing line over 38km. Project approved. Works completed in 2016.	<ul style="list-style-type: none"> Pollution Habitat loss, degradation or change. Mortality Disturbance Changes to hydrology Alien invasive species introduction/spread 	This existing line and permitted uprate project is within the North Connacht project study area. The NIS ⁷³ for the Bellacorick - Castlebar identified LSEs for the River Moy SAC and Bellacorick Bog Complex SAC. There is no potential for in-combination effects during construction as the Bellacorick - Castlebar project has been completed. At the operational phase there will be no change in existing conditions for the Bellacorick – Castlebar line however regardless on the technology taken forward North Connacht project (OHL or UGC) future upgrade works could be undertaken at the same time therefore in-combination effects are possible, on for example, aquatic qualifying interest species of the River Moy SAC.	Y	With the implementation mitigation (see Section 7.3, Box F) there is no potential for AESI.	N
Oweninny Wind Farm The project will cover an area of approximately 50km ² and initially comprised 112 wind turbines. Access to the wind farm site will be off the N69 road. Planning permission has been granted for Phase 1 and 2 only with 61 associated wind turbines.	<ul style="list-style-type: none"> Significant effects to aquatic species due to the release of pollutants and sediments Mortality Disturbance 	This Oweninny Wind Farm project is in close proximity to the North Connacht project study area. The proposed development will occur in two phases. Phase 1 and Phase 2 of the proposed development developed between 2014 and 2018. The NIS for Oweninny Wind Farm was published in 2015 ⁷⁴ and identified the River Moy SAC and Lough Conn SPA as having the potential to be impacted by the proposed development. Reported within the NIS two power plants have been granted permission (Conventional 200MW natural gas fired peaking plant along the Srahnakilla Road and 68MW gas turbine peaking plant at Bellacorick) but the associated planning documents for these power plants did not identify any effects on Natura 2000 sites. As construction works will not be undertaken in tandem no in-combination effects can occur for Phase 1 and 2. As noted in the NIS "While there are four SPAs (Owenduff/Nephin Complex SPA, Lough Conn and Lough Cullin SPA, Carrowmore Lake SPA and Blacksod Bay/Broadhaven SPA) within a 15km radius of the Oweninny site, it can be concluded with a high degree of certainty that activities associated with the proposed project either during the construction and/or operation phases could not have any impacts, direct or indirect, on the conservation objectives of the SPAs". However, regardless of the technology taken forward for the North Connacht project (OHL or UGC) future upgrade works and maintenance/ decommissioning of the Oweninny wind farm could occur at the same time therefore in-combination effects through disturbance could occur on QI species such as, for example, the Greenland white-fronted goose.	Y	With the implementation of mitigation at mitigation (see (Section 7.3, Box H)) there is no potential for AESI.	N

⁷² TOBIN Consulting Engineers (2015). Bellacorick – Moy 110kV Line Uprate Project, Natura Impact Statement.

⁷³ ESB International (2014). Bellacorick to Castlebar 110kV Line Proposed Part 2 Uprate Project, Natura Impact Statement.

⁷⁴ <https://v942.files.wordpress.com/2015/11/aa-phases-1-and-22.pdf> (Accessed May, 2017).

Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project being assessed against identified in bold and underlined	Likely Significant Effects (Y/N)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
Dooleeg, Bellacorick Wind farm development of one 2MW turbine	<ul style="list-style-type: none"> Disturbance Mortality 	<p>The Dooleeg, Bellacorick wind farm project is in close proximity to the North Connacht project study area. The permission 09/259 for a wind farm development at Dooleeg, Bellacorick (one 2MW wind turbine) was granted on appeal to ABP (PL16.236402). The location is a few hundred metres south of the Oweninny site. The planning application concluded that the project would have no adverse impacts on any designated site. It is unlikely that construction of both projects will be undertaken at the same time therefore in-combination effects are not predicted.</p> <p>Given the small scale development of one turbine and taking into consideration the conclusion of the NIS, there is no potential for in-combination effects during the operational phase.</p>	N	N/A	N
Corvoderry Wind Farm Development Wind farm development of ten turbines with 100m overall height.	<ul style="list-style-type: none"> Significant effects to aquatic species due to the release of pollutants and sediments Mortality Disturbance 	<p>The Corvoderry Wind Farm Development project is in close proximity to the North Connacht project study area. The development (Planning reference 11838) comprises ten wind turbines, access tracks and a substation, and is located within the proposed Oweninny site. The windfarm was consented 15.10.12. There is a right of way to the site along the existing Bellacorick wind farm road. As cited in the Oweninny Wind Farm NIS⁷⁵, the Corvoderry NIS (Jennings O'Donovan & Partners, 2011) did not identify risks to any Natura site in the vicinity.</p> <p>The wind farm development is approximately 15km from Loch Conn and Lough Cullin SPA and to the west and is within the Oweninny site. It is unlikely that works will be undertaken in tandem therefore no in-combination effects are predicted.</p> <p>However, regardless of the technology taken forward for the North Connacht project (OHL or UGC) future upgrade works and maintenance/ decommissioning of the Corvoderry wind farm could occur at the same time therefore in-combination effects through disturbance could occur on QI species such as, for example, the Greenland white-fronted goose.</p>	Y	With the implementation of detailed ornithological survey and appropriate mitigation (see Section 7.3, Box 7G) there is no potential for AESI	N
Magheramore/ Cregganbrack, Bekan, Claremorris Permission over 10-year period to develop a 7 wind turbine site between 6 to 8km north-east of Claremorris and 3km south and south-east of Knock, Co Mayo. Turbine height is 156.5m.	<ul style="list-style-type: none"> Pollution Habitat loss, degradation or change Mortality Disturbance Changes to hydrology 	<p>The Magheramore/ Cregganbrack, Bekan, Claremorris project is within and adjacent to the North Connacht project study area. The site covers approximately 424Ha situated on undulating farmland and cut away bog. New access roads may be required as well as infrastructure and caballing for connection to the grid. Environmental Impact Assessment and an NIS were submitted as part of the planning application. The only Natura 2000 sites identified liked hydrologically were Lough Carra/ Lough Mask SAC (not within the Zol for the North Connacht project) and River Moy SAC.</p> <p>Given the 10-year period for development of the Magheramore/ Cregganbrack, Bekan, Claremorris wind farm there is potential for in-combination effects during construction. Also, regardless on the technology taken forward for the North Connacht project (OHL or UGC) future upgrade works and maintenance/ decommissioning of the Magheramore/ Cregganbrack, Bekan, Claremorris wind farm could be undertaken at the same time therefore in-combination effects are possible on, for example, aquatic qualifying interest species of the River Moy SAC.</p> <p>With mitigation no impacts to qualifying interests were identified and in conclusion ABP found no in-combination effects would arise from the development⁷⁵.</p>	Y	With the implementation mitigation (see Section 7.1, Box 7A and Section 7.3, Box E and Box F) there is no potential for AESI	N
N5 Ballaghaderreen Bypass to Longford Road runs through Roscommon and Longford and will consist of 35km of Type 1 single carriageway.	<ul style="list-style-type: none"> Pollution Habitat loss, degradation or change Mortality Disturbance Changes to hydrology 	<p>The N5 Ballaghaderreen Bypass to Longford road project is within the North Connacht project study area. An AA Screening⁷⁶ and AA Screening Decision⁷⁷ (June 2016) concluded that individually or in-combination with other plans or projects LSEs on the River Moy SAC and Tullaghanrock Bog SAC would occur. Potential effects from disturbance and fragmentation of SCIs associated with the Bellanagare Bog SPA and Lough Gara SPA identified on the basis of proximity, fragmentation of key species was related only to areas out with European sites. Whether effects occurred during construction and/or operation was not identified. However, in-combination effects during construction are unlikely as both projects are unlikely to be constructed simultaneously.</p> <p>Given the nature of the two different schemes in-combination effects at operational phase are not predicted.</p>	N	N/A	N

⁷⁵ [http://www.pleanala.ie/documents/reports/244/R244055\(a\).pdf](http://www.pleanala.ie/documents/reports/244/R244055(a).pdf) (Accessed December, 2017)

⁷⁶ <http://www.roscommoncoco.ie/en/Services/Roads/N5-Ballaghaderreen-to-Scramoge-Road-Project/Proposed-Road-Development-AA-Screening-Report.pdf>(Accessed May, 2017)

⁷⁷ <http://www.roscommoncoco.ie/en/Services/Roads/N5-Ballaghaderreen-to-Scramoge-Road-Project/Proposed-Road-Development-AA-Screening-Decision.pdf> (Accessed May, 2017)

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<p>N5 Westport to Turlough (Building on Recovery CIP 2016-2022)</p> <p>Development comprises 20km of Type 2 carriageway from Westport to east of Castlebar (Turlough). Also an associated 2.5km single carriageway link to N59 north of Westport.</p>	<ul style="list-style-type: none"> • Pollution 	<p>The N5 Westport to Turlough road project is within the North Connacht project study area. An AA Screening undertaken in 2013 noted that the project had the potential to impact the River Moy SAC through the deterioration in water quality within the Castlebar River during both construction and operational phases. Direct impacts to Atlantic salmon were predicted. The NIS for the project concluded that there was the potential for in-combination effects on the River Moy through a reduction in water quality⁷⁸.</p>	Y	With the implementation of mitigation. (see Section 7.3, Box F) there is no potential for AESI.	N
<p>Foxford Sewerage Scheme Network and Wastewater Treatment Plants</p> <p>Includes constructing a new Wastewater Treatment Plant on a greenfield site on the Toorglass Road, a new marine outfall into Blacksod Bay, two new pumping stations and rehabilitation of the existing wastewater network. The scheme is in progress and expected to be complete in winter 2019.</p>	<ul style="list-style-type: none"> • Pollution • Habitat loss, degradation or change • Disturbance 	<p>The Foxford Sewerage Scheme project is within the North Connacht project study area. Raw effluent is being discharged to Broadhaven Bay due to the absence of suitable wastewater treatment for Belmullet and the existing plants serving Foxford and Charlestown are both working above their design capacity and are overloaded on a daily basis. There appears to be no AA Screening or NIS for the project as a whole. Upgrade of the existing treatment plant at Charlestown has been subject to AA Screening and an NIS⁷⁹ reported LSE for the River Moy SAC and qualifying interests. These comprised the potential for a reduction in habitat and species densities at the new outfall and the potential for disturbance and fragmentation during construction. Improvements in water quality during operation were envisaged. An AA Screening⁸⁰ for Foxford WwTP discharge licence concluded no LSE on Natura 2000 sites from water discharge.</p> <p>No in-combination construction effects are predicted as the projects are not likely to be progressed in tandem. Given the nature of the two different schemes and that there are no changes to water quality from the operation of the North Connacht project in-combination effects at operational phase are not predicted.</p>	N	N/A	N
<p>Dunstown – Moneypoint Line Refurbishment</p> <p>The project is in the approval process and work are planned to begin in 2018. The existing line to be updated is 208.5km long.</p>	<ul style="list-style-type: none"> • Mortality • Disturbance 	<p>The Dunstown – Moneypoint Line Refurbishment project is within the Shannon Crossing project study area. Screening for AA was undertaken for this project by EirGrid⁸¹. There will be no alterations of towers or foundation works required. Works will comprise of general refurbishment and replacement of outdated hardware. The AA Screening examined the proposed works and access to existing towers, the likelihood of significant effects on the conservation interests of Natura 2000 sites was ruled out. Therefore, potential for in-combination effects during construction (works will not be progressed in tandem) or the operational phase (no change in existing conditions for the refurbished line) have been ruled out.</p>	N	N/A	N
<p>Moneypoint – Oldstreet 400kV line Refurbishment</p> <p>Works have been approved for this existing 102.5km line and are to start in 2018. The works are programmed to finish in 2019 at the earliest.</p>	<ul style="list-style-type: none"> • Habitat loss, degradation or change • Disturbance 	<p>The Moneypoint – Oldstreet Line Refurbishment project is partially within the Shannon Crossing project study area. Screening for AA was undertaken for this project by EirGrid which concluded that there was potential for effects to one or more Natura 2000 sites⁸². The NIS⁸³ identified several Natura 2000 sites, East Burren Complex SAC, Ballyvogan SAC, Slieve Aughty Mountains SPA and Cregg House Stables Crusheen SAC where effects could occur. The concluding statement in the NIS confirmed that with the implementation of mitigation no effects were predicted. Further clarification (Request for Further Information RFI) was required from Clare County Council (Planning Ref. 16/1011) and Galway County Council (Planning Ref. 16/1747) in February 2017 and a response to RFI (Planning Reference 16/1011 and 16/1747) returned in July 2017⁸⁴. Planning permission has now been granted for this project. Works will not be progressed at the same time, and given that one cable is existing and the second will be buried, and that the only sites where there is potential for LSE for the Shannon Crossing project are the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA, there is no potential for in-combination effects during construction or operation.</p>	N	N/A	N
<p>Ennis – Booltiagh – Tullabrack T – Moneypoint 110kV line uprate</p> <p>Works have been approved for this existing 50.2km line and were completed in 2018.</p>	<ul style="list-style-type: none"> • Habitat loss, degradation or change • Disturbance 	<p>The Ennis – Booltiagh – Tullabrack T – Moneypoint 110kV uprate project is within the Shannon Crossing project study area. The proposed uprate works involves the replacement of polesets and steel towers therefore the associated excavation works will be localised. Watercourses, are sailed over and a number of support structures that need to be replaced are in close proximity to watercourses which include the River Fergus. Screening for AA was undertaken for this project by EirGrid⁸⁵ and concluded no LSE for the Lower River Shannon SAC. Potential for in-combination effects have been ruled out.</p>	N	N/A	N

⁷⁸ <http://www.regdesign.com/wp-content/uploads/2013/08/N5-EIS-Volume-4-Screening-Report-NIS.pdf>

⁷⁹ http://www.epa.ie/licences/lic_eDMS/090151b280506a49.pdf

⁸⁰ http://www.epa.ie/licences/lic_eDMS/090151b280510afd.pdf

⁸¹ EIRGRID (2016). Screening Report for Appropriate Assessment (Stage 1 AA) Dunstown – Moneypoint 400kV Refurbishment, Revised Report Based on Line Project Assessment Report.

⁸² EIRGRID (2013) Screening Report for Appropriate Assessment (Stage 1 AA). Moneypoint – Oldstreet 400kV Refurbishment. Final Report.

⁸³ EIRGRID (2016) Natura Impact Statement. Moneypoint Oldstreet 400kV Refurbishment.

⁸⁴ MOTT MACDONALD (2017) Moneypoint – Oldstreet 400kV Response to RFI (Planning Reference 16/1011). Report for EIRGRID.

⁸⁵ EIRGRID (2015) Screening Report for Appropriate Assessment (Stage 1 AA). Ennis – Booltiagh – Tullabrack T – Moneypoint 110kV Overhead Transmission Line Uprate. Revised Report (Final).

Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project being assessed against identified in bold and underlined	Likely Significant Effects (Y/N)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
Knockanure 220/110kV New Station New substation. Work completed.	<ul style="list-style-type: none"> Disturbance Pollution Habitat loss, degradation or change 	The Knockanure 220/110kV New Station project is within the Shannon Crossing project study area. Screening for AA identified two sites, Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA and Lower River Shannon SAC, that could potentially be effected by development of the new station. LSE from construction activities were identified in the NIS but no operational effects were noted ⁸⁶ . As the new station has already been constructed there is no potential for in-combination effects during construction of Shannon Crossing project. Potential for in-combination effects during operational phase have been ruled out.	N	N/A	N
–Kilpaddoge - Knockanure 220kV New Cable Works have been approved for this 26km new underground cable and works are to start in 2018.	<ul style="list-style-type: none"> Disturbance Pollution Habitat loss, degradation or change. 	The Knockanure 220/110kV New Station project is within the Shannon Crossing project study area. Screening for AA identified two sites, Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA and Lower River Shannon SAC, that could potentially be effected by development of the new station. LSE from construction activities were identified in the NIS but no operational effects were noted ⁸⁷ . As the new station has already been constructed there is no potential for in-combination effects during construction of Shannon Crossing project. Potential for in-combination effects during operational phase have been ruled out.	N	N/A	N
Tarbert – Tralee 110kV line Refurbishment The existing line to be refurbished is 41.8km long with 218 associated structures. Most of the wooden poles will be replaced with now polesets due to age and condition. Awaiting approval and works due to start in 2018.	<ul style="list-style-type: none"> Disturbance Pollution Habitat loss, degradation or change. 	A proportion of the Tarbert – Tralee 110kV line Refurbishment project is within the Shannon Crossing project study area. AA Screening for the project ruled out effects on the conservation interests of the Natura 200 sites ⁸⁸ . As the proposed uprate works involves the replacement of polesets associated excavation works will be localised. Potential impacts associated with the proposed works, included potential disturbance to breeding hen harrier in the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA and possible localised siltation of water bodies and disturbance to otter within the Lower River Shannon SAC. The Screening Statement in the AA Screening Report concluded that given the distance and temporary nature of proposed works there was no potential for significant effects. No in-combination construction effects are predicted as the projects are not likely to be progressed in tandem. No potential for in-combination effects during operational phase are predicted.	N	N/A	N
Kilpaddoge: Knockanure - Ballyvouskil 220kV line uprate – Clashavoon 220kV line uprate and Kilpaddoge – Tarbet 220kV line refurbishment Existing line refurbishment/uprate 97.3km and works have been partially completed.	<ul style="list-style-type: none"> Disturbance Pollution Habitat loss, degradation or change 	A proportion of the Killpaddoge: Knockanure - Ballyvouskil 220kV line uprate, Ballyvouskil - Clashavoon 220kV line uprate and Kilpaddoge – Tarbet 220kV project is within the Shannon Crossing project study area. Three AA Screenings for the project were undertaken ^{89 90 91} . Natura 2000 sites potentially affected include the River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC. No LSE were predicted for Ballyvouskil - Clashavoon or Kilpaddoge – Tarbet and both have been completed. In the NIS ⁹² for Ballyvouskil – Knockanure uprate potential construction impacts associated with the proposed works included disturbance to breeding hen harrier in the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA and changes in water quality effecting otter and aquatic QI species in the Lower River Shannon SAC and Blackwater River (Cork/Waterford) SAC. No in-combination construction effects are predicted as the projects are not likely to be progressed in tandem. No potential for in-combination effects during operational phase are predicted.	N	N/A	N
Laois - Kilkenny Reinforcement Project Comprises three main elements: new 400/110kV substation near Portlaoise with 1.5km of 400kV line to Dunstown-Moneypoint, a new extension to the existing 38kV substation at Ballyragget and a new 110kV line between Portlaoise and Ballyragget substations (30km). The proposed line will comprise double wood polesets and galvanised steel lattice towers. Estimated completion date 2018.	<ul style="list-style-type: none"> 	The Laois Kilkenny Reinforcement project is within to the Great Island to Kilkenny project study area. EirGrid undertook AA Screening ⁹³ for the project and identified four Natura 200 site potentially affected. Three sites, River Nore SPA, Lisbigney Bog SAC and Ballyprior Grassland SAC were screened out as no impacts were identified. One site, River Barrow and River Nore SAC was taken forward to Stage 2 as construction phase effects were identified. No in-combination construction effects are predicted as the projects are not likely to be progressed in tandem. No potential for in-combination effects during operational phase are predicted.	N	N/A	N

⁸⁶ Tobin (2012) North Kerry Project, Natura Impact Statement. Report for EIRGRID.

⁸⁷ Tobin (2012) North Kerry Project, Natura Impact Statement. Report for EIRGRID.

⁸⁸ EIRGRID (2014). Screening Report for Appropriate Assessment (Stage 1 AA) Tarbet – Tralee (No. 1) 110kV Overhead Transmission Line Refurbishment, Final Report.

⁸⁹ EIRGRID (2014) Screening Report for Appropriate Assessment (Stage 1 AA). Ballyvouskil – Knockanure 220kV Overhead Transmission Line Uprate. Final Report.

⁹⁰ EIRGRID (2014) Screening Report for Appropriate Assessment (Stage 1 AA). Ballyvouskil – Clashavoon 220kV Overhead Transmission Line Uprate. Final Report.

⁹¹ EIRGRID (2014) Screening Report for Appropriate Assessment (Stage 1 AA). Tarbert – Knockanure 220kV Overhead Transmission Line Uprate. Final Report.

⁹² ARUP (2016) Ballyvouskil to Knockanure 220kV Line Uprate – Co Kerry. Natura Impact Statement. Report for EIRGRID.

⁹³ AOS Planning (2012) Laois Kilkenny Reinforcement Project Environmental Reports. Appropriate Assessment Screening Report.

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Raffeen - Trabeg 110kV No. 1 Line Uprate Uprate/ modification of existing 10.4km line. Programmed works for 2017.	<ul style="list-style-type: none"> Habitat, degradation or change Disturbance Pollution Mortality 	<p>The Raffeen - Trabeg 110kV No. 1 Line Uprate project line at the closest point is 6.1km from the <u>Celtic Interconnector</u> project area. No information on the line uprate/ modification or no Screening for AA was available. The project is in close proximity to the Cork Harbour SPA and <10km from the Great Island Channel SAC. Works will not be undertaken in tandem with the <u>Celtic Interconnector</u> therefore construction effects are not predicted. In addition, no decision has been made on the final landing point for the cable Cork and West Wexford both currently an option.</p> <p>Potential for in-combination effects during operational phase have been ruled out for the UGC as there will be no change from existing conditions. There is a potential for in-combination effects if the OHL technology is taken forward through mortality of QI birds species of the Cork Harbour SPA.</p>	Y	With the implementation of mitigation (see Section 7.4.1, Box K) there is no potential for AESI.	N
Cow Cross 110kV Station - New 110kV Bay Uprate/ modification project awaiting approval. Programmed works for 2019.	<ul style="list-style-type: none"> Disturbance Pollution 	The Cow Cross 110kV station is 4.7km from the <u>Celtic Interconnector</u> project area. Works will not be undertaken in tandem and all works will be within existing station out with any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs. No potential for in-combination effects.	N	N/A	N
Trabeg 110kV Station - Uprate 2 110kV Transformer Bays Uprate/ modification project awaiting approval. Programmed works for 2020.	<ul style="list-style-type: none"> Disturbance Pollution 	The Trabeg 110kV station is 4.7km from the <u>Celtic Interconnector</u> project area. Works will not be undertaken in tandem and all works will be within existing station out with any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs. No potential for in-combination effects.	N	N/A	N
Midleton 110kV Station - New 110kV DSO Transformer Bay Uprate/ modification project awaiting approval. Programmed works for 2019.	<ul style="list-style-type: none"> Disturbance Pollution 	The Midleton 110kV station is 5.6km from the <u>Celtic Interconnector</u> project area. Works are unlikely to be undertaken in tandem and all works will be within existing station out with any European site. Minimal work requirement, undertaken within footprint of existing station. No potential for LSEs. No potential for in-combination effects.	N	N/A	N
M28 Ringaskiddy to Cork (Building on Recovery CIP 2016-2022) Development comprises 11km of new motorway and 2km of new single carriageway from the existing Broomfield Interchange (junction 9) on the N40 to the eastern side of Ringaskiddy Village.	<ul style="list-style-type: none"> Pollution Habitat loss, degradation or change Mortality Disturbance 	<p>The M28 Ringaskiddy to Cork project is approximately 3.2km from the <u>Celtic Interconnector</u> project area. The Screening for AA as reported in the NIS⁹⁴ for the project identified Cork Harbour SPA and Great Island Channel SAC (not of relevance for the <u>Celtic Interconnector</u> as being within the ZoI. Therefore, there is potential for in-combination effects.</p> <p>No construction effects are predicted as neither projects will be progressed in tandem. No operational in-combination effects with the M28 Ringaskiddy to Cork project (changes in water quality) and the <u>Celtic Interconnector</u> project (disturbance/mortality) are predicted to the Cork Harbour SPA.</p>	N	N/A	N
N8 Dunkettle Interchange (Building on Recovery CIP 2016-2022) The scheme comprises the upgrade of the existing Dunkettle Interchange.	<ul style="list-style-type: none"> Pollution Habitat loss, degradation or change Disturbance 	<p>The project is approximately 12km from the <u>Celtic Interconnector</u> project area. Screening for AA⁹⁵ identified LSEs for Cork Harbour SPA and Great Island Channel SAC (not of relevance for the <u>Celtic Interconnector</u> through disturbance and run-off during construction and from spread of invasive cord grass into new areas of the SPA resulting in loss of feeding intertidal mud habitat.</p> <p>Therefore, there is potential for in-combination effects.</p> <p>As the projects will not be constructed at the same time construction in-combination effects are not predicted. No operational in-combination effects with the N8 Dunkettle Interchange project and the <u>Celtic Interconnector</u> project are predicted.</p>	N	N/A	N

⁹⁴ <http://www.n28cork-ringaskiddy.com/EIS/vol3/Natura%20Impact%20Statement.pdf>

⁹⁵ http://www.epa.ie/licences/lic_eDMS/090151b2805a882a.pdf (Accessed December, 2017)

Project	Potential Impacts – Key Types	Potential for In-combination Implications on European Sites Project being assessed against identified in bold and underlined	Likely Significant Effects (Y/N)	Mitigation and Conclusion	In-combination Adverse Effects on Site Integrity (Y/N)
<p>Cork Lower Harbour Main Drainage Project</p> <p>New water treatment plan, 14 new pumping stations, 30km of new sewers and drilling under the estuary. Work began in 2016 and are programmed to compete in 2020.</p> <p>Pumping stations and pipelines associated with Ringaskiddy will be completed between 2016 and 2019.</p> <p>Pumping stations and pipelines associated with Cobh will be completed between 2018 and 2019.</p> <p>Estuary crossing by HDD from Cork dockyard to Monkstown.</p>	<ul style="list-style-type: none"> • Pollution • Disturbance 	<p>The Cork Lower Harbour Main Drainage project is approximately 5.5km from the <u>Celtic Interconnector</u> project area. The Screening for AA⁹⁶ for the Cork Lower Harbour Main Drainage project concluded no LSEs. The NIS⁹⁷ for the HDD component of the project noted that although no work would be undertaken within any Natura site, potential indirect impacts to Cork Harbour SPA and Great Island Channel SAC (not of relevance for the <u>Celtic Interconnector</u> were possible through potential disturbance to QI bird species and pollution of SAC habitat. However, in-combination effects with the <u>Celtic Interconnector</u> project are not predicted as construction will not occur at the same time. No operation effects are predicted.</p>	N	N/A	N
<p>Ringaskiddy Port Redevelopment</p> <p>The proposed project comprises container berths and multi-purpose berth at Ringaskiddy east, a deep water berth extension at Ringaskiddy west, road improvements and an amenity area at Paddy's Point. The implementation will be phased with a disposal at sea of dredged material component to the project.</p>	<ul style="list-style-type: none"> • Pollution • Habitat loss, degradation or change • Introduction of invasive species • Disturbance • Mortality 	<p>The Ringaskiddy Port Redevelopment project is at the closest point approximately 3km from the <u>Celtic Interconnector</u> project area. The Screening for AA⁹⁸ identified Ballycotton SPA, Cork Harbour SPA and Great Island Channel SAC as being within the Zol. At the nearest point the proposed project is 60m from the nearest Natura 2000 site, Cork Harbour SPA. Potential construction and operational negative effects to both the Great Island Channel SAC and Cork Harbour SPA were identified. For example, sedimentation from dredging activities smothering offshore habitats. Although it is unlikely that construction will be undertaken at same time, there is potential for in-combination effects during operational activities of the Ringaskiddy Port Redevelopment project and the construction of <u>Celtic Interconnector</u> through disturbance to QI bird species.</p>	Y	With the implementation of mitigation (see Section 7.4.1, Box J) there is no potential for AESI.	N
<p>Douglas Flood Relief Scheme</p> <p>Construction of flood defenses and conveyance improvement measures along the Ballybrack Stream, Grange Stream and Tramore River to minimise flood risk in Douglas and Tougher in County and the city of Cork</p>	<ul style="list-style-type: none"> • Pollution • Habitat loss, degradation or change • Disturbance 	<p>The Douglas Flood Relief Scheme project is 13km from the <u>Celtic Interconnector</u> project area. The Environmental Impact Assessment for the project identified a hydrological link to the nearest Natura 2000 sites, Cork Harbour SPA and Great Island Channel SAC, which are 0.4km and 6.9km respectively away. LSEs were ruled out in the Screening AA report, as noted in the planning application documents to ABP⁹⁹, therefore no in-combination effects are predicted.</p>	N	N/A	N

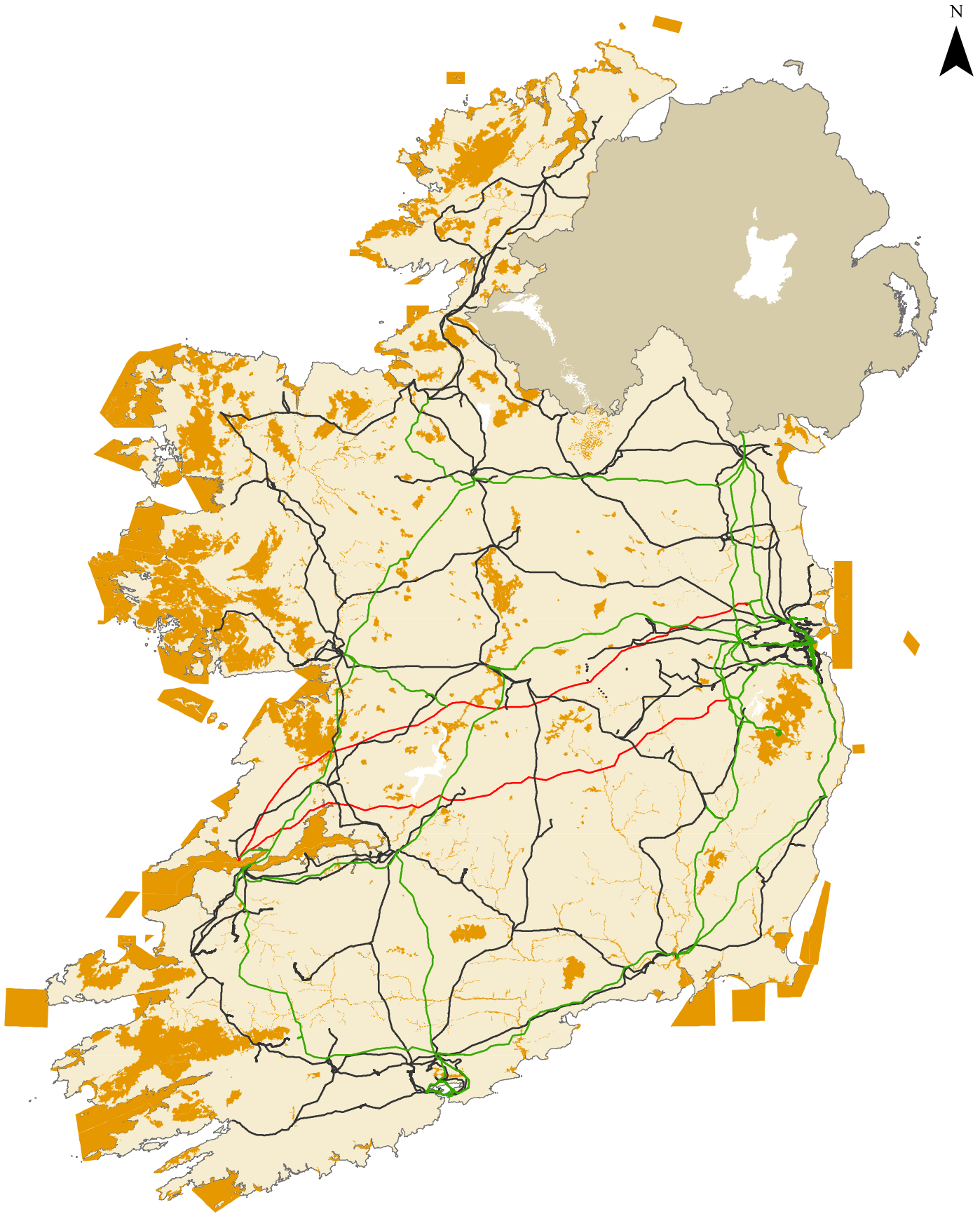
⁹⁶ http://www.housing.gov.ie/sites/default/files/foreshore-applications/application-documents/outfall_upgrade_repair_works_appropriate_assessment_-_stage_1_screening.pdf

⁹⁷ http://www.housing.gov.ie/sites/default/files/foreshore-applications/application-documents/estuary_crossing_natura_impact_statement.pdf

⁹⁸ RPS (2014) Proposed Alterations to Ringaskiddy Port Redevelopment Screening for Appropriate Assessment

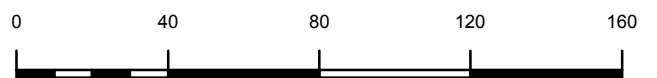
⁹⁹ <http://www.pleanala.ie/documents/reports/JA0/RJA0038.pdf>

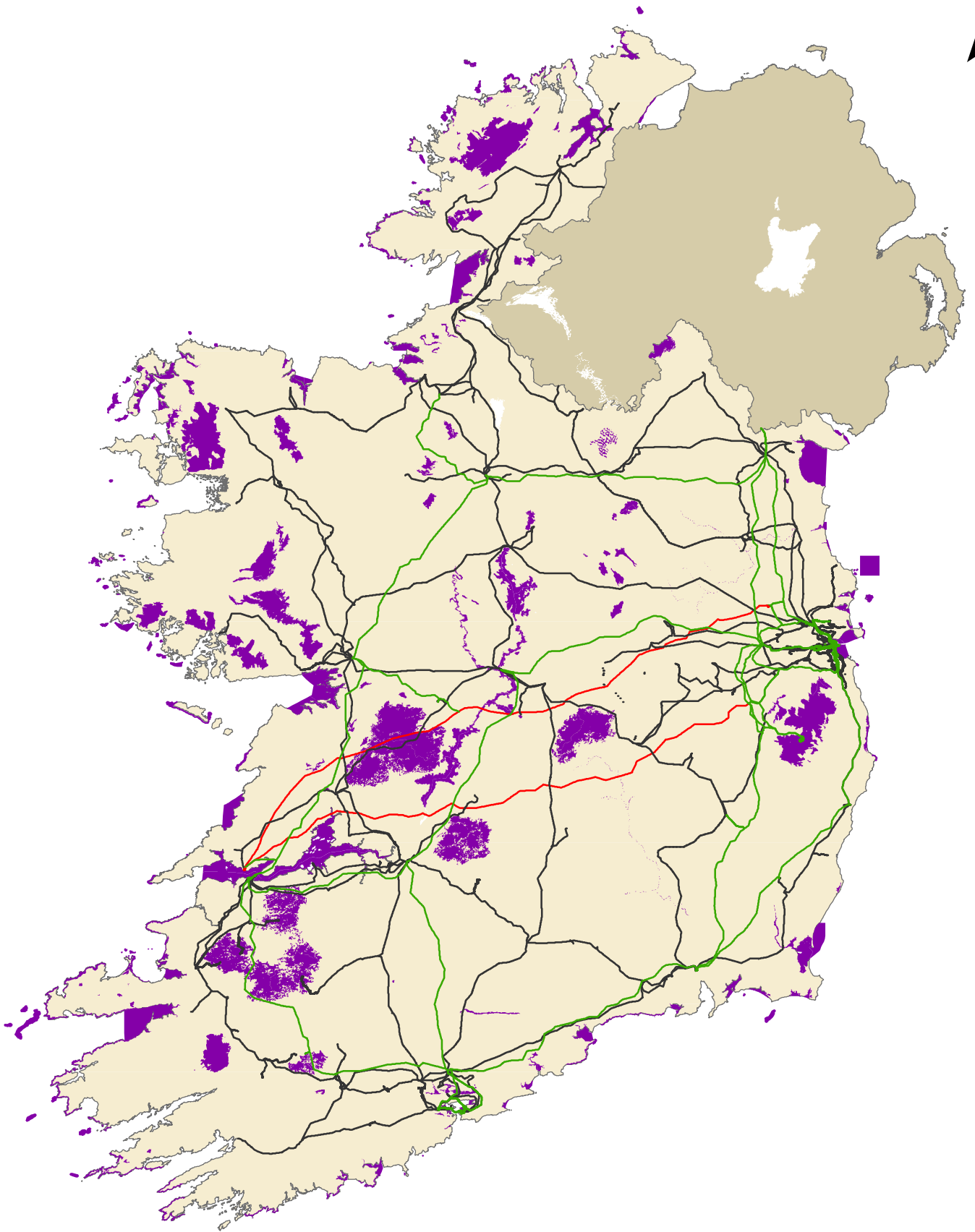
Appendix G. Figures







Legend

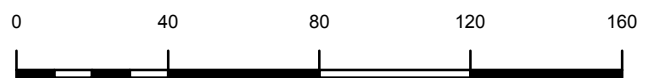
- 110kV Existing Network
- 220kV Existing Network
- 400kV Existing Network
- Special Area of Conservation (SAC)





Legend

-  110kV Existing Network
-  220kV Existing Network
-  400kV Existing Network
-  Special Protection Area (SPA)



Kilometers



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