Grid Implementation Plan 2017-2022 Strategic Environmental Assessment Statement

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GRID Implementation Plan 2017-2022

Strategic Environmental Assessment - Environmental Report (Updated)

32106700_GRID Implementation Plan – SEA Environmental Report | 1

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EirGrid

GRID Implementation Plan 2017-2022

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Consultation on the SEA

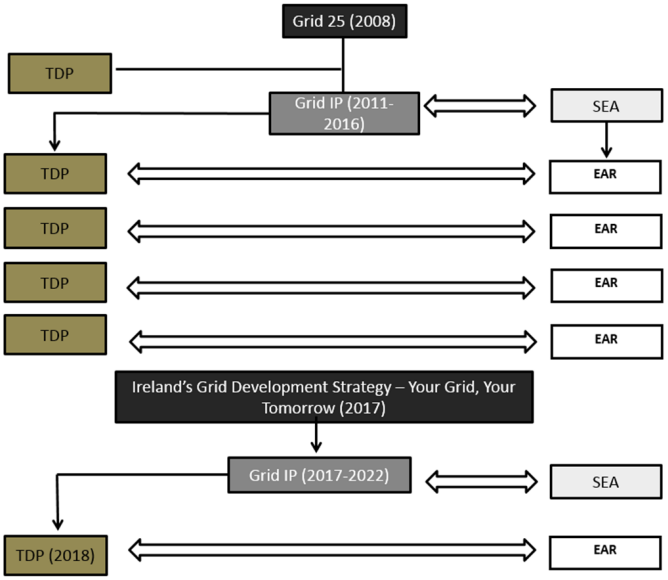
Consultation has been undertaken on the draft Grid Implementation Plan (Grid IP) and the Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) documents to ensure that the knowledge, experience and views of stakeholders and the general public was considered at all stages of the development of the Grid IP and SEA.

The draft Grid IP has been amended along with the SEA and AA documents in response to comments received during the consultation period and the influence of the SEA and consultation process is set out in the SEA statement. A copy of the final Grid IP and the associated environmental reports, and Natura Impact Statement (NIS) are available via the EirGrid website as indicated below. This SEA Environmental Report has been updated to take account of comments received during consultation and the finalisation of the Grid IP.

Non-Technical Summary

Introduction

Strategic Environmental Assessment (SEA) is a process that aims to provide a high level of protection to the environment, integrating environmental consideration into the preparation and adoption of plans. It promotes sustainable development for plans. This Environmental Report sets out the high-level assessment that has been undertaken for the Grid Implementation Plan 2017-2022 (Grid IP). The findings of the assessments are published with the Grid IP and a Natura Impact Statement (NIS) for public comment.



The transmission system in Ireland, also known as 'the grid', refers to the high voltage electricity network and is made up of a network of electrical substations, power lines and underground cables. EirGrid is responsible for operating and maintaining a safe, secure, reliable, economical and efficient transmission system. EirGrid develops projects which are fundamental to continued social and economic development in the Republic of Ireland. ESB Networks are responsible for the construction of the grid as identified by EirGrid.

Grid Implementation Plan

The Grid IP identifies, at a strategic level, parts of the transmission system that are likely to be developed over the next six years. It identifies the issues, policies and objectives that will guide in developing the grid. It also provides a list of projects envisaged to be developed over the cycle of the plan. The final Grid IP has been published in December 2018 following consultation on the draft Grid IP and covers the five-year period from 2017 up to 2022. The SEA Environmental Report was published alongside the draft Grid IP for public consultation and has now been amended in light of the comments received and finalisation of Grid IP.

EirGrid Strategy Statements (2017):

We will optimise the existing grid to minimise the need for new infrastructure.

We will consider all practical technology options.

Inclusive consultation with local

The Grid IP covers the Republic of Ireland, however the Grid IP and the SEA documents have carefully considered grid development, and likely significant environmental effects of a transboundary nature, including the various existing and planned electricity interconnectors between Ireland, Northern Ireland, Great Britain and France.

Grid IP Objectives

The overall objectives of the Grid IP are to:

- Support the continued development of a safe secure and reliable transmission system in Ireland. This is largely based on *Ireland's Grid Development Strategy; Your Grid, Your Tomorrow*.
- Review the first Grid IP (Grid25 Implementation Plan 2011-2016) published in 2012 and to update it in the context of the Strategy, policies and processes that have been developed in the interim.
- Examine the successes and challenges encountered in delivering the previous IP and to integrate the lessons learned into the new IP.
- Identify and examine the high level environmental, social, technical, project development, planning and consenting matters for grid development. To draft policies and objectives that will ensure these issues are considered in grid development undertaken during the Grid IP period.
- Examine the transmission infrastructure projects that are likely to be developed during the Grid IP period. These projects are taken from the current adopted Transmission Development Plan 2016-2026 (TDP 2016-2026) as defined in Section 10 of the Grid IP.

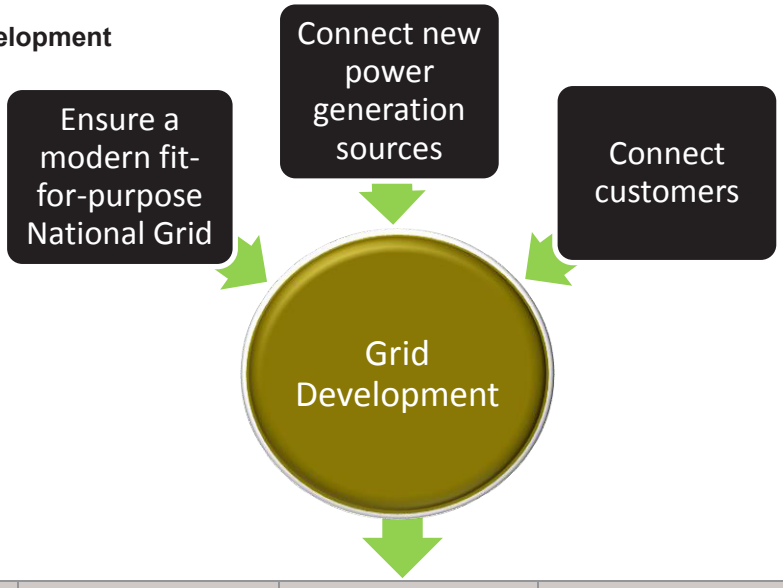
Grid IP Content

EirGrid have included a series of plan policies and objectives within the Grid IP to ensure that the environmental issues are considered in the process of Grid development and that Natura 2000 sites are protected. These policies and objectives are based on six categories as follows:

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

The Grid IP outlines several future grid development projects. The key drivers behind grid development is shown below, along with the various project types that support this development. Many of the projects outlined within the Grid IP are in line with the EirGrid strategy related to optimising the existing grid.

Drivers for Grid Development



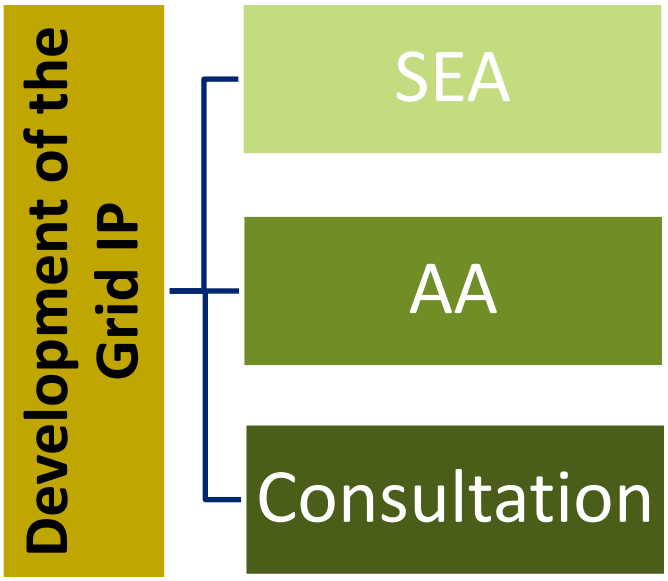
New Build (NB)	Uprate (U)	Modify (M)	Refurbish/ Replace (R/R)	Redevelopment (RD)
Construction of new infrastructure	Upgrading existing infrastructure to higher specifications	A modification of existing assets	Maintenance of existing assets	Redevelopment of assets due to the condition and age

Alternatives

As required by the SEA Directive, alternatives were considered, taking account of the objectives and geographical scope of the Grid IP, and with a view to identifying potential ways that EirGrid could achieve an appropriate and sustainable approach to the planning and consenting of transmission projects. In this regard alternatives were considered across three areas; namely plan level, scenario planning and project level alternatives.

In terms of the plan level assessment, a No Plan / no development alternative was initially considered. However, this was not deemed a reasonable alternative, which would allow EirGrid to meet their legal obligations as a Transmission System Operator and on this basis, was not considered further. Three plan alternatives were then considered, and it was determined that the Grid Implementation Plan 2017-2022 as proposed was the preferred alternative. Whilst the implementation of the Grid IP could result in some negative environmental impacts in general, the implementation of Grid IP in compliance with its specified policies and objectives is likely to result in overall greater positive environmental effects.

Strategic Environmental Assessment



SEA is required under EU Legislation (known as the SEA Directive) and is a process of predicting and evaluating the likely significant environmental effects of certain plans and programmes "subject to preparation and/or adoption by a national, regional or local authority OR prepared by an authority for adoption through a legislative procedure by Parliament or Government**"**.

The Grid IP was 'screened in' for SEA considering that EirGrid, as a semi-state company reports to the Commission for Regulation of Utilities (CRU) who perform their functions on behalf of the Department of Communications, Energy and Natural Resources (DCENR). EirGrid can be considered as the "competent authority" under the SEA Directive and Regulations 2004 (S.I. No. 435 of 2004) for the purpose of this Plan. The Plan however does not need to be formally adopted through a legislative procedure by the Government, rather through an internal adoption process by EirGrid.

The process of SEA and Appropriate Assessment (AA) and associated consultation has been ongoing throughout the development of the Grid IP.

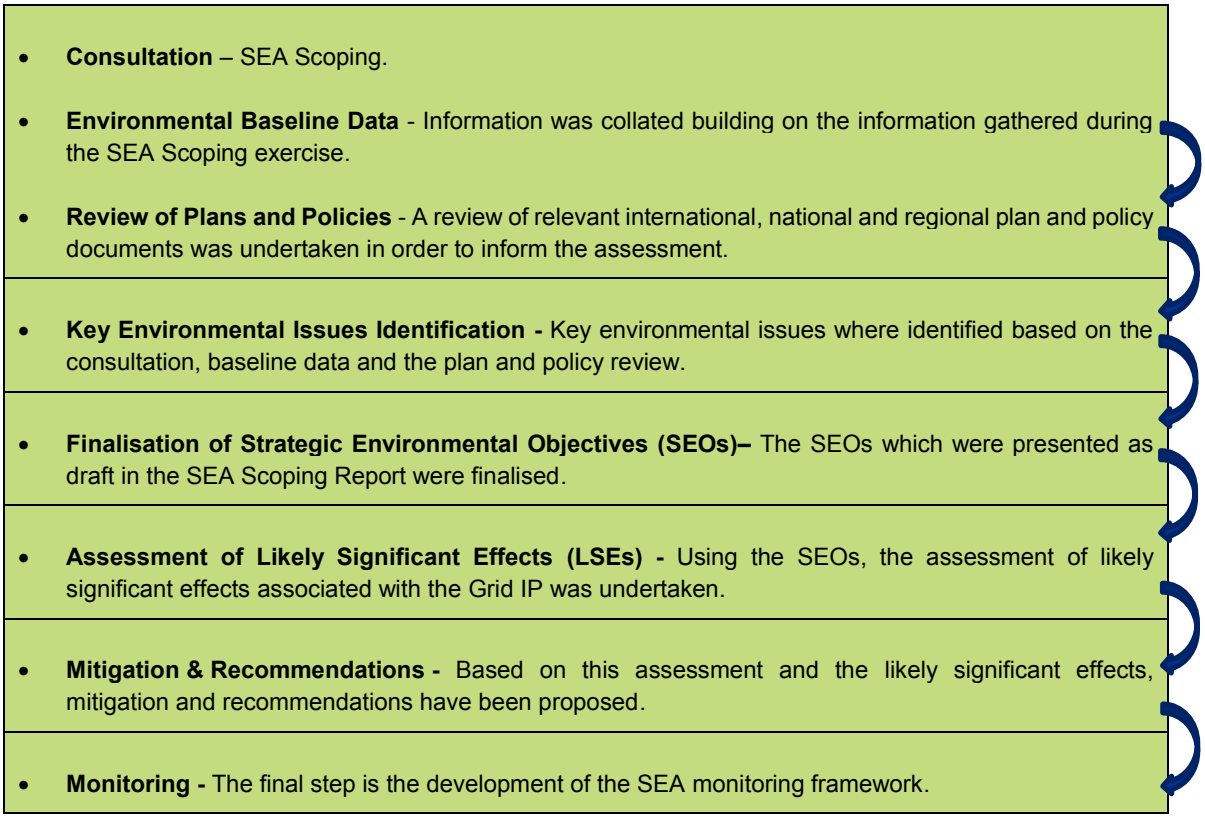
This SEA process aims to:

- Ensure that likely significant environmental effects are identified and evaluated during the plan development.
- Ensure that any significant environmental effects identified are considered in the plan development process so that the Plan can be developed with regard to these, and/or mitigation measures put in place to avoid or reduce any potential environmental effects of development from the Grid IP.
- The process ensures that the effectiveness of mitigation measures is monitored during the Plan's lifetime.
- It also ensures that decisions are made in conjunction with stakeholder and public involvement.

The stages of the SEA process include:

- **Stage 1: Screening** (deciding whether SEA is required).
- **Stage 2: Scoping** (establishing the scope of the assessment).
- **Stage 3: Identification, Prediction, Evaluation and Mitigation of likely significant effects**; and

- **Stage 4: Consultation, Revision and Post-Adoption**. This SEA Environmental Report has been completed as part of Stage 3 of the SEA process as outlined below:



The Grid IP was published in 2018. An SEA Statement has been published alongside the final Grid IP, setting out how the SEA and any consultation responses has influenced the SEA and the Grid IP.

Appropriate Assessment (AA)

There is also a requirement for the Grid IP to meet the requirements of the EU Habitats Directive. Full detail of that assessment is included in an NIS for the Grid IP. AA examines the direct and indirect effects of the draft (and final) Grid IP or project, either individually or in-combination with other plans and projects on European protected sites, part of the Natura 2000 Network of Special Areas of Conservation (SAC) and Special Protection Areas (SPAs). The process is to ensure that the Grid IP, will not result in adverse effects on the integrity of the Natura 2000 Network of sites.

Consultation

The public consultation on the Grid IP and accompanying SEA Environmental Report and NIS is the key process for stakeholders and the general public to influence the environmental context of the final Grid IP and SEA documents. Following completion of the consultation period, all responses received have been considered, and amendments made to the Final Grid IP. An SEA Statement, which documents how feedback from the public consultation has been addressed in the final Grid IP and SEA documents and are published by EirGrid.

Baseline Information - Current State of the Environment & Future Trends

Full details of the current state the environment (as relevant to the Grid IP) and future trends (that is, how the baseline may be expected to change), is provided in the main SEA Environmental Report and presented in summary below.

Theme	Current condition	Future Trends (Evolution of the Baseline)
Population, Human Health & the Economy	• The population is on the increase (currently 4.7 million) a trend within most counties in Ireland. • Overall, the health of the population is generally '*Good*' to '*Very Good'* based on a recent national health survey. • The Irish economy is undergoing recovery since the "crash" of 2008.	• The population of Ireland is projected to increase to over five million by 2031. • Life expectancy in Ireland has increased and with an ageing population, the health of Ireland will continue to place pressure on the health care systems. • Investment in infrastructure will continue through the governments Capital Investment Plan. • The government has targeted 200,000 additional jobs by 2020.
Biodiversity, Flora & Fauna	• There are several international and national protected sites in Ireland. • Almost 80% of the protected habitat are inadequate or bad status. • Over 50% of the protected species are at favourable status. • Invasive species can have a significant negative effect on wildlife and habitats.	• Land-use change such as urbanisation, are likely to continue to pose risks to habitats and species. • Continued conservation initiatives and legislation will help protect biodiversity resource going forward. • Invasive species are likely to remain threat to biodiversity.
Landscape & Visual Amenity	• There is no national level landscape mapping for Ireland. • There are several county level protected landscape feature in Ireland.	• The existing landscape is not expected to change significantly in the immediate future. • As part of the National Landscape Strategy a National Landscape Character Assessment will be developed.
Cultural Heritage - Archaeology & Architectural	• There are a number of national level protected cultural heritage feature in Ireland. These are afforded strict protection under national legislation.	• The existing cultural heritage environment is not expected to change significantly in the immediate future.
Geology and Soils	• Ireland consists of a central limestone plain that is surrounded by coastal mountains. • Soil quality in Ireland is regarded as generally good. • There is no legislation solely directed to soil protection in Ireland.	• Soil loss and degradation is recognised as a major challenge across Europe.
Land use	• The total land area of Ireland is almost 7 million hectares and agriculture accounts for two-thirds of this landmass cover. • The main changes to land use in Ireland have seen a decrease in agricultural land and peatland areas and an increase to forested land and artificial areas. • Forested areas cover about one-tenth (9.2%), much of which consists of commercial plantation of conifers, owned by Coillte.	• Initiatives such as Food Harvest 2020 (which aims to increase Irish agri-food export by 2020. • The Irish Government has made a commitment to increase the forest area to 17% of the total land area by 2030.
Water	• The current quality of water in Ireland is considered among the best in Europe but there is still improvement needed.	• Ireland will continue to seek improvements in water quality.

Theme	Current condition	Future Trends (Evolution of the Baseline)
	• Flooding, particularly from fluvial and coastal sources, is an increasing problem in Ireland.	• Several flood management projects rolled out across the country as outlined under the recent Flood Risk Management Plan.
Material Assets & Infrastructure	• There are numerous national Assets such as roads, rail, port and airport in Ireland. • Electricity generation includes, gas, coal, hydro, thermal, pumped storage generation and wind generation.	• Investment in infrastructure will continue through the governments Capital Investment Plan.
Tourism & Recreation	• International tourism has increased in recent years with approximately 25 million passengers passed through Dublin airport in 2015.	• Tourism number are expected to increase into the future.
Climate Change	• Ireland's Green House Gas (GHG) emissions, per capita were the tenth highest in Europe in 2014.	• The report outlines that to achieve the 2020 emissions targets (20% below 2005 levels), continuous reductions are required.

Other Plans and Policies

The SEA requires a review of other plans and policies (PP) to identify potential relationship[1] between the Grid IP objectives and these other PPs. Some key PP are:

- Ireland's Grid Development Strategy, Your Grid, Your Tomorrow: 2017
- A National Landscape Strategy for Ireland (NLS).
- The Habitats Directive (92/43/EEC).
- The Birds Directive (2009/147/EC).
- Environmental Impact Assessment Directive (2014/52/EU) and associated Irish legislation.
- Ireland 2040 Our Plan - National Planning Framework.
- Transmission Development Plan (TDP).
- Strategic Environmental Directive (2001/42/EC) and associated Irish legislation.

A review of relevant national and regional plan and policy documents was undertaken to inform the key environmental issues, and to ensure that the requirements of these plan and policy documents are fully addressed by the policies and objectives set out in the Grid IP.

SEA Objectives

Strategic Environmental Objectives (SEOs) are measures developed from policies which are used to guide environmental protection. The SEOs are used as standards against which the Grid IP can be assessed in order to identify any likely significant environmental effects.

Theme	Objective
Population, Human Health & the Economy	**PHH1:** To minimise the proximity of development to concentrations of population and to mitigate potential effect of development in order to reduce actual and perceived environmental effects.
Biodiversity, Flora & Fauna	**B1:** Ensure compliance with the Habitats Directive with regard to protection of designated European Sites including Article 10.

[1] SEA Directive – "an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;"

Theme	Objective
	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).
Landscape & Visual Amenity	**L1:** Avoid significant adverse impacts on landscape character and designations.
	L2: Avoid or minimise adverse visual effects on residential receptors.
Cultural Heritage - Archaeology & Architectural	**CH1:** Avoid impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPS and NIAHs).
Geology and Soils	**GSL1:** To avoid or minimise effects on mineral resources or soils.
Land use	**LU1**: To avoid or minimise effects on existing land use.
Water	**W1:** Prevent impact upon the status of surface and groundwater in line with the objectives of the WFD as outlined in the River Basin Management Plan.
Material Assets & Infrastructure	**MAI1:** Minimise effects upon the sustainable use of the land, mineral resources or soils.
	MAI2: Minimise effects upon the existing and planned infrastructure.
Tourism & Recreation	**TR1:** Minimise effects upon the tourism and recreation amenities.
Climate Change	**CC1:** Help to facilitate the achievement of higher level targets contained in the Government's Energy White Paper, '*Ireland's Transition to a Low Carbon Energy Future 2015-2030'* and targets relating to the Kyoto Protocol.

Assessment of the Grid IP

Inherent Mitigation

Projects outlined within the Grid IP will be subject to a range of statutory, and non-statutory mitigation measures (namely, EirGrid in-house processes and procedures) that will work to avoid or mitigate any potential environmental effects of development from the Grid IP. While the applicability of particular processes and measures will be dependent on the nature and scale of each project, examples of typical inherent mitigation that will be implemented at the different stages of project implementation include:

- **Statutory Requirements -** These are related to the various planning routes that a potential grid development project is subject to and the associated assessments such as Environmental Impact Assessment (EIA).
- **EirGrid in-house processes and procedures –** EirGrid internal processes such as the project guidelines and the six-step framework for Grid development.
- **Best Practice construction requirements –** Industry guidance on undertaking construction projects.

The assessment of likely significant effects has been undertaken with the assumption that these inherent mitigation measure are, and will be, in place for development proposed in the Grid IP.

Policies and Objectives

Over 50 policies and objectives outlined in the Grid IP have all been assessed against the SEOs, and overall the policies and objectives within the Grid IP are positive in nature, seeking to:

- Serve the **electricity needs** of the county in a sustainable manner;
- **Avoid and mitigate** environmental effects;
- Promote the **use of existing grid infrastructure**;
- **Implement and improve** existing internal guidance, processes and procedure for development;
- Incorporate **social impact assessment** into the grid development process;

- Promote **new technologies** in transmission infrastructure development;
- Increase transparency and **public participation** in the grid development process;
- Contribute to Irelands achievement of its **renewable energy targets**;
- Contribute to **combating climate change**; and
- Support the **EPA key actions** outlined in their 2016 State of the Environment Report.

Transmission Development Projects

Over 40 transmission development projects contained within the Grid IP were assessed against the SEOs. With the application of inherent mitigation, the likelihood of significant effects from Grid projects are reduced however the possibility of limited significant effects cannot be ruled out completely.

The SEA Directive requires that where the Grid IP has potential for transboundary environmental effects these must be addressed within the SEA. The Grid IP relates to grid development in Northern Ireland as the transmission system is being developed as an all-island system and deals with electricity interconnectors between Great Britain and France. As such, the Grid IP (and SEA/AA) has considered potential transboundary effects in these regions.

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. A copy of the drat Grid IP, this Environmental Report and NIS have also been made available to these transboundary consultees.

Cumulative and in-combination effects between projects within the Grid IP and other projects was considered. The assessment determined that in general, there were no anticipated significant cumulative or in-combination effects. Where significant effects were considered likely, it was concluded that with the implementation of the recommendations from this Environmental Report and the measures from the NIS, these effects would be reduced or avoided.

Data Gaps and Limitations

This SEA is being undertaken using best available data and methodologies at the time of assessment. However, there remain some data gaps and limitations which limit the scope and content of the assessment, Including:

- This baseline description is not intended to be an exhaustive description of all baseline environmental data.
- The lack baseline data to cover all SEA aspects/issues, such as landscape character assessment designations across some development areas.
- The Grid IP has reference to the adopted Transmission Development Plan (TDP) of 2016-2026 and the SEA has not influenced the list of projects. Mitigation measures and monitoring measures have been developed however and integrated into the Grid IP.
- As the projects referenced in the Grid IP are based on the adopted TDP 2016-2026 new projects may arise over the lifetime of the IP. The system of environmental appraisal for each annual TDP ensures that a high level of environmental assessment is undertaken annually in line with provisions set out in the SEA and NIS.
- The nature of the process of Grid development is that for several projects, the details are relatively un developed. The need for projects is identified but specific elements are not known such as the location or technology to be used.

SEA Mitigation and Recommendations

Recommendations have been provided to strengthen the Grid IP policies and objectives, and all recommendations have been accepted by EirGrid and have been integrated into the final Grid IP document. The 2018 SEA framework will also provide the basis for the assessment in Environmental Appraisal Report (EAR) of the next TDP (2018-2028).

SEA Monitoring

The SEA Monitoring Framework has been proposed to monitor and manage the potential significant negative effects and any unforeseen effects of the Grid IP. Monitoring will be undertaken for all aspects including:

- Population, Human Health & the Economy;
- Biodiversity, Flora & Fauna;
- Landscape & Visual Amenity;
- Cultural Heritage (Archaeology & Architectural);
- Water;
- Material Assets & Infrastructure (including soil and landuse);
- Tourism & Recreation; and
- Climate Change.

Conclusion

The Grid IP identifies the best current understanding of those parts of the transmission system that are likely to be developed over the next six years and identifies the issues, policies and objectives that will be addressed in developing the Grid. All projects within the Grid IP will be subject to the appropriate planning requirements. In addition, consideration of the potential environmental effects will also be undertaken during the selection of the preferred technology, and locational solutions for each project, and these will be subject to the policies and objectives set out in the Grid IP.

It is considered that the Grid IP, the objectives and policies within the Plan, and the mitigation proposed as part of the SEA will contribute to the sustainable development of the transmission system in Ireland over the next six years and beyond. There is a focus on using the existing network as far as is reasonably practical, thus reducing potential negative effects on the environment, and contributing to sustainable development.

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1. Introduction

1.1 Background

EirGrid plc. (EirGrid) is the national electricity Transmission System Operator (TSO). The transmission system relates to the high-voltage electricity network, also known as the national grid (or 'the grid'), which refers to 110 kilovolt (kV), 220 kV, 275 kV and 400 kV infrastructure. In its role as TSO in Ireland, EirGrid operates and maintains a safe, secure, reliable, economical and efficient transmission system. EirGrid develops key infrastructure projects, which are vital for the socio-economic development of the country, with due regard for the environment. ESB Networks, as the Transmission Asset Owner (TAO), is charged with constructing the transmission assets as specified by the TSO. ESB also has the role of Distribution System Operator (DSO); the distribution system refers to the lower-voltage network of 38 kV and 10 kV infrastructure.

Electricity supply is essential, and a reliable electricity network is the means by which power is moved around the country, safely and reliably, from the point where it is generated to the places it is needed, powering homes and businesses, and contributing to economic growth. The development of transmission network infrastructure is therefore, of national strategic importance.

In 2008, EirGrid published the *Grid25 strategy,* a high-level strategy to outline how it intended to undertake the development of the grid in the short, medium and long-term, particularly in the context of connecting new sources of renewable electricity onto the grid to meet National and European renewable energy targets.

The associated *Grid25 Implementation Plan 2011-2016* (Grid25 IP) provided a strategic overview of how the early stages of the *Grid25 strategy* were to be implemented. In turn, the Grid25 IP was informed by an annual rolling operational document, the *Transmission Development Plan* (TDP), prepared by EirGrid under the terms of its licence, per Regulation 8(6) of the European Communities (Internal Market in Electricity) Regulations 2000 (S.I. 445 of 2000), and which is submitted for approval to the Commission for Regulation of Utilities (CRU – previously the Commission for Energy Regulation, CER). The annual TDP includes a list of grid development projects that EirGrid envisage will be undertaken over the following ten-year period. This is a rolling plan updated each year and passes through a public consultation and approval process lead by the Commission for Regulating Utilities (CRU). Each TDP is accompanied by an Environmental Appraisal Report (EAR) which assesses whether that TDP remains in accordance with the provisions of the governing SEA.

Each of these documents - the strategy, the Grid25 IP, and the TDP - provided a different level of scale and detail; from the long-term vision of the *Grid25 strategy* to the short and medium-term grid development policies and objectives set out in the Grid25 IP, to the specific envisaged projects outlined in the TDP. This is set out graphically in **Figure 1.1**. In 2017 EirGrid published an updated strategy *Ireland's Grid Development Strategy; Your Grid, Your Tomorrow* **(Appendix A)** which replaces Grid25. The *Grid Implementation Plan 2017–2022* (Grid IP), which is the subject of this SEA Environmental Report, will sit alongside the 2017 Strategy.

EirGrid Strategy Statements (2017):

1. ***We will optimise the existing grid to minimise the need for new infrastructure.***
2. ***We will consider all practical technology options.***
3. ***Inclusive consultation with local communities and stakeholders will be central to our approach.***

The Grid IP identifies, at a strategic level, the current best understanding of those parts of the transmission system that are likely to be developed over the period 2017-2022 and identifies the issues, policies and objectives that will be addressed in developing the grid. It also takes account of the approved TDP 2016-2026, as this was the most up-to-date list of projects envisaged to be developed over the next decade during preparation of the Grid IP and SEA. It establishes the parameters and criteria for the core processes by which subsequent decisions will be made. The final Grid IP was approved in December 2018.

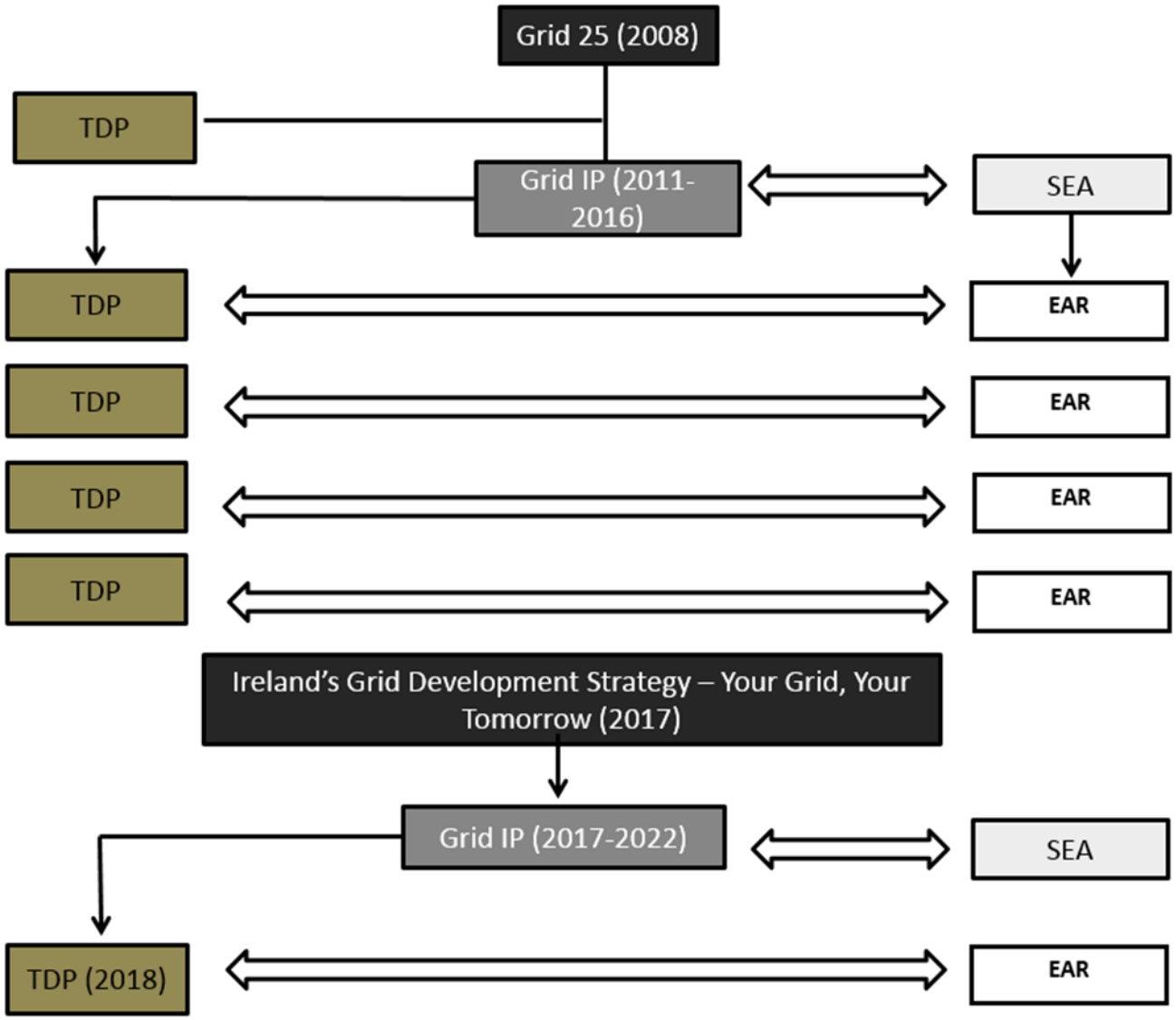


Figure 1.1: **SEA Structure (for previous Grid25 strategy and associated Implementation Programme, SEA, EAR[2] and TDP and Ireland Grid Development Strategy – Your Grid, Your tomorrow (2017) and associated IP, SEA, EAR**)

The Grid IP now sits with and incorporates Ireland's Grid Development Strategy (2017) (see Error! Reference source not found.). TDPs produced over the next 5-year period will be subject to annual environmental appraisal reports (EARs) in accordance with the framework set out in this SEA.

The Grid IP was subject to SEA and this SEA Environmental Report was the output of Stage 3 of the four-stage SEA process (detailed further in **Section 4** below). The Grid IP and the SEA has been amended in line with comments from the consultation process, and will continue to be, informed by the views and knowledge of stakeholders and the general public. An SEA Statement has been published along with the final Grid IP detailing how the consultation has influenced the plan development and the SEA, therefore this Report refers to the Grid IP rather than draft Grid IP.

2 The Environmental Appraisal Report is produced to accompany each TDP.

1.2 Overview of the Grid

The electricity transmission network refers to the higher-capacity electricity network (also known as the Extra-High Voltage or EHV network). As per **Figure 1.2**, the transmission network in Ireland comprises substations and circuits at 400 kV (i.e. 400,000 Volts), 220 kV, and 110 kV.

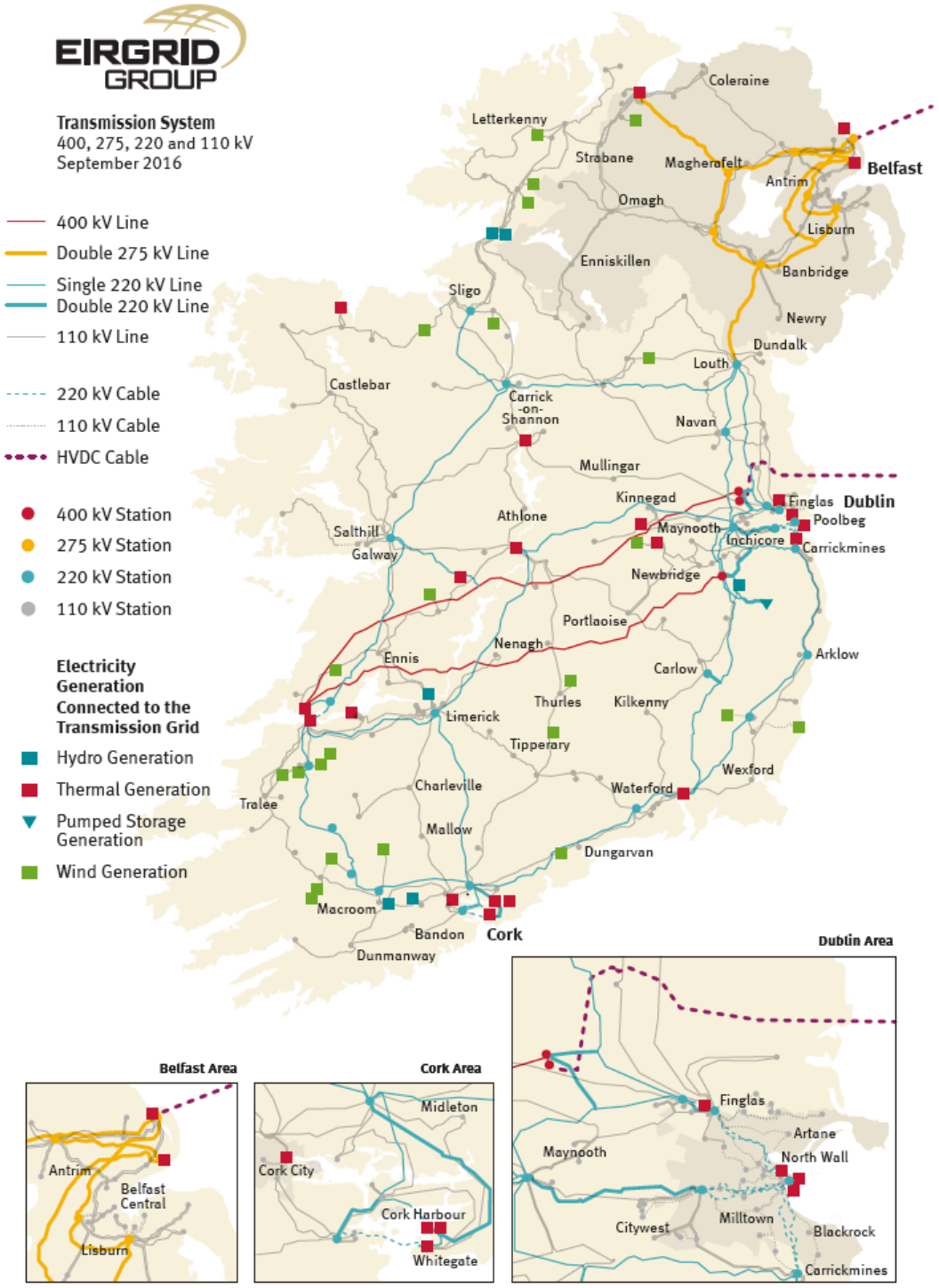


Figure 1.2: The National Transmission System (Source: EirGrid, 2017)

1.3 Overview of the Grid Implementation Plan 2017 - 2022

The Grid IP is a high-level 'Development Plan[3]' which outlines how EirGrid envisages undertaking the development of the electricity transmission grid in the short, medium (over the five -year cycle of the plan), and in the longer-term, to support a sustainable and reliable electricity supply. The Grid IP brings together the high-level strategies outlined in EirGrid's recently published *Ireland's Grid Development Strategy; Your Grid, Your Tomorrow* (2017) and the approved TDP 2016-2026 and details how electricity transmission infrastructure will be developed over the next five years. More detail on the Grid IP is provided in **Section 2**.

1.4 Purpose and Structure of this Report

EU Directive (2001/42/EC) on the assessment of the effects of certain plans and programmes on the environment, herein referred to as the 'SEA Directive', established the statutory requirement for SEA as part of the development of certain plans and programmes.

In accordance with the overall aim of the SEA Directive as set out in Article 1, an SEA of the Grid IP is required to:

> *"Provide for a high level of protection to the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development…."*

Under Article 2 an *environmental assessment:*

> *"…shall be carried out for all plans and programmes, (a) which are prepared for agriculture, forestry, fisheries,* ***energy****, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in Annexes I and II to Directive 85/337/EEC4."*

The SEA process is undertaken in four stages. Stage 1 Screening (to determine whether SEA is required, or not) and Stage 2 Scoping (establishing the spatial and temporal scope of the SEA and a decision-making framework that can be used to evaluate impacts) have been completed for the Grid IP, with the outputs of both stages, the SEA Screening Statement and the SEA Scoping Report, available on the EirGrid website (www.eirgridgroup.com).

This SEA Environmental Report is the output of Stage 3 of the four-stage SEA process (detailed further in **Section 4** below). The purpose of this SEA Environmental Report was to:

- identify, evaluate and describe the likely significant effects on the environment of implementing the draft Grid IP, allowing for the opportunity to amend the draft Grid IP before publication;
- ensure that identified adverse effects are communicated, mitigated and that the effectiveness of mitigation is monitored; and
- provide opportunities for public and stakeholder involvement prior to the finalisation of the Grid IP.

The next stage (Stage 4) involved the development of an SEA Post Adoption Statement. The Statement was informed by stakeholder comments on the draft Grid IP and this SEA Environmental Report and has been published alongside the final Grid IP.

This SEA Environmental Report has been divided into 14 sections as outlined in **Table 1-1**. The corresponding requirements for the content of the SEA Environmental Report as outlined in the SEA Directive - Annex I is also provided in this table.

[3] This is not a local Authority Development Plan as required under the Planning and Development Act 2000 (as amended).
[4] Replaced by 2011/92/EU as amended by b 2014/52/EU

Table 1-1: SEA Environmental Report Structure and Compliance Check

SEA Directive requirements for Environmental Report		Section of the Environmental Report
Article 5: Environmental Report	*(1) Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated. The information to be given for this purpose is referred to in Annex I.*	Addressed throughout the Environmental Report (ER)– more detailed response to the Annex 1 information requirements provided below.
	(2) The environmental report prepared pursuant to paragraph 1 shall include the information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process in order to avoid duplication of the assessment.	**Section 2**: Grid Implementation Plan 2017-2022- provides an outline of the contents and main objectives of the plan or programme. **Section 4**: Strategic Environmental Assessment; and **Section 10**: Assessment Methodology. These chapters cover the content of the Grid IP, detail how the SEA process has been integrated with the Grid IP and outline the methods of assessment relevant to the ER. Reference is also made in the ER to the application of Environmental Impact Assessment (EIA) for future project level assessments.
	(3) Relevant information available on environmental effects of the plans and programmes and obtained at other levels of decision-making or through other Community legislation may be used for providing the information referred to in Annex I.	**Section 7**: External Influences – Planning and Policy Review identifies the relationship with other relevant plans or programmes which have been used to inform the SEA.
	(4) The authorities referred to in Article 6(3) shall be consulted when deciding on the scope and level of detail of the information which must be included in the environmental report.	**Section 5**: Consultation details the consultation process conducted to date and the process for consultation relevant to the ER and draft plan.
Annex 1: Information referred to Article 5 (1)		
The information to be provided under Article 5(1), subject to Article 5(2) and (3), is the following:	*(a) an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;*	**Sections 1**: Introduction, **Section 2:** Grid Implementation Plan 2017-2022, and **Section 7**: Programme, Plan and Policy Review.
	(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	**Section 6**: Baseline Information – provides details on the existing environmental situation and key trends and evolution of the baseline without the plan in place.
	(c) the environmental characteristics of areas likely to be significantly affected;	**Section 6**: Baseline Information and **Section 8**: Key Environmental Issues detail the characteristics of areas likely to be affected by the Plan.

SEA Directive requirements for Environmental Report		Section of the Environmental Report
	(d) any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC;	**Section 6**: Baseline Information. **Section 8**: Key Environmental Issues provide detail on existing environmental problems relevant to the draft plan. A Natura Impact Statement (NIS) has also been published to comply with the provisions of Directive 92/43/EEC.
	(e) the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;	**Section 7**: Programme, Plan and Policy Review details the relevant Plans, Policies and Programmes and **Section 8** details the Key Environmental Issues. These have influenced the development of the Strategic Environmental Objectives (SEO's) listed in **Section 9**: SEA Objectives, Targets and Indicators.
	(f) the likely significant effects (1) on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;	**Section 10**: Assessment Methodology details what is considered in the assessment and **Section 11**: Assessment of the Grid IP reports on the likely significant effects on the environment.
	(g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;	**Section 11.2**: Inherent Mitigation details the range of statutory and EirGrid in house processes and procedures that will seek to avoid effects in the first instance and mitigate potential effects resulting from the draft plan. **Section 12**: SEA Recommendations provides details on the recommendations in relation to grid development and the draft plan.
	(h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	**Section 3**: Alternatives and **Section 11** Assessment of the Grid IP details the reasonable alternatives.
	(i) a description of the measures envisaged concerning monitoring in accordance with Article 10;	**Section 13: Monitoring Framework** provides details on the SEA monitoring proposals, targets and indicators have been drafted for each SEO and the sources for information to assesses the performance against each target/indicator.
	(j) a non-technical summary of the information provided under the above headings.	**Non-Technical Summary**: A summary of the content of the Environmental Report in non-technical language is found at the beginning of the report.
	([1]) These effects should include secondary, cumulative, synergistic, short, medium and	**Section 10: Assessment Methodology** and **Section 11 (11.3): Assessment of the Grid IP**.

SEA Directive requirements for Environmental Report		Section of the Environmental Report
	long-term permanent and temporary, positive and negative effects.	The 'effects' to be considered have included secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.
Annex II: Criteria for determining the likely significance of effects referred to in Article 3 (5).		
1. Characteristics of plans and programmes, having regard, in particular, to:	*- the degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources,*	**Section 11.3** Grid IP Assessment.
	- the degree to which the plan or programme influences other plans and programmes including those in a hierarchy,	**Section 11.6.2** Inter-relationship with other Plans and Strategies.
	- the relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development,	The integration of environmental considerations is built into the assessment of Grid IP policies, proposed projects to promote sustainable development. The approach for this is set out in: **Section 9**: SEA Objectives, Targets and Indicators detail the SEO's that have been used in the assessment to predict environmental effects. **Section 10**: Assessment Methodology details the assessment methodology and criteria used to identify likely significant effects from the draft plan. **Sections 11 & 12**: Assessment of the Grid IP and SEA Recommendation detail the outcome of the assessment and proposed recommendations.
	- environmental problems relevant to the plan or programme,	**Section 6**: Baseline Information, **Section 8**: Key Environmental Issues provide detail on existing environmental problems relevant to the draft plan.
	- the relevance of the plan or programme for the implementation of Community legislation on the environment (e.g. plans and programmes linked to waste-management or water protection).	**Section 7**: External Influences and **Section 11.6**: Inter-relationship with other Plans and Programmes look at regional and local plans and programmes of relevance as well as other national.
2. Characteristics of the effects and of the area likely to be affected, having regard, in particular, to	*- the probability, duration, frequency and reversibility of the effects,* *- the cumulative nature of the effects,* *- the transboundary nature of the effects,* *- the risks to human health or the environment (e.g. due to accidents),*	**Section 10:** Assessment Methodology and **Section 11** Assessment of the Grid IP have regard for the characteristics of effects relevant to the draft plan.

SEA Directive requirements for Environmental Report		Section of the Environmental Report
	- the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected), *- the value and vulnerability of the area likely to be affected due to:* *- special natural characteristics or cultural heritage,* *- exceeded environmental quality standards or limit values,* *- intensive land-use,* *- the effects on areas or landscapes which have a recognised national, Community or international protection status.*	

1.5 Appropriate Assessment

In addition to compliance with the SEA Directive, the preparation and implementation of the Grid IP must meet the provisions of Habitats Directive (92/43/EEC) and transposing regulations EC (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Full details of this process are provided in the NIS for the Grid IP.

Key Messages from Chapter 1:

- EirGrid published Ireland's Grid Development Strategy - Your Grid, Your Tomorrow in 2017.
- To deliver on this strategy, the Grid Implementation Plan 2017 - 2022 has been developed by EirGrid. This Plan is subject to Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA).
- EirGrid have received feedback on the draft Grid IP, the SEA Environmental Report and the Natura Impact Statement and amended these reports accordingly. A summary of consultation responses is provided in the SEA Statement.

2. 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 to ensure continued social and economic growth in Ireland. In addition, it is important to assess the potential for interconnection to reinforce the supply of electricity to the national grid, improve competition and support the development of renewable power generation.

The National Planning Framework (2018) has set out the impacts of continued economic and population growth in Ireland, has placed particular emphasis on energy under the theme of connectivity to shape the future growth and development of our country out to the year 2040. The NPF provides for the collaboration in the energy sector, driven by the single electricity market. The need for a new interconnector between the electricity grids of Northern Ireland and Ireland has been identified by the Irish Government and Northern Ireland Executive as a project of common interest. Ireland is also working with other countries such as France to explore potential for electricity interconnection and will continue to support relationships with our European neighbours to enhance our international connectivity. To support the National Planning Framework, additional electrical grid strengthening will be required for parts of the border subject to the necessary planning consents to enhance energy security through further reductions in dependence on fossil fuels, moving towards wind, gas with carbon capture and sequestration, biomass and other renewable sources. Future enhancement of energy security and resilience to support a population of 8 million people will also be supported through progression of further north-south interconnection of electricity grids.

The NPF also identified the potential of the marine, particularly in the renewable energy sector. The development of offshore renewable energy is critically dependent on the development of enabling infrastructure, including grid facilities to bring the energy ashore and connect to major sources of energy demand. Given the potential for renewable generation off the western part of the country, this may necessitate reinforcing the existing transmission network in the west to facilitate the transfer of renewable energy generated to the major demand centres in the east.

Furthermore, the NPF has set out the Transition to a Low Carbon and Climate Resilient Society as a National Strategic Outcome and a priority of the National Development Plan 2018-2027. Within this it notes that the National Climate Policy Position establishes the national objective of achieving transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. This objective will shape investment choices over the coming decades in line with the National Mitigation Plan and the National Adaptation Framework. New energy systems and transmission grids will be necessary for a more distributed, renewables-focused energy generation system, harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar and connecting the richest sources of that energy to the major sources of demand.

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 six-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 six-step Framework is set out in **Figure 2.1** below.

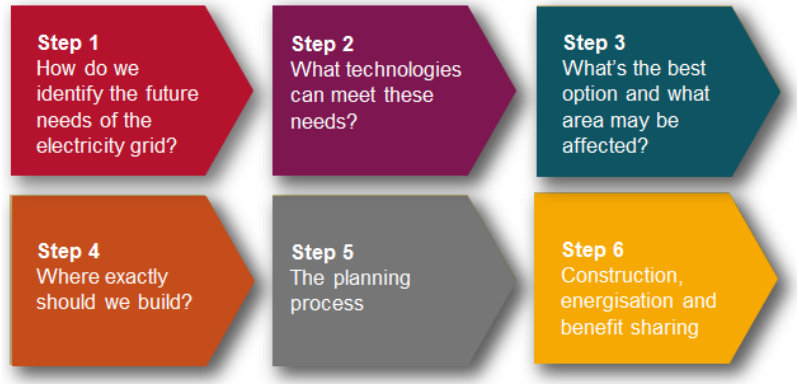


Figure 2.1: General Structure of the Framework for Grid Development

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 results from the selection process which utilises 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 Need, Objectives and Scope of the GRID Implementation Plan 2017 - 2022

2.3.1 Need for the Grid IP

The Grid IP reviews and updates the original *Grid25 IP* 2011 - 2016 (2011). It has been prepared in the context of EirGrid's "*Ireland's Grid Development Strategy; Your Grid, Your Tomorrow*" (2017). The Grid IP is a practical strategic overview of how the grid strategy is intended to be implemented.

The Grid IP identifies the best current understanding of those parts of the transmission system that are envisaged as likely to be developed over the next six years and identifies the issues, policies and objectives that will be addressed in developing the Grid. In this way it establishes the parameters and criteria for the underlying processes by which subsequent decisions will be made. Details of the content of the plan are provided in **Section 2.4.**

2.3.2 Overarching Objectives of the Grid IP

The overall objectives of the Grid IP are:

- To realise the vision for grid development set out in *Ireland's Grid Development Strategy; Your Grid, Your Tomorrow*.
- To review the Grid25 Implementation Plan 2011-2016 which was published in 2012 and to update it in the context of the 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 and to integrate the lessons learned into the new 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, and to draft policies and objectives that will ensure their appropriate consideration in grid development activities undertaken during the Grid IP period.
- To 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 Grid IP period, as set out in EirGrid's TDP 2016-2026.

2.3.3 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 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 regions are illustrated in **Figure 2.2**. 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 1st 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 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 - 2025* (EirGrid, 2017). 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, known as the Celtic Interconnector. Therefore, the Grid IP has regard, where relevant and / or appropriate, to territorial seas and 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
	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

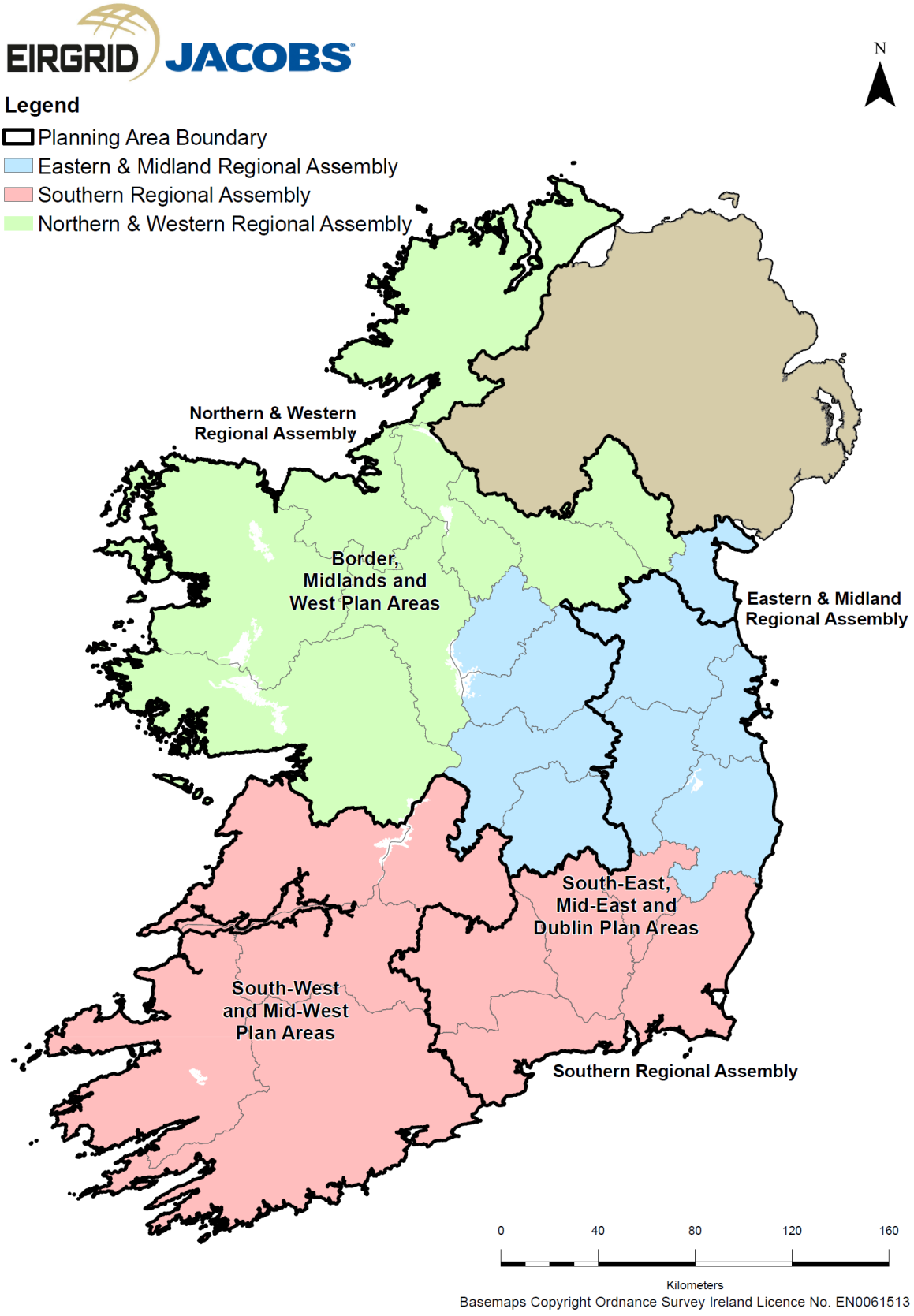


Figure 2.2: Grid IP Plan Area and Regional Assemblies

2.3.4 Timeframe of the Grid IP

The final Grid IP covers the six-year period from 2017 up to and including 2022 following a consultation period of twelve weeks which commenced in mid-2018 to gather feedback on the draft Grid IP and SEA/AA documents.

2.4 Content of the Grid IP

2.4.1 Overview

Table 2-2 outlines the content of the Grid IP. The plan is divided into three parts; Part A outlines the need, vision and strategy for grid development, Part B sets out the policies and objectives associated with this vision and strategy, and Part C outlines the potential future projects for grid development.

Table 2-2: Content of the Grid IP

Chapter	Content
Part A – Need, Vision and Strategy	
1	Introduction and Need for the Grid
2	Strategy for Grid Development
3	Strategy for Regional Grid Development
Part B – Implementation	
4	Our Approach to the Environment
5	Our Approach to Technology
6	Our Approach to Project Development
7	Our Approach to Planning and Consenting of Projects
8	Our Approach to Consultation and Engagement
9	Our Approach to Human Beings and Society
Part C – Projects	
10	Projects in the TDP 2016-2026
11	Strategic Environmental Assessment of TDP 2016-2026 (Project Assessment)
12	Appropriate Assessment (AA)
Part D – Recommendations and Mitigation Arising from SEA and AA	
13	Recommendations and Mitigation Arising from SEA/ AA

2.4.2 Draft Policies and Objective

EirGrid has included various policies and objectives within the Grid IP to ensure that the environment is appropriately protected in the process of grid development. These policies and objectives have been developed to drive the process from an early stage and to positively impact development. These policies and objectives are based on six categories as follows:

- Environment;
- Technology;
- Project Development;
- Planning and Consenting of Projects;

- Consultation and Engagement; and
- Human Beings and Society.

Grid development is driven by one of two general requirements:

1. to ensure a modern fit-for-purpose national grid; much of the grid was originally constructed in the 1970s and 1980s, and has reached the end of its design life and needs to be replaced and/or upgraded with modern equipment; or
2. to connect new generation sources or demand customers to the grid. Demand customers essentially refer to activities which require direct connection to the transmission grid for power – this would include hi-technology industries and data centres.

The Grid IP identifies, at a strategic level, anticipated future grid development within each of the three geographical regions. As outlined in *Ireland's Grid Development Strategy; Your Grid, Your Tomorrow – Technical appendix,* each region is summarised in the regional summary tables as follows:

- the forecast regional generation and demand balance;
- the main regional demand centres, and the forecast demand and additional available capacity at the demand centres;
- the number of projects;
- circuit lengths; and
- total projected regional development cost.

Projects listed within the Grid IP are based on those outlined in the EirGrid TDP 2016–2026. Projects are categorised into major and regional notable projects. There are several other smaller projects, occurring at a local scale and within existing stations, outlined in the TDP. There is a total of 117 projects outlined within the TDP 2016-2026 and, of these, 44 are at planning stage i.e. subject to the relevant planning consent process. A further 73 projects are at construction phase i.e. they have already proceeded through the appropriate planning process[5].

For the purpose of this SEA, only those projects that have not completed the relevant planning consent process (including project deemed as exempt development) are considered as projects for assessment under the SEA. Projects that have already gone through the planning process are not assessed individually under the SEA but are considered in the cumulative assessment.

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

- **New Build (NB)** - Projects that involve the construction of new infrastructure. This can include new substations, overhead 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 might involve replacing existing conductors (the actual power lines) with higher performing conductors. It generally involves the partial or full replacement of support structures comprising wooden polesets and / or steel towers, to support the generally heavier conductors. For substations, this might involve replacement of equipment and apparatus.
- **Modify (M)** - Projects that involve 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 (R/R)** - Projects that involve the maintenance of existing stations or existing circuits. This category also includes projects that involve some limited replacement of existing assets.

[5] It is noted that some developments are deemed exempted development, all development are subject to AA screening.

- **Redevelopment (RD)** – Projects that consider the redevelopment of assets due to the condition and age of the assets. This might include the development of a new substation to replace an existing one.

All projects are detailed within Section C of the Grid IP.

Key Messages from Chapter 2:

- The Grid IP details how Ireland's Grid Strategy will be delivered over a 5-year time frame from 2017 to 2022 and sets out a series of policies and objectives for future grid development under six categories.
- The Grid IP sets out the grid development projects that will be developed over the 5-year period.
- EirGrid have developed a new six-step Transmission Development Process.

3. Alternatives

Alternatives to the Grid IP were considered taking account of the objectives and geographical scope of the Grid IP and with a view to identifying other potential ways that EirGrid could achieve an appropriate and sustainable approach to the planning and consenting of transmission projects.

In this regard, alternatives were considered across three levels; namely at the plan level, scenario planning and project level alternatives. The assessment of alternatives for each of these approaches is presented in **Section 11** Assessment of this Environmental Report.

3.1 Plan Alternatives

The SEA Directive requires the SEA process to identify and describe 'reasonable alternative' means of achieving the Grid IP objectives. The following are considered to be reasonable alternatives to the Grid IP.

A No Plan / No Development alternative was initially considered, however this was not deemed a reasonable alternative that would allow EirGrid to meet its legal obligations as a TSO. On this basis, it was discounted and was not considered further.

The plan alternatives presented in Error! Reference source not found. of this Environmental Report were identified as potential ways that EirGrid could achieve an appropriate and sustainable approach to the planning and consenting of transmission projects and are were assessed on this basis.

- **Alternative 1 –** Reliance on the detail provided in Irelands Grid Strategy: i.e. No IP / reliance on the 2017 Grid strategy;
- **Alternative 2** – Continuation of provisions of Grid25 IP**:** i.e. development of the projects over the next five years using the policies and objectives from the previous Plan; and
- **Alternative 3** – Development of a second and updated Grid IP incorporating the 2017 Strategy, with updated and strengthened environmental policies and objectives and the adopted TDP 2016-2026: i.e. the published Grid Implementation Plan 2017-2022.

3.2 Scenario Planning

As part of the process to plan the development of the electricity transmission grid to meet future needs, EirGrid has developed a range of four scenarios which could potentially emerge and influence how electricity generation and consumption might change over time. The Grid needs to be sufficiently flexible to enable it to manage the supply and demand patterns which emerge under each potential scenario, whilst still ensuring fulfilment of sustainability objectives. Scenario planning therefore aims to encourage flexible, robust and sustainable approaches to grid development. EirGrid sought feedback through public consultation on these four scenarios, and the consultation period ended in April 2017.

The aim of this scenario planning is to allow EirGrid to better explain what is driving the need for individual grid development projects and demonstrate how the electricity grid enables the achievement of national and international policy objectives. The scenarios will be reviewed every two years and include any new information available. The four draft scenarios are summarised in **Table 3-1** below.

Table 3-1: Planning Scenarios

Scenario	Description
Steady Evolution	Steady improvements in the economy and in technologies which generate electricity result in renewable electricity generation continuing to grow at a steady pace. New consumer technologies help to increase energy efficiency in homes and businesses.
Slow Change	Slow economic growth and a slow response to renewable policies results in little change in the way electricity is generated. The adoption of new technologies at residential, commercial and electricity

Scenario	Description
	generation levels has been slow due to a risk adverse approach. Ireland's 2030 emission targets are missed under this scenario.
Low Carbon Living	High economic growth encourages the creation and rollout of new technologies for low carbon electricity generation. A strong public demand to reduce GHG emissions, in addition to high carbon prices and incentives for renewables, creates a high level of renewable generation on the grid.
Customer Action	A strong economy leads to high levels of consumer spending ability. The public want to reduce greenhouse emissions therefore electricity consumers enthusiastically limit their energy use and generate their own energy. This results in a large number of community led energy projects and a rapid adoption of electric vehicles and heat pumps in the home.

3.3 Project Alternative Assessment Process

Environmental aspects are considered through Steps 2 to 4 of the of the new six-step Framework for Grid Development as follows:

- **Step 2: What technologies can meet these needs?**
- **Step 3: What's the best option and what area may be affected?**
- **Step 4: Where exactly should we build?**

More information on the six-step framework is provided in **Section 2.2** of this report, and full details are included in the Grid IP.

Key Messages from Chapter 3:

- There are three reasonable alternatives to the Grid IP; reliance on the Grid Strategy, continuation of the previous Grid IP and the current Grid IP alternative.
- EirGrid have developed four possible future energy scenarios to assist in planning for the Grid into the future.
- The six-step Transmission Development Process ensures the assessment of alternative options, technologies and locations is embedded within the EirGrid project development.

4. Strategic Environmental Assessment

4.1 The Requirement for SEA

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 European Communities Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No 435 of 2004) as amended by S.I. No. 200 of 2011 (European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011) and S.I. No. 201 of 2011 (Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011) respectively. Their purpose is to enable plan-making authorities to incorporate environmental considerations into decision-making at an early stage and in an integrated way throughout the plan making process.

A pre-screening check was carried out to determine if the Grid IP could be considered to be a plan/programme as defined in S.I. 435 of 2004 (as amended 2011) as those being required under legislative procedures and administrative provisions and falling within the criteria stipulated in Article 9(1).

This process concluded that the Grid IP falls under a sector covered by the SEA Directive, namely energy. The Grid IP sets out a framework for future development of Grid projects, some of which may require EIA. While the Plan does not set a framework for consent of those projects, it could be interpreted as setting the context for future projects. In addition, in the absence of further detailed assessment, it could not be ruled out that the Plan would significantly affect a Natura 2000 site/European Site.

Screening also determined the following factors which resulted in the decision to follow best practice and “screen in” the Grid IP for SEA:

- the draft Grid IP 2017-2022 is a national scale plan covering all regions in the country with potential transboundary implications;
- impacts on European sites could not be ruled out, given the Grid IP was at draft stage and the fact that there were uncertainties regarding potential implications of the policies, objectives and projects arising from the draft Grid IP;
- in the absence of further information or the integration of mitigation measures during the Screening stage, it was considered that the draft Gird IP could have potential to impact on European sites; as a result, in the absence of more detailed information on the Grid IP and projects listed therein during the Screening stage, the precautionary principle was applied;
- in accordance with Article 6(3) of the Habitats Directive, AA of the Grid IP was determined to be required. This is presented in the Natura Impact Statement (NIS); and
- as provisions of Article 9(1) of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations were largely met, it was determined that the SEA process should progress to Stage 2 – Scoping Stage.

EirGrid is not a government body, it is a semi-state company that reports to the CRU who perform their functions on behalf of the Department of Communications, Energy and Natural Resources (DCENR). EirGrid can be considered as the “competent authority” under the SEA Directive and Regulations 2004 (S.I. No. 435 of 2004) for the purpose of this Plan. The Plan however does not need to be formally adopted through a legislative procedure by the Government, rather through an internal adoption process by EirGrid.

Therefore, process of SEA and Appropriate Assessment (AA) and associated consultation have been ongoing throughout the development of the Grid IP.

4.2 The SEA Process

The SEA process can be defined by four stages, all of which include some level of consultation (refer to **Figure 4.1**). These stages are defined as:

- **Stage 1** – Screening: deciding whether SEA is required;
- **Stage 2** – Scoping: establishing the spatial and temporal scope of the SEA and a decision-making framework that can be used to evaluate the likely significant effects;
- **Stage 3** – Identification, Prediction, Evaluation and Mitigation of likely significant effects; and
- **Stage 4** – Consultation, Revision and Post-Adoption. This includes the implementation of statutory SEA monitoring.

Stage 1 and Stage 2 of the SEA process are complete and the outputs of both stages - the SEA Screening Statement and the SEA Scoping Report - are available on the EirGrid website (www.eirgridgroup.com).

Stage 3 (the current stage) forms the main written output of the SEA process, the SEA Environmental Report. Responses received from Stage 2 (stakeholder consultation) have been taken into consideration at this stage, and the decision-making framework established through Stage 2 has been used to evaluate the likely significant effects of the Grid IP on the environment. This report presents information on the environmental assessment and likely environmental issues related to the implementation of the Grid IP.

During the next stage of the SEA process (Stage 4), EirGrid publish a post adoption SEA Statement alongside the final Plan setting out how the SEA and any consultation responses have influenced the final Grid IP.

4.2.1 Appropriate Assessment (AA)

In addition to compliance with the SEA Directive, the preparation and implementation of the Grid IP must meet the provisions of the EU Habitats Directive (92/43/EEC) which 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).

Article 6(3) and 6(4) of the Habitats Directive sets out the decision-making test for plans and projects likely to affect a European site. Article 6(3) establishes the requirement for AA and requires that:

> *"Any plan or project not directly connected with or necessary to the management of the [European] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to Appropriate Assessment of its implications for the site in view of the site's conservation objectives. Considering 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."*

To comply with this Directive, it must be first established, through an initial screening assessment, whether: (1) the Grid IP is directly connected with or necessary for the management of a European site(s) and (2) it is likely to have a significant adverse effect on a European site(s), either individually or in combination with other plans or projects. The screening for AA (detailed in the AA Screening Statement) concluded that the Grid IP had the potential to have a significant effect European sites and therefore AA of the Grid IP was required. The Grid IP is not directly connected with or necessary for the management of European site(s) and therefore the AA was undertaken to assess the potential for the Grid IP to result in likely significant effects leading to adverse effects on the integrity of European sites(s).

The AA is being undertaken concurrently with the SEA, but both processes are clearly distinguished. The AA is documented in a Natura Impact Statement (NIS), as shown in **Figure 4.1**.

A competent authority for the purpose of SEA is defined under S.I. No. 435 of 2004 as the authority which is, or the authorities which are jointly, responsible for the preparation of a plan or programme, or modification to a plan

or programme. EirGrid is therefore the Competent Authority with respect to this Plan and is obliged to determine whether the Plan could give rise to significant effects on the environment[6].

In *Screening* the need for SEA, EirGrid referred to Article 9(1) of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004).

It was considered that the Grid Implementation Plan (IP) 2017-2022 could be viewed to function as a "framework for future development consent" as it will *inter alia* identify and pursue certain types of development and/or give guidance for consent of development projects that fall within the categories set out in Annexes I and II to the EIA Directive. EirGrid had also committed to reviewing the need for SEA following the Grid 25 Implementation Programme 2011-2016. Therefore, while the Grid IP does not set a framework for the consenting of Grid projects per se (function of relevant Planning Authority) it was considered good practice to undertake SEA for the purpose of this plan.

Similarly with respect to Appropriate Assessment under the Habitats Directive, the competent authority is EirGrid. Article 42 of the S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011, provides for the carrying out of Appropriate Assessment by a public authority. The notion "public authority" is defined in Article 2(1) of the 2011 Regulations and expressly includes in the list of public authorities at (z) EirGrid. The Appropriate Assessment Determination is presented in a standalone document as part of the overall approval process.

[6] It is noted that the Grid IP is not a 'development plan', as defined under the Planning and Development Act 2000 as amended and therefore the provisions of this Act do not apply.

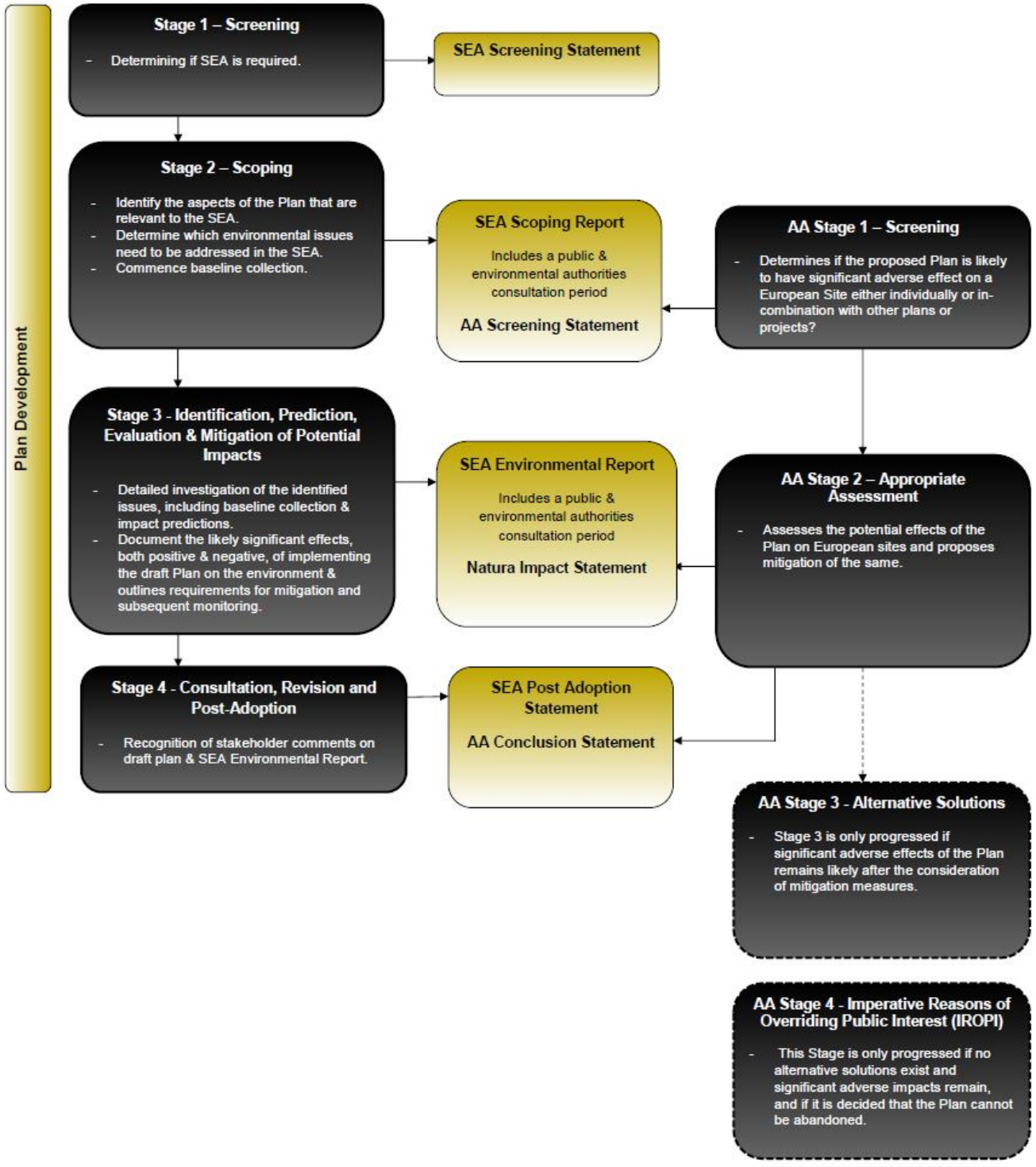


Figure 4.1: SEA/AA Stages and Key Deliverables

4.2.2 SEA - Stage 3 (current stage)

Stage 3 of the SEA process (the assessment stage) was undertaken in several phases, as set out below, and shown graphically in **Figure 4.2**:

- **Consultation and Baseline:** Information gathered during the SEA scoping exercise was collated and expanded upon. This included a review of the findings of the EirGrid Evidence Based Environmental Studies (EBES), the EPA State of the Environment Report (2016) and consultation submissions received during the scoping stage. More detail is provided in **Section 5** and **Section 6**.

- **Plan and Policy Review:** A review of relevant national and regional plan and policy documents was undertaken both to identify the key environmental issues, ensure that the policies and objectives set out in the Grid IP meet the requirements of all relevant plans and policies. More detail is provided in **Section 7**.

- **Key Environmental Issues: --** - The key environmental issues were identified based on the baseline data, EBES and the plan and policy review. More detail is provided in **Section 8**.

- **Strategic Environmental Objectives (SEOs):** The SEOs which were presented as draft in the SEA Scoping Report were finalised, considering phases A to C above. More detail is provided in **Section 9**.

- **Assessment:** Using the SEOs, the assessment of likely significant effects associated with the Grid IP component (policies and objectives, projects and alternatives to the Plan) was undertaken. This assessment of likely significant effects took account of "inherent mitigation". Inherent mitigation is considered to be the in-house processes within EirGrid such as the six-step Framework for Grid Development, the EirGrid Environmental Guidelines and statutory processes (i.e. EIA, AA and planning as required). More detail is provided in **Section 10** and **Section 11**.

- **Mitigation and Recommendations:** Based on this assessment, and the likely significant effects, mitigation and recommendations have been proposed. More detail is provided in **Section 12.**

- **Monitoring:** The final step is the development of the SEA monitoring framework. More detail is provided in **Section 13**.

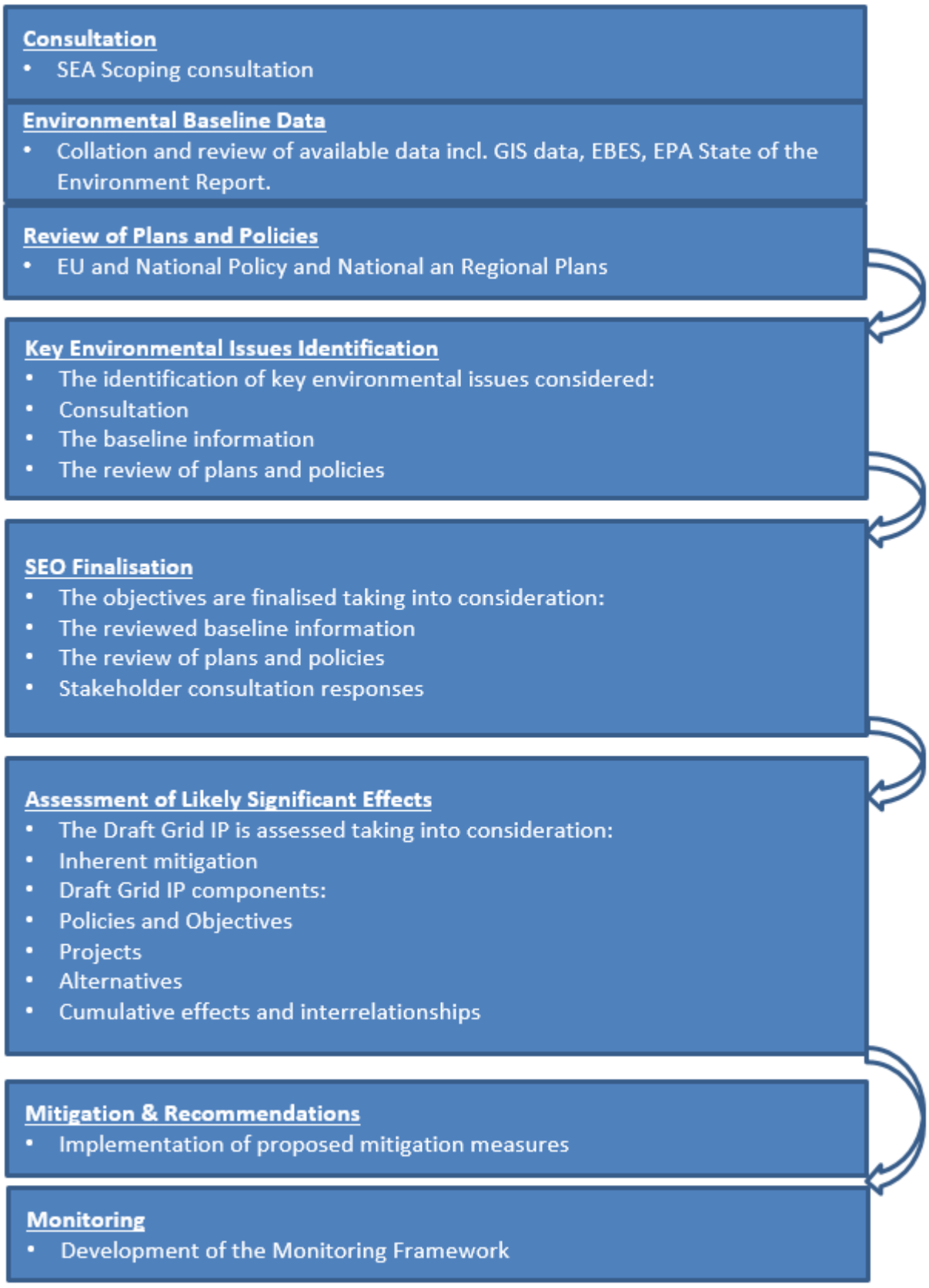


Figure 4.2: Over view of Stage 3 of the SEA Process for the Grid IP

4.2.3 SEA Study Area

The Grid IP plan area is detailed in **Section 2.3.3**. The Study Area for the SEA covers the entirety of the land mass of Ireland as shown in **Figure 4.3** and relevant territorial seas. In addition, the SEA assesses any likely significant effects on the surrounding environment in the context of potential offshore connections and / or cumulative and transboundary effects as applicable.

Figure 4.3: SEA Study Area

4.2.3.1 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 Ireland, 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 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.

The NIEA provided the following feedback in relation to the SEA Scoping Report issued in November 2016:

- The SEA Environmental Report should contain a clear statement indicating the opinion (and the reasons for it), about whether the implementation of the Grid IP, 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.
- At this stage the NIEA have no issues or concerns relating to the SEA Scoping Report but may have concerns in the future should any power line base structures'/stations have a negative impact on the licensed aquaculture sites in Northern Ireland.

The NIEA listed several key data sources relevant to Northern Ireland.

Similarly, Natural Resources Wales (NRW) provided the following feedback:

- NRW welcomes and supports the strategic approach to the assessment that the Grid IP 2017-2022 aims to achieve.
- Since the EirGrid east-west interconnector to Wales is already built, NRW assume that little in the way of change is planned. However, if any changes to this interconnection are planned, consideration will need to be given to the potential effects to Welsh waters and any land-based infrastructure in Wales.

No response on the SEA Scoping Report was received from the Ministry of the Environment in France.

There is an existing 262km Interconnector that links the electricity transmission grids of Ireland and Great Britain, from converter stations at Portan in Ireland to Shotton in Wales. There are no changes proposed in the Grid IP to this existing transmission infrastructure and this has not been assessed as part of the SEA.

The Celtic Interconnector is a proposal for an interconnector between the south coast of Ireland and the north-west coast of France. Both EirGrid and the French TSO, RTE are assessing the viability of this project. RTE and EirGrid are now moving to the next assessment phase of the project; initial design and pre-consultation, with the feasibility study completed as of 2016 (EirGrid, 2017).

A transboundary consultation has been undertaken in relation to the North South 400 kV Interconnector Project as this (permitted) project will have localised significant effects on landscape and cultural heritage in the Border region.

A copy of the Grid IP and this SEA Environmental Report has been made available to the transboundary consultees.

4.2.4 Alternatives

The SEA Directive requires the SEA process to identify, describe and assess reasonable alternatives which consider the objectives and the geographical scope of the Grid IP**. Section 3** details the alternatives available within the Grid IP and the assessment of these alternatives is outlined in **Section 11.5**.

4.2.5 Integrating the SEA, AA and the Grid IP

The SEA and the AA have been fully integrated into the development of the Grid IP, as shown in **Figure 4.1.** Integration of both the SEA and AA processes into the development of the Grid IP ensure that, where possible, it meets the requirements of the SEA and Habitats Directive and takes account of consideration of alternatives and identification of mitigation through the SEA process.

4.3 Progress on SEA Mitigation for the Grid Implementation Programme 2011-2016

4.3.1 SEA Mitigation

EirGrid has undertaken and continued several initiatives based on the Environmental Mitigation Measures (EMM) outlined in the 2011 Environmental Report for the previous 2011 Grid25 IP, as outlined in **Table 4-1**.

Table 4-1: Grid25 Implementation Programme 2011-2016 - SEA Mitigation Update

Code	Mitigation Measure	Status	Update on progress since previous plan
EMM1	Full Integration of Planning and Environmental Considerations in EirGrid's Transmission System Planning	Complete	The Project Development and Consultation Roadmap has now been replaced by a new Framework for Grid Development. The consideration of environmental issues is at the heart of this framework; in particular, there is a specific focus on the human and social environment.
EMM2	Preparation of Strategic Environmental Constraints Mapping	Rev 1: complete Rev 2: ongoing	As part of this Grid IP development and associated SEA an updated mapping system has been developed.
EMM3	Preparation of Evidence-based Environmental Guidelines	Rev 1: complete. However, these Studies are intended to be "living" documents, which can be updated as new information, surveys or literature is published.	Based on the content and conclusions of the ten complete EBES, EirGrid prepared three guideline documents setting out a standard approach to environmental assessment of transmission projects. These comprise: • *EMF and You: Information about Electric & Magnetic Fields and the electricity transmission system in Ireland (revised July 2014);* • *Cultural Heritage Guidelines for Electricity Transmission Projects (October 2015); and* • *Ecology Guidelines for Electricity Transmission Projects - A Standard Approach to Ecological Impact Assessment of High Voltage Transmission Projects (October 2015).*
EMM4	Consideration of the Broadest Possible Range of Alternatives in all Future Energy Transmission Strategies	Ongoing	New Grid Development Strategy published in 2017 which outlines the new approach to Grid Development. This is also reflected in EirGrid's strategy statement "*We will consider all practical technology options.*" In addition, EirGrid have developed a range of Energy Scenarios. These scenarios consider the range of possible ways that energy usage may change in the future. Scenario planning will allow EirGrid to efficiently develop the grid taking account of the uncertainties associated with the future demand for electricity and the future location and technology used to generate electricity.
EMM5	Preparation of TDP EAR	Ongoing	Three EARs have been prepared to accompany each TDP to ensure that it is in accordance with the SEA (currently comprising the Grid25 Implementation Programme (IP)

Code	Mitigation Measure	Status	Update on progress since previous plan
			2011-2016). These will continue to be developed for future TDPs in the context of the new SEA when finalised.
EMM6	Ongoing Co-operation in preparation of Renewable Energy Generation Guidelines and Strategies	Ongoing	EirGrid is a member of the steering group for a number of such Guidelines and Strategies, including the development of the Methodology for Local Authority Renewable Energy Strategies.
EMM7	Integrating Offshore Grid connectivity requirements and environmental considerations in EirGrid's Strategic Environmental Framework (SEF)	Ongoing	The Offshore Renewable Energy Development Plan (OREDP) was published in early 2014. Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects has also been produced and was published in April 2017. EirGrid formed part of the Environmental Working Group (EWG) which inputted to the production of these Guidelines.
EMM8	Other measures integrated into the Grid IP	Ongoing	EirGrid has developed their EBES's and Guideline documents to inform future transmission project developments. As part of this cycle of the Grid IP EirGrid has developed a series of policies and objectives for future grid development.

EMM2 was undertaken in 2010 and informed the EBES, the development of which was the first step of EMM3. EirGrid (together with RPS Group) have completed the following EBES:

- **EBES 1: Electromagnetic Fields (EMF)** - Literature review of EMF and human health, and an evidence base of EMF measurements from the Irish Transmission System (ITS) (EirGrid, 2014);
- **EBES 2: Cultural Heritage** - Literature review and evidence-based field study on the effects of high voltage electricity infrastructure on archaeological, architectural and cultural heritage in Ireland (EirGrid, 2015a);
- **EBES 3: Bats** - Literature review and evidence-based field study on the effects of high voltage transmission lines on bats in Ireland (EirGrid, 2015b);
- **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);
- **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);
- **EBES 8: Noise** - Literature review and evidence-based field study on the noise effects of high voltage transmission development (EirGrid, 2016e);
- **EBES 9: Settlement & Land Use** - Literature review and evidence-based field study on the effects of high voltage transmission development on patterns of settlement and land use (EirGrid, 2016f); and
- **EBES 10: Landscape & Visual** - Literature review and evidence-based study on the landscape and visual effects of high voltage electricity infrastructure in Ireland (EirGrid, 2016g).

The purpose of these studies was to determine the actual effect, in respect of several environmental aspects, of the construction and existence of transmission projects in a representative range of Irish environmental conditions; typical, non-standard, and worst-case. They also assisted in considering the likely significant effect on the environment of the Grid IP. These studies are intended to be periodically updated to take account of new

information and / or developments in understanding arising from practice and research. The EBES are an important source of baseline information of this SEA.

In fulfilling its obligation to EMM3, EirGrid has developed several guidelines:

- **EirGrid Ecology Guidelines for Electricity Transmission Projects:** A Standard Approach to Ecological Impact Assessment of High Voltage Transmission Projects (EirGrid, 2012);
- **EirGrid, Cultural Heritage Guidelines for Electricity Transmission Projects:** A Standard Approach to Archaeological, Architectural and Cultural Heritage Impact Assessment of High Voltage Transmission Projects (EirGrid, 2015); and
- **EirGrid, EMF & You:** Information about Electric & Magnetic Fields and the electricity transmission system in Ireland (EirGrid, 2014).

These guidelines are based on evidence from the relevant literature and field studies, and they provide practical guidance to practitioners and consultants in the planning and design of transmission infrastructure from the perspective of a particular environmental topic.

Key Messages from Chapter 4:

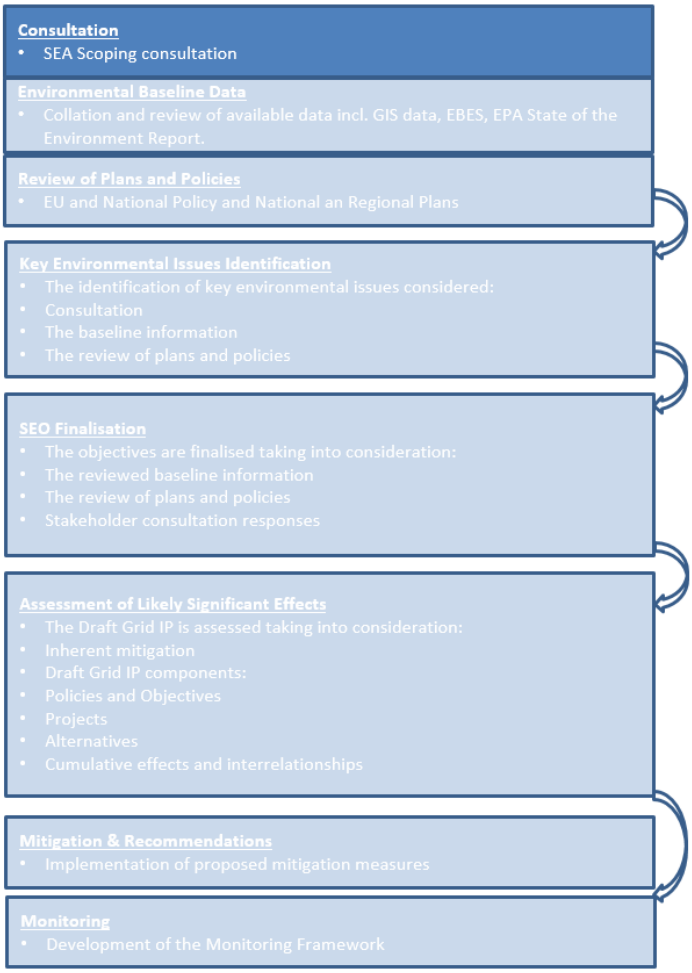
- SEA is a four-stage process. Stage 1 and 2 are complete and we are currently at Stage 3.
- The development of the Grid IP, the SEA and the AA are being undertaken in tandem.
- Stage 3 of the SEA has been undertaken as follows:
    - The baseline data (Section 6), feedback from the SEA Scoping Stage (Section 5) and a review of relevant plans and policy (Section 7) have informed the identification of both the key environmental issues (Section 8) and the development of the Strategic Environmental Objectives (SEOs) (Section 9).
    - The likely significant effects of the Grid IP are assessed against these SEOs taking into consideration inherent mitigation (Section 10 and 11).
    - Mitigation and/or recommendations have been developed (Section 12).
    - A monitoring framework will be set up to track progress against the SEOs (Section 13).
- Significant progress was made on the previous Grid IP SEA mitigation plan including the completion of ten Evidence Based Environmental Studies and three Environmental Guideline documents.

5. Consultation

5.1 Background

In 2014, EirGrid began a review of its consultation process to enhance future stakeholder and public engagement on projects. Full details of this review are contained in EirGrid's *Reviewing and Improving our Public Consultation Process (2015)*. From this review, three common themes on how to use a *community-focused approach* to improve future engagement emerged as outlined below:

- **Theme 1: Develop A Participative Approach** - *We will move to developing more electricity projects to enable greater stakeholder participation from the outset*.
- **Theme 2: Change our Culture and Processes** - *We will change the culture in our organisation to develop stronger relationships with stakeholders and communities*.
- **Theme 3: Encourage Leadership & Advocacy** - *We will seek support from the political system and state bodies to better explain energy issues and make the benefits of a stronger system clearer to all*.



5.2 Environmental Advisory Group Workshops

In addition to statutory requirements, to build on and support the three consultation themes, EirGrid set up an Environmental Advisory Group (EAG). The purpose of the EAG is to input and advise the development of the Grid IP and the SEA documents.

A SEA Scoping Workshop was held in September 2016 and formed the first round of the SEA workshops designed to gather early input from the EAG members on the development of the Grid IP and the SEA Scoping stage. This workshop aimed to:

- Provide EAG members with an opportunity to achieve a mutual understanding of the Grid IP and the SEA process.
- Give EAG members the opportunity to participate in a discussion about key environmental issues and SEA objectives, and ultimately recommend issues for inclusion in the SEA Scoping Report.
- Help to identify the most appropriate data and information sources required to establish the environmental baseline and the potential future large-scale changes (e.g. climate change, land use changes).

Environmental Advisory Group

- *Environmental Protection Agency (EPA);*
- *National Park and Wildlife Service (NWPS);*
- *The Heritage Council;*
- *Department of Housing, Planning, Community and Local Government (DHPCLG); and*
- *Regional Assemblies (East and Midlands).*

- Allow the capture of intelligence from a national and regional perspective to consider the key environmental issues.
- Help establish what means of engagement EAG members would like to see going forward.

Subsequently all EAG members were issued with an information package containing the following:

- the draft identified key environmental issues;
- the draft SEA Objectives;
- a SEA Plans and Policy information sheet; and
- a feedback form to raise any further environmental issues/concerns, and any additional comments on the SEA Scoping Report or the communications and engagement process.

The SEA Scoping Report which is available on the EirGrid Website was formally issued to the EAG members, statutory environmental authorities and other non-statutory stakeholders (as listed in **Section 5.4.1**) in November 2016.

A second workshop was held in June 2017 to present the draft Grid IP and findings of the associated environmental assessments. This workshop aimed to:

- provide EAG members with an update on progress for the Grid IP including the vision and purpose, the overall objective, and the policies and objectives within the Grid IP;
- outline the findings of the draft SEA Environmental Report, including scoping responses, the key issues identified, SEA methodology and assessment, along with the proposed mitigation and monitoring measures;
- outline the findings of the AA process including the likely significant effects and the proposed mitigation measures which are incorporated in the NIS; and
- seek feedback from the EAG on the issue of transboundary consultation requirements.

The SEA Environmental Report which is available on the EirGrid website was formally issued to the EAG members, statutory environmental authorities and other non-statutory stakeholders (as listed in **Section 5.4.1**).

5.3 SEA Scoping Phase Consultation

As part of the SEA scoping process, and in accordance with Article 11 of S.I. No. 435 of 2004, environmental authorities as well as the relevant transboundary authorities 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. In addition, several other non-statutory stakeholders were notified, as detailed in **Section 5.4.1**. Notifications were accompanied by a covering letter and a hard/soft copy of the SEA Scoping Report. Submissions were received from the following stakeholders:

- The EPA;
- The Department of Communications, Climate Action and Environment (on behalf of Inland Fisheries Ireland);
- Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA);
- Eastern and Midlands Regional Assembly (EMRA);
- Natural Resources Wales;
- Department of Communities (NI); and
- Northern Ireland Environment Agency (NIEA) Department of Agriculture, Environment and Rural Affairs (DEFRA) (NI).

Details of the submissions received are contained in **Appendix C**. The submissions received on the SEA Scoping Report primarily contained information as follows:

- submissions highlighted new or existing data sources such as the EPA State of the Environment Report;

- submissions highlighted other plans that could be relevant to the development of the Grid IP;
- some recommendations were made in relation to the SEOs such as those from the DAHRRGA in relation to the biodiversity SEOs;
- The DAHRRGA also made comment on the interrelationships between cultural heritage assets and other aspects such as biodiversity;
- The EMRA recommended that the Grid IP reflected the new regional boundaries; and
- The Inland Fisheries Ireland (IFI) commented on aspect to be considered during the assessment such as water quality and amenity/recreational areas for fisheries.

All comments received from the statutory and non-statutory stakeholders have been considered as appropriate during the Grid IP development and the SEA/AA. Where new baseline data and/or plans have been identified these have been included as required in the assessment. Consideration has also been given to the recent EPA State of the Environment Report (EPA, 2016) and the seven key actions identified therein. In addition, EirGrid's policies and objectives, as outlined within the Grid IP, have sought to support these seven keys actions, see **Section 6**.

5.4 Stakeholder Consultation on the Draft Grid IP and Environmental Assessments

5.4.1 Stakeholders List for the draft Grid IP and SEA Environmental Report

In line with SEA Regulations, the draft Grid IP and the SEA Environmental Report were issued to the following statutory Environmental Authorities[7]:

- The EPA;
- Department of Housing, Planning, Community and Local Government (formerly the Department of Environment, Community and Local Government);
- The DAHRRGA;
- The Department of Agriculture, Food and the Marine;
- Department of Communications, Climate Action and Environment (formerly the Department of Communications, Energy and Natural Resources); and
- NIEA (transboundary related).

In addition to the above statutory Environmental Authorities and EAG members, we sought to engage with the following stakeholders:

- An Taisce;
- Birdwatch Ireland;
- Bord na Móna (BNM);
- Coillte;
- Department of Agriculture, Environment and Rural Affairs (Northern Ireland);
- Department of Transport, Tourism and Sport;
- Environmental Law Implementation Group (ELIG);
- ESBN;
- Fálite Ireland;

7 Recent governmental changes may require amendments to the exact name convention of these environmental authorities. The EPA have recommended that until a Departmental Circular is issued with the new names of the Departments, that the existing circular is to be used.

- Geological Survey of Ireland (GSI);
- Geological Survey of Northern Ireland (GSNI);
- Inland Fisheries Ireland (IFI);
- Inland Waterways Association of Ireland (IWAI);
- Irish Farmers Association;
- Irish Landscape Institute;
- Landscape Alliance Ireland;
- Office of Public Works (OPW);
- Regional Authorities[8];
- Réseau de transport d'électricité (Rte);
- Sustainable Energy Authority of Ireland (SEAI);
- Teagsac;
- Ministry of the Environment (ministère de l'environnement, de l'énergie et de la mer);
- National Assembly for Wales; and
- The Countryside Council for Wales.

An electronic copy of the draft Grid IP and this SEA Environmental Report was made available to the above stakeholders via email for review and comment. No significant effects have been identified in relation to France or the UK. However, these stakeholders were notified on the publication of the draft Grid IP and associated SEA Environmental Report and NIS and comments from relevant stakeholders have been taken into consideration.

5.4.2 Public Consultation

Public consultation has been undertaken in line with the SEA Regulations. The approach to Public consultation was outlined on the EirGrid website - www.eirgridgroup.com

Key Messages from Chapter 5:

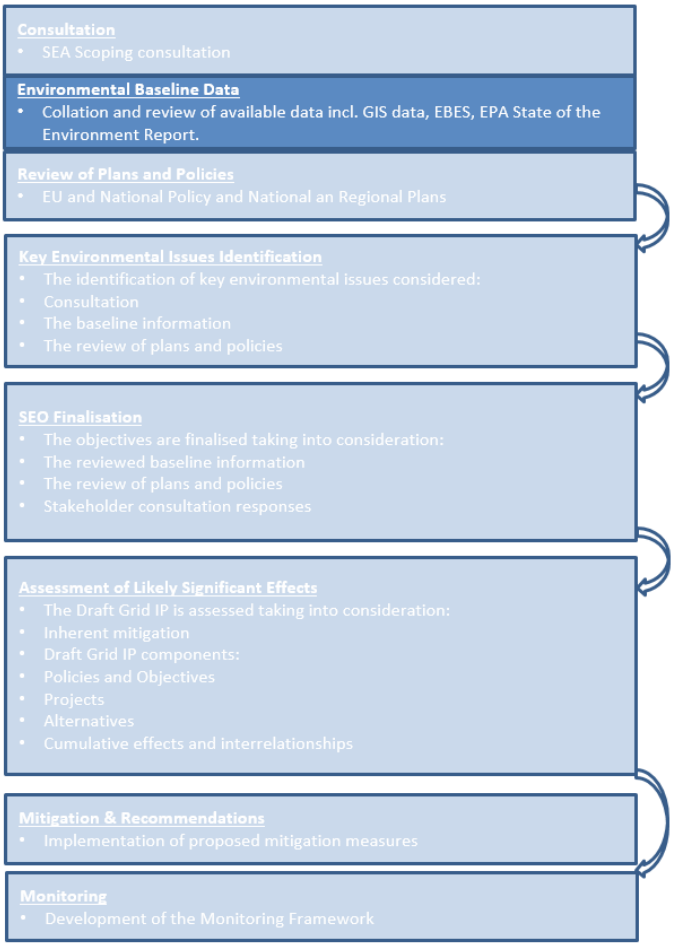
- EirGrid are committed to continued stakeholder engagement.
- An Environmental Advisory Group (EAG) was set up to inform the development of the Grid IP and the associated SEA and AA.
- In addition to statutory consultees on SEA, and the EAG, several other interested stakeholders have been engaged.
- The draft Grid IP, SEA Environmental Report and NIS was issued to statutory Environmental Authorities in line with the SEA regulations.
- Other interested stakeholders were consulted on the draft Grid IP and the SEA.
- Public consultation was undertaken in line with the SEA Regulations.

[8] Eastern and Midland Region – which comprises the combined territory of the counties of Dún Laoghaire–Rathdown, Fingal, Kildare, Laois, Longford, Louth, Meath, Offaly, South Dublin, Westmeath and Wicklow as well as the territory of the city of Dublin. Northern and Western Region – which comprises the combined territory of the counties of Cavan, Donegal, Leitrim, Galway, Mayo, Monaghan, Roscommon and Sligo as well as the territory of the city of Galway. Southern Region – which comprises the combined territory of the counties of Carlow, Clare, Cork, Kerry, Kilkenny, Limerick, Tipperary, Waterford and Wexford as well as the territory of the cities of Cork and Waterford.

6. Baseline Information

6.1 Introduction

The baseline describes the current environmental conditions in the absence of the Grid IP at a defined point in time. This provides a benchmark to which the predicted environmental effects can be assessed. Detail of the baseline environment and future trends in the absence of the Grid IP for each environmental topic was outlined in the SEA Scoping Report published in December 2016. This baseline detail has been updated as relevant and provided in **Section 6.2** to **6.12**.



In addition, a GIS database of environmental constraints and existing and planned grid infrastructure has been created to inform the SEA and the AA process.

During the SEA scoping phase consultation, the EPA highlighted their State of the Environment Report published in November 2016. This report provides:

- an assessment of the overall quality of Ireland's environment;
- an outline of the pressures being placed on this environment; and
- the key actions that can address these pressures.

The report recognises the importance of the natural environment and that the overall quality of Ireland's environment is '*good*'. However, the report also acknowledges that the impacts of many environmental issues such as air quality, water pollution and noise can be more localised and can be subject to masking by the national level assessments and that the environment faces many challenges, particularly as the economy begins to grow (EPA, 2016). Detail from the current state of the environment in Ireland is provided under each environmental aspect as available. Environmental factors included in the EPA report that are not of direct relevance to the development of the Grid IP are not dealt with in detail in this report. This includes factors such as the environment and transport, and the environment and agriculture. **Section 6.2** to **6.12** provides an overview of the overarching state of the environment based on the EPA's assessment, as relevant to the development of the Grid IP (within the blue boxes). The seven key actions aimed to address the associated pressures (EPA, 2016) are also presented (within the green boxes) throughout **Section 6.2** to **6.12**.

A review of the EirGrid EBES and guideline documents was also undertaken. The studies are an important source of baseline information as they assess how the existing transmission system interacts with the natural and human environment. They are important sources of information to identify key issues related to the Grid IP and subsequent identification of likely significant effects. These studies are summarised in **Section 6.14.**

The baseline data gathering exercise, the EPA State of the Environment Report, the review of the EBES and the consultation undertaken as part of the SEA Scoping Report all contributed to identifying the key environmental issues relating to the Grid IP as presented in **Section 8** and subsequent development of the SEOs presented in **Section 9**.

6.2 Population, Human Health and the Economy

6.2.1 Current Conditions

Population

A review of the current population trends in Ireland was undertaken as part of EirGrid's EBES No. 9 Settlement and Land Use. This EBES states that "*Ireland's population increased by 42% in the period 1926-2011*" (from approximately 2.9 million to 4.5 million people) (CSO, 2011). Population growth was particularly evident from the 1960s onwards, reflecting the development of the national economy which in turn is reflected in the need for, and expansion of the transmission network. Over this period, geo-demographic trends, and in particular rural and urban population dynamics, have greatly changed the shape and profile of the country. For example, in 1961, 46.4% of the population lived in urban areas and 53.6% lived in rural areas. However, by 2011, 62% of the population lived in urban areas and 38% lived in rural areas, representing a rural urban shift of 15.6% of the population (EirGrid, 2016f).

More recently the numbers from the 2016 census indicate that population figures have again increased by approximately 3.7% to over 4.7 million. Population changes vary within each county, ranging from a high of over 8% in Fingal to a reduction of -1.5% in Donegal. The fastest growing counties were Dublin, Meath, Kildare and Laois and the fastest growing cities were Cork and Galway. Whilst most counties experienced some level of population growth, three counties witnessed population decline over the last five years, namely Donegal (-1.5%), Mayo (-0.2%) and Sligo (-0.1%) with three other counties growing by less than 1% (CSO, 2016). **Figure 6.2** shows the settlement patterns within Ireland.

Table 6-1: Population of Administrative Counties - changes between 2011 and 2016 (Source: CSO, 2016)

County	Change 2011-16 %	County	Change 2011-16 %
Carlow	4.1	Cork County	4.2
Dublin City	4.8	Kerry	1.4
Dún Laoghaire-Rathdown	5.3	Limerick City	2.1
Fingal	8.1	Limerick County	1.6
South Dublin	5.1	North Tipperary	1.5
Kildare	5.6	South Tipperary	0.7
Kilkenny	3.9	Waterford City	3.5
Laois	5.2	Waterford County	1.4
Longford	4.6	Galway City	5.3
Louth	4.5	Galway County	2.2
Meath	5.9	Leitrim	0.5
Offaly	1.7	Mayo	-0.2
Westmeath	2.6	Roscommon	0.6
Wexford	2.9	Sligo	-0.1
Wicklow	4.2	Cavan	4.0
Clare	1.2	Donegal	-1.5
Cork City	5.4	Monaghan	1.3
State	**3.7%**		

The existing transmission network avoids the majority of urban areas. However, it clearly interacts in and around the main urban areas due to the function of the transmission grid to carry electricity from where it is generated to where it is required (EirGrid, 2016f).

Environmental Health & Wellbeing (EPA 2016)

As indicated in the EPA SOE report Ireland's environment is generally classified as 'good' and provides a clean, safe environment to live in. The report indicates that some of the most prevalent health issues, at a national level, include localised air pollution and water contamination.

The EPA report comments on the recent EU scientific committee publication a final opinion on the potential health effects of exposure to electromagnetic fields (EMFs) (SCENIHR, 2015), which concluded that there are no evident adverse health effects associated with EMF if exposure remains below the levels recommended by EU legislation (EC, 2015).

Health

Overall, the health of the population in the Study Area is generally 'Good' to 'Very Good' based on the Central Statistics Office (CSO) self-perceived health survey (CSO, 2010). Hypertension (11%) was the most prevalent condition reported by adults, followed by chronic back conditions (10%), and high cholesterol (10%). Cancer accounted for 2% of medically diagnosed health conditions (CSO, 2010). EirGrid have carried out studies in relation to what is deemed the greatest health risk because of electricity supply, Electromagnetic Fields (EMF) as part of Evidence Based Environmental Study 1 EMF (EirGrid, 2014). A summary is provided in **Section 6.14.1**.

Table 6-2: Self Perceived Health Survey (Source: CSO, 2010)

Age range	Very good	Good	Fair	Bad/Very Bad
18-24	59	36	4	1[9]
24-34	61	34	4	1
35-44	51	40	7	1
45-54	41	45	11	3
55-64	29	49	18	3
65-69	23	56	18	3
70+	18	49	27	5
Average	**40**	**44**	**13**	**2**

Figure 6.1 details the types of medical cover in Ireland, as of 2010. This shows that almost a quarter of the population is dependent on the public health care system with neither private health insurance and/or a medical card.

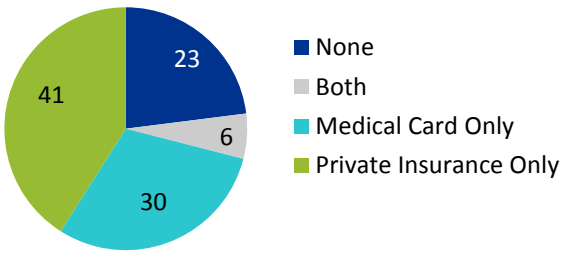


Figure 6.1: Type of Medical Cover held in Ireland (Source: CSO, 2010)

[9] Indicate percentages based on small numbers, and are, therefore, subject to a wide margin of error.

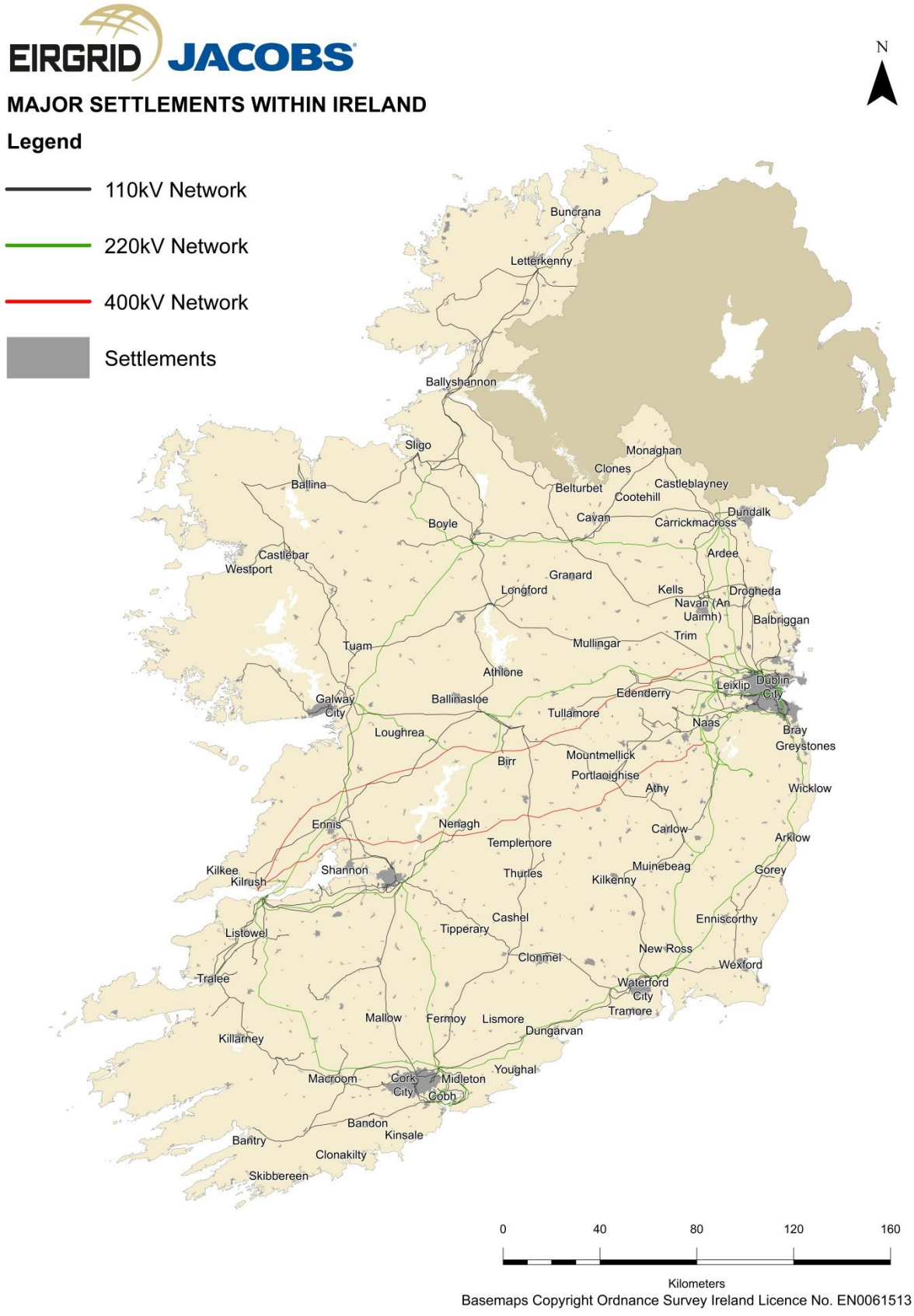


Figure 6.2: Major Settlement Patterns within Ireland (Source: OSI)

Economy

Between 1990 and 2000 the Irish economy grew with the Gross Domestic Product (GDP) growth per year averaging 9% for most of this period. Between 2001 and 2007 the GDP increase was high compared to other countries in the EU. The Irish GDP growth can be linked to the labour market, where employment rates rose by almost 50% from the late 1990s to 2006/07. The global economic crash in 2007/08 resulted in the GDP falling by 10% between 2008 and 2010. The building and construction sector were hardest hit in Ireland. Unemployment levels at this time were highest amongst males, followed by young people.

The Environment & the Economy (EPA 2016)

The environment is under increasing pressure from population growth, urbanisation, changing economies and the competition for depleting resources. As the economy begins to recover, the challenge surrounding waste generation and GHG emissions will increase. The EPA recognises that it is imperative to integrate sustainability values and practices into economic practices, in order to move towards a more resource-efficient and low carbon economy.

From 2015, there have been indicators that the Irish economy is recovering as the GDP has grown by 5.2%. In 2012, the unemployment rate rose to its highest rate (15%) since the recession began in 2008 and as of July 2016; unemployment was down to 7.8% (approximately 169,000) (CSO, 2016). Transmission infrastructure is considered as a key component for sustainable economic development.

6.2.2 Future Trends (Evolution of the Baseline)

Population

According to the CSO the population of Ireland is projected to increase to over five million by 2031. Over the plan period the percentage of people living in urban areas will increase from approximately 63% to 73.5% and the population density per square km will increase to approximately 80 persons per km^2 (CSO, 2016). The National Planning Framework also sets out other predictions such as an additional 660,000 jobs, and at least an additional 500,000 new homes by 2040. (Government of Ireland, 2018) This increase in Ireland will lead to increased energy demands and greater capacity requirement in the transmission network. It is noted that EirGrid is committed through its 2017 *Grid Development Strategy Your Grid, Your Tomorrow* that it will do more with the existing grid before building new transmission infrastructure.

Key Action: Community Engagement (EPA 2016)

Keep communities informed, engaged and provide support in terms of the protection and improvement of the environment.

Health

Life expectancy in Ireland has increased by two and a half years since 2004 and has been consistently higher than the EU average throughout the last decade (Department of Health, 2015). This is a trend anticipated to continue, and with an ageing population, the health of Ireland will continue to place increased pressure on the health care systems.

The government is aware of ongoing health trends and in 2013 the Healthy Ireland Framework was adopted by the government in response to Ireland's changing health and wellbeing profile. Healthy Ireland's four high-level goals to improve the health in Ireland going forward are:

Key Action: Environmental Health & Wellbeing (EPA 2016)

Recognition of the link between good quality environment and health benefits.

- increasing the proportion of Irish people who are healthy at all stages of life;
- reducing health inequalities;
- protecting the public from threats to health and wellbeing; and
- creating an environment where every sector of society can play its part in achieving a healthy Ireland.

Economic

The Government's Capital Investment Plan (CIP) 2016-2021 outlines the investment in capital infrastructure over that period. The CIP combines investment from the Exchequer, Public Private Partnerships and State-owned investment accumulating to €42 billion. Of this figure over five billion euro is to be invested during the course of the CIP in energy transmission and distribution networks, renewable and conventional power generation, and smart metering by ESB, Ervia (formerly Bord Gáis Éireann), Bord na Móna (BNM), and EirGrid. There are several key energy transmission and distribution networks projects listed in the CIP to be delivered between now and 2021.

Data centers have a high-power demand and the IDA has cited that access to a high-quality electricity grid is critically important for attracting new investment. Ireland has experienced significant investment in Irish data centres by global companies in the last number of years; a trend anticipated to continue.

Key Action: Sustainable Economic Activities (EPA 2016)

Integrate resource efficiency and sustainability ideas across all economic sectors.

The government recently published its *Action Plan for Jobs* (2016) which targets 200,000 net additional jobs by 2020.

The UK is a very important partner for Ireland and as a result, Ireland is uniquely exposed to Brexit. Irish exports of goods and services to the UK equalled almost €37 billion in 2015, while imports from the UK reached €31 billion. (DBEI, 2015). The Department of Business, Enterprise and Innovation published the report 'Ireland and the Impacts of Brexit' in 2015 and analysed a number of EU-UK trading scenarios and how this would impact Ireland in the long term. The report determined that Ireland would be negatively impacted by all EU-UK trading scenarios.

6.2.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- loss of amenity or property value because of grid development which can induce stress that can lead to adverse health outcomes population and development growth within Ireland;
- temporary disruption to the local community, such as noise, dust, disruption to services/utilities and traffic etc.;
- potential visual effect of transmission lines; and
- potential safety risk from transmission lines.

6.3 Biodiversity, Flora and Fauna

6.3.1 Current Conditions

There are a number of Nature Conservation designations in Ireland at an International, European and National level including:

- UNESCO (United Nations Educational, Scientific and Cultural Organisation) World Heritage and Biosphere sites;
- Special Areas of Conservation (SAC);
- Special Protection Areas (SPAs);
- sites designated as Wetlands of International Importance or RAMSAR sites;
- National Heritage Areas (NHAs) and proposed National Heritage Areas (pNHAs); and
- other designations such as Salmonid Waters, Freshwater Pearl Mussel (FWPM) Catchments and Nature Reserves.

Nature (EPA 2016)

The majority of Ireland's protected habitats are reported as 'inadequate' or 'bad' in terms of conservation status. However, levels of many protected species are reported to be stable.

The report outlines that considerable efforts and resources will be required to improve the status of habitats and species and will be dependent on land-use changes, climate change, the inclusion of biodiversity in economic development decisions, improvement of co-ordination across regulatory bodies and the effective implementation of legislation.

In 1997, the Habitats Directive (92/43/EEC) was transposed into Irish national law by the European Communities (Natural Habitats) Regulations, S.I. 94 of 1997 as amended. The Regulations were subsequently revised and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011, S.I. 477 of 2011. The main purpose of the Directive is to ensure the appropriate conservation of natural habitats and of wild fauna and flora. Under the directive, Member States like Ireland were required to establish an ecological network of SACs (sites which host a range of natural habitats and species listed in Annex I and II of the Directive) and SPAs as designated under the Birds Directive (2009/147/EC).

There are approximately 430 SACs in Ireland, covering 13,500km^2. Roughly 53% is land, the remainder being marine environments or large lakes. There a total of 154 SPAs encompassing over 5,700km^2 of marine and terrestrial habitats (NPWS, 2016). In general, these sites occur in greatest concentrations in the west of Ireland and in particular along the western coast (including north-western and south-western coasts).

There is approximately 120km of transmission lines (110kV, 220kV and 400kV) within SACs and 140km of within SPAs, as shown in **Figure 6.3** and **Figure 6.4.**

The National Parks and Wildlife Service (NPWS) monitor and assess the status of protected species (Annex I of 92/43/EEC) and habitats in Ireland (Annex I of 92/43/EEC). This considers the status of the range, area, structure and functions and prospects of each species/habitat before defining an overall status for each. A total of 59 different habitats and 61 species are listed. The overall status of Annex I habitats as of 2013 are as follows (NPWS, 2013):

- 8.5% as 'Favourable';
- 49% as 'Inadequate'; and
- 40.5% as 'Bad'.

The overall status of Annex II species as of 2013 is as follows:

- 52.5% as 'Favourable';
- 19.7% as 'Inadequate';
- 9.8% as 'Bad'; and
- 18% as 'Unknown'.

There are 155 NHAs across the country, the majority of which are bog related, and 630 pNHAs which have yet to be statutorily proposed or designated (NPWS, 2016).

Other ecological designations across Ireland include:

- six National Parks;
- 45 sites designated as RAMSAR sites (RAMSAR, 2016);
- two designated UNESCO World Heritage Sites and a further seven heritage sites currently listed as tentative but, yet to be officially designated (UNESCO, 2016); and
- several protected sites such as Nature Reserves or Wildlife Refuges which are outlined and identified in the various County Development Plans.

NPWS have prepared a *National Peatland Strategy*, a *Draft Raised Bog SAC Management Plan*, and a *Raised Bog NHAs Review*, to protect and manage significant peatlands in Ireland, which are designated under EU and National legislation. Additionally, the DAHRRG will be preparing SAC Management Plans for Blanket Bogs.

EirGrid have carried out a study in relation to the electricity network and its potential to impact on habitats as part of their Evidence Based Environmental Study 4 Habitats (EirGrid, 2016a). A summary of this study is outlined in **Section 6.14.4**.

Birds

BirdWatch Ireland and the Royal Society for the Protection of Birds (RSPB) in NI provide a list of priority bird species for conservation on the island of Ireland. This list is referred to as the Birds of Conservation Concern in Ireland BoCCI List. In this list, birds which breed and/or winter in Ireland are classified into three separate lists (Red, Amber and Green), based on the conservation status of the bird and hence conservation priority. Birds on the Red List are those of highest conservation concern, the Amber List are of medium conservation concern and the Green List birds are not considered threatened (Colhoun and Cummins, 2013). The number and breakdown of bird species on the Red and Amber List is shown in **Table 6-3.**

Table 6-3: Red and Amber Bird Types

Bird Types	Red List	Amber List
Breeding	21	60
Passage	2	5
Wintering	9	15
Breeding and Wintering	5	11

EirGrid have carried out a study in relation to the electricity network and its potential to impact on birds as part of their Evidence Based Environmental Study 5 Birds (EirGrid, 2016b). A summary of this study is outlined in **Section 6.14.5**.

Aquatic Biodiversity

Water quality is an important aspect which was considered by the Grid IP, as discussed later in **Section 6.9** to and this has a big influence on aquatic biodiversity. Aquatic biodiversity encompasses freshwater ecosystems including lakes, ponds, reservoirs, rivers, streams, groundwater, wetlands, coastal and marine. Aquatic species are dependent on good quality water and suitable flows. Construction run-off can impact water quality, modification of watercourses can reduce water flows and, in turn, reduce a watercourse's potential to support fish life.

The NPWS has identified 44 different water dependent habitat types and 22 water dependent species in Ireland. Of these, the freshwater pearl mussel is considered to be a highly sensitive surface water dependent species in Ireland, and coastal lagoons a highly sensitive water dependent habitat (EPA, 2016a). Of the water dependent

habitats, 11% are deemed to be at Favourable Conservation Status, while 50% of water dependent species are at Favourable Conservation Status.

The Grid IP should therefore consider the following in addition to water quality and surface water hydrology;

- fish spawning and nursery areas;
- passage of migratory fish;
- fish and shellfish cultivation;
- European eel conservation status;
- ecosystem structure and functioning;
- seabirds and marine mammals;
- sediment transport and coastal erosion;
- mineral and aggregate resources;
- sport and commercial fishing and angling;
- amenity and recreational areas;
- navigation and other legitimate use of the sea;
- areas of natural heritage importance including geological heritage sites; and
- designated marine protected areas.

EirGrid have carried out a study in relation to the electricity network and its potential to impact on the water network as part of their Evidence Based Environmental Study 6 Water Quality and Aquatic Ecology (EirGrid, 2016c). A summary of this study is outlined in **Section 6.14.6**.

Invasive Species

The spread of invasive species can have a significant negative effect on wildlife and habitats and the significance of this is reflected in Ireland's second *National Biodiversity Plan (2010-2015)* and recent European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Common invasive species in Ireland include:

- giant hogweed (*Heracleum mantegazzianum*);
- giant rhubarb (*Gunnera tinctoria*);
- himalayan balsam (*Impatiens glandulifera*);
- japanese knotweed (*Fallopia japonica*); and
- rhododendron (*Rhododendron ponticum*).

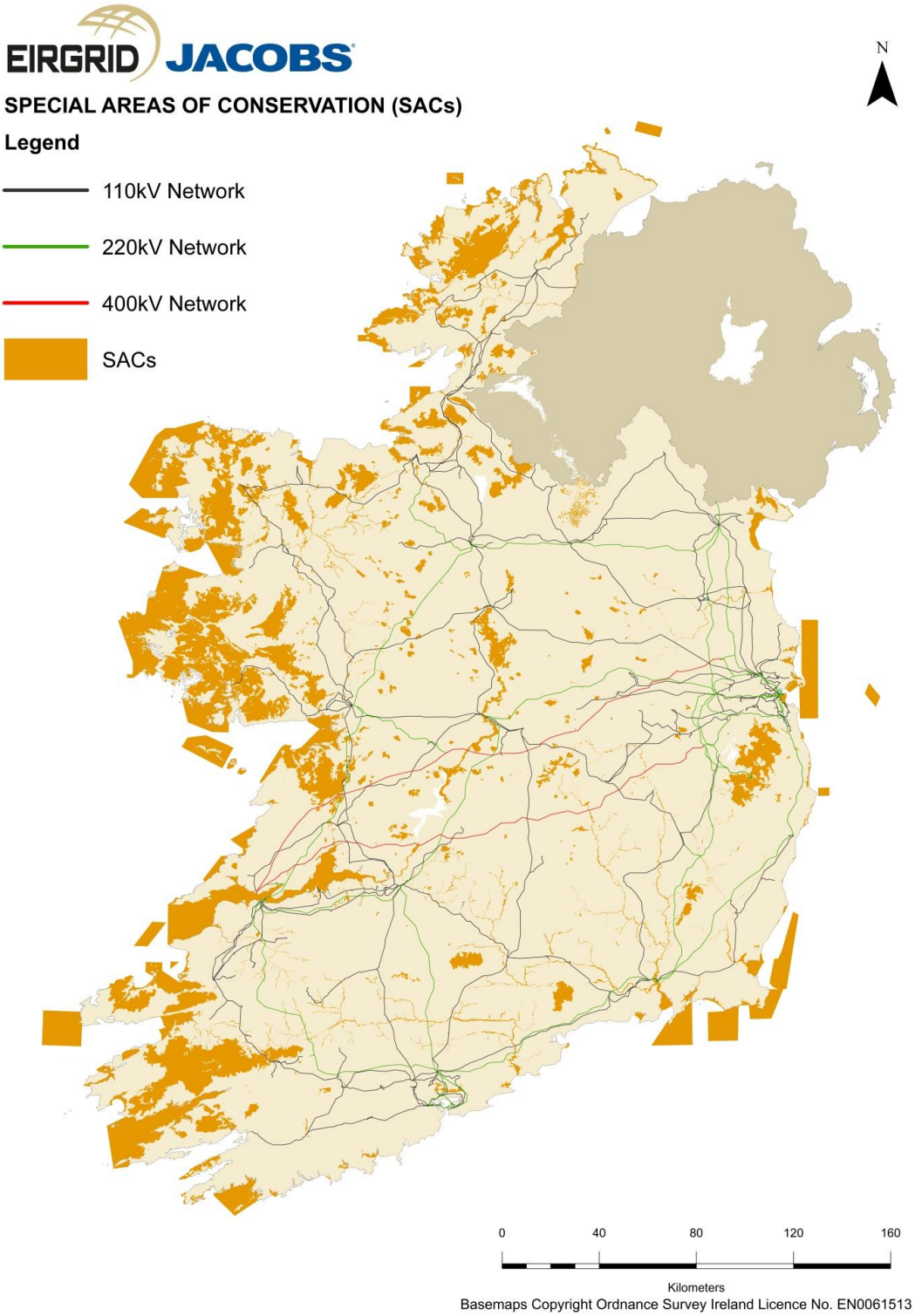


Figure 6.3: Special Areas of Conservation in Ireland (Source: NPWS)

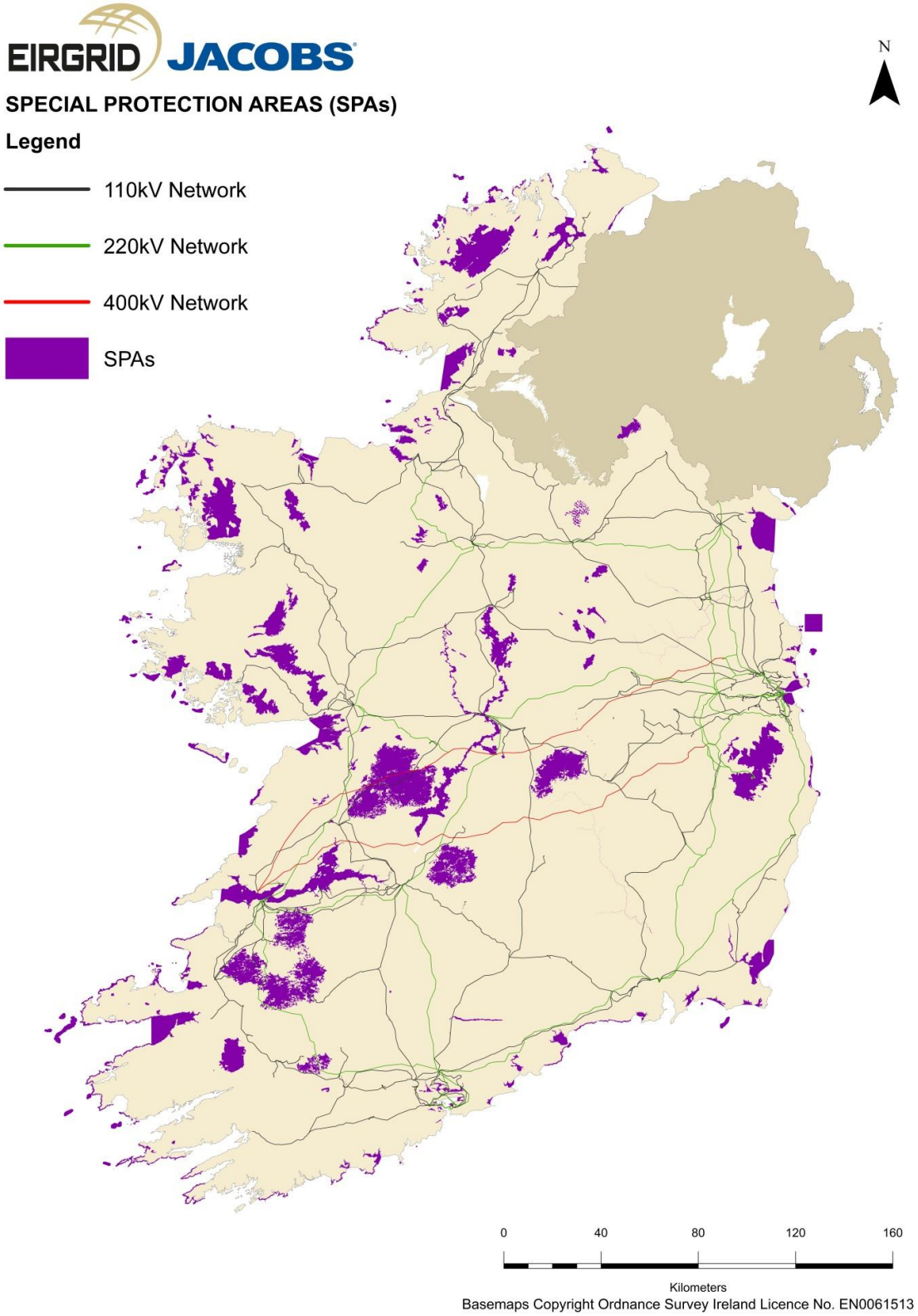


Figure 6.4: Special Protection Areas in Ireland (Source: NWPS)

6.3.2 Future Trends (Evolution of the Baseline)

Increasing land-use change such as urbanisation, afforestation and its associated management and changing agricultural practices are likely to continue to pose risks to the quality and distribution of aquatic and terrestrial habitats and species, both within and outside protected sites. However, the continued implementation of measures required in achieving the objectives of the Water Framework Directive (WFD) and the requirements of the Habitats Directive are likely to benefit protected sites and the wider aquatic environment in the future.

The Conservation Management Plans and conservation objectives which are being developed by the NPWS for many of the European sites, as well as other management plans for declining species (e.g. Species Management Plans) will help protect biodiversity resource going forward. It should be noted that the development of these Conservation Management Plans and site-specific conservation objectives are unlikely to be developed for every site.

Key Action: Nature and Wild Places (EPA, 2016)

Continue to protect pristine and wild places which are key to biodiversity and provide sustainable tourism opportunities.

Future trends will be influenced by changes/additions to existing designated (SAC, SPAs and NHAs). Several pNHAs may be reviewed and upgraded to NHAs and, similarly, sites listed as tentative on the UNESCO Heritage list may be upgraded to designated heritage sites.

There are currently 29 established and 18 potential invasive species threats. Species which are listed as potential threats may become established threats in the near future. The EPA's report on alien invasive species and the continuing development of the National Biodiversity Data Centre National Invasive Species Database will aid in the documentation of the distribution of invasive species in Ireland. These reports and datasets will go towards the implementation of the recent European legislation on halting the spread of invasive species (Regulation 1143/2014, entered into force on 1 January 2015).

6.3.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- impacts to semi-natural and sensitive natural habitats, particularly peatland habitats because of construction and maintenance of electricity transmission infrastructure;
- potential for bird strike / collision with new infrastructure;
- potential for effects on protected areas: National and European sites (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), RAMSAR), National sites (e.g. Natural Heritage Areas (NHAs)) and other Natural Heritage Sites and Conservation Interest Sites e.g. refuge for fauna or flora, wildfowl reserves;
- restrictions to existing/future transmission development because of the requirement for ecological protection; potential for effects on non-designated biodiversity features e.g. important habitats and species outside designated sites; and potential to spread invasive species during construction works.

6.4 Landscape and Visual Amenity

6.4.1 Current Conditions

There is currently no published national level landscape mapping for Ireland. In accordance with the Planning and Development Act 2010 all Local Authorities need to identify Landscape Character Areas (LCAs) within their Development Plans to ensure that defining features are protected and managed. There is no national classification system for LCAs as these are geographically specific and have their own distinctive character based on its location and surrounding environment. Some County Councils have yet to formally document LCAs. In addition, many Local Authorities have incorporated landscape designation into their Development Plans in the form of protected views, prospects, landscape conservation areas and scenic routes etc. Similar to the LCAs, there is no national standardised approach for designating these landscape features/sites.

As result of EMM2 *Preparation of Strategic Environmental Constraints Mapping* a number of landscape maps were developed during the SEA process for the previous Plan (2011-2016). National visual sensitivity mapping,

based on CORINE land cover characteristics, indicated conditions where visual vulnerability was considered high. The majority of visual sensitivities occur along the western half of the country, particularly along the western seaboard. The second type of mapping produced was topographical mapping. The topography maps identified all areas which are greater than 200 m in height. Thirdly, landscape constraints and opportunities mapping were produced. These maps indicate at a high level the landscape areas that are potentially most sensitive/least sensitive to the construction of electricity transmission infrastructure. In areas where there are high concentrations of sensitivities it is deemed that development can potentially conflict with these sensitivities (EirGrid, 2012b). EirGrid have carried out a study in relation to the electricity network and its potential to impact on landscape and visual amenity in their Evidence Based Environmental Study 10 Landscape and Visual (EirGrid, 2016g). A summary of this study is outlined in **Section 6.14.10**.

6.4.2 Future Trends (Evolution of the Baseline)

The existing landscape is not expected to change significantly in the immediate future. In May 2015 the DAHRRG published the *National Landscape Strategy for Ireland 2015-2025*. This is in line with Ireland's ratification of the European Landscape Convention (ELC) (2000). The National Landscape Strategy will be used to aid compliance with the ELC and as part of this a National Landscape Character Assessment is currently being developed. It is a high-level policy framework aimed at achieving a balance between the protection, management and planning of the landscape by way of supporting actions (DAHRRG, 2016). The Planning and Development (Amendment) Act 2010 defines the term '*landscape*[10]', and to support this, complementary legislation and codes will be examined to see whether gaps need to be addressed therefore there maybe legislation specific to landscape protection in the near future.

Key Action: Implementation of Legislation* (EPA 2016)

Need to improve how plans/policies are tracked and the overall enforcement of environmental legislation.

*relevant to all aspects

6.4.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- effects on areas of designated landscape quality and scenic views;
- landscape character and features can constrain development;
- sensitivity of the landscape to change from transmission infrastructure; and
- visual intrusion on receptors from transmission infrastructure.

6.5 Cultural Heritage - Archaeological and Architectural

6.5.1 Existing Conditions

Archaeological sites are legally protected by the provisions of the National Monuments Acts, the National Cultural Institutions Act 1997 and the Planning and Development Acts. One of the primary sources of information for known archaeological features is the Record of Monuments and Places (RMP) which was established under the National Monuments Acts 1930 to 2004. The RMP is an inventory of sites and areas of archaeological significance. It holds records of known upstanding archaeological monuments, the original location of destroyed monuments, and the location of possible sites. There are almost 80,000 sites recorded in the RMP (DAHRRG, 2016). Of these sites approximately 1,000 are under state care i.e. are in the ownership or guardianship of the Minister for Arts, Heritage, Regional, Rural and the Gaeltacht Affairs.

Architectural Conservation Areas (ACAs) are designated under Section 81 of the Planning & Development Act 2000-2010 (as amended) for the protection of areas for their special characteristics and distinctive features. ACAs in Ireland are detailed in the various County and Local Area Development Plans (some of which are pending designation).

10 Landscape has the same meaning as it has in Article 1 of the European Landscape Convention which states The landscape, covers the national territory, including land, inland water and seascapes of each member state. It refers equally to natural, rural, urban and peri-urban areas, from the outstanding to the degraded. It covers, in short, the entire physical environment as specified by each country upon ratification of the Convention.

One of the primary sources of information for known architectural heritage is the Record of Protected Structures (RPS). Local authorities are obliged to compile and maintain the RPS under Section 51 of the Planning & Development Act and Development Act 2000. These protected structures are listed in the County Development Plans but are not available in digital map format for some county councils. It is acknowledged that the RPS documented in County Development Plans may not represent all Ministerial recommended sites/structures which are included in the National Inventory of Architectural Heritage (NIAH). The NIAH was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. The purpose of the NIAH is to identify, record, and evaluate the post-1700 heritage of Ireland and there are over 50,000 listings on the NIAH in Ireland (DAHRRG, 2016).

There are two registered UNESCO World Heritage Sites in Ireland: Brú na Bóinne - Archaeological Ensemble of the Bend of the Boyne in Co. Meath, and Skellig Michael off the coast of Co. Kerry. A number of sites have been on the UNESCO tentative list since the last revision in 2010.

There remains the possibility for the presence of unknown, undesignated archaeological and architectural remains including underwater archaeology to be discovered during future developments.

EirGrid have carried out a study in relation to the electricity network and its potential to impact on cultural heritage as part of their Evidence Based Environmental Study 2 Cultural Heritage (EirGrid, 2015a). A summary of this study is outlined in **Section 6.14.2**.

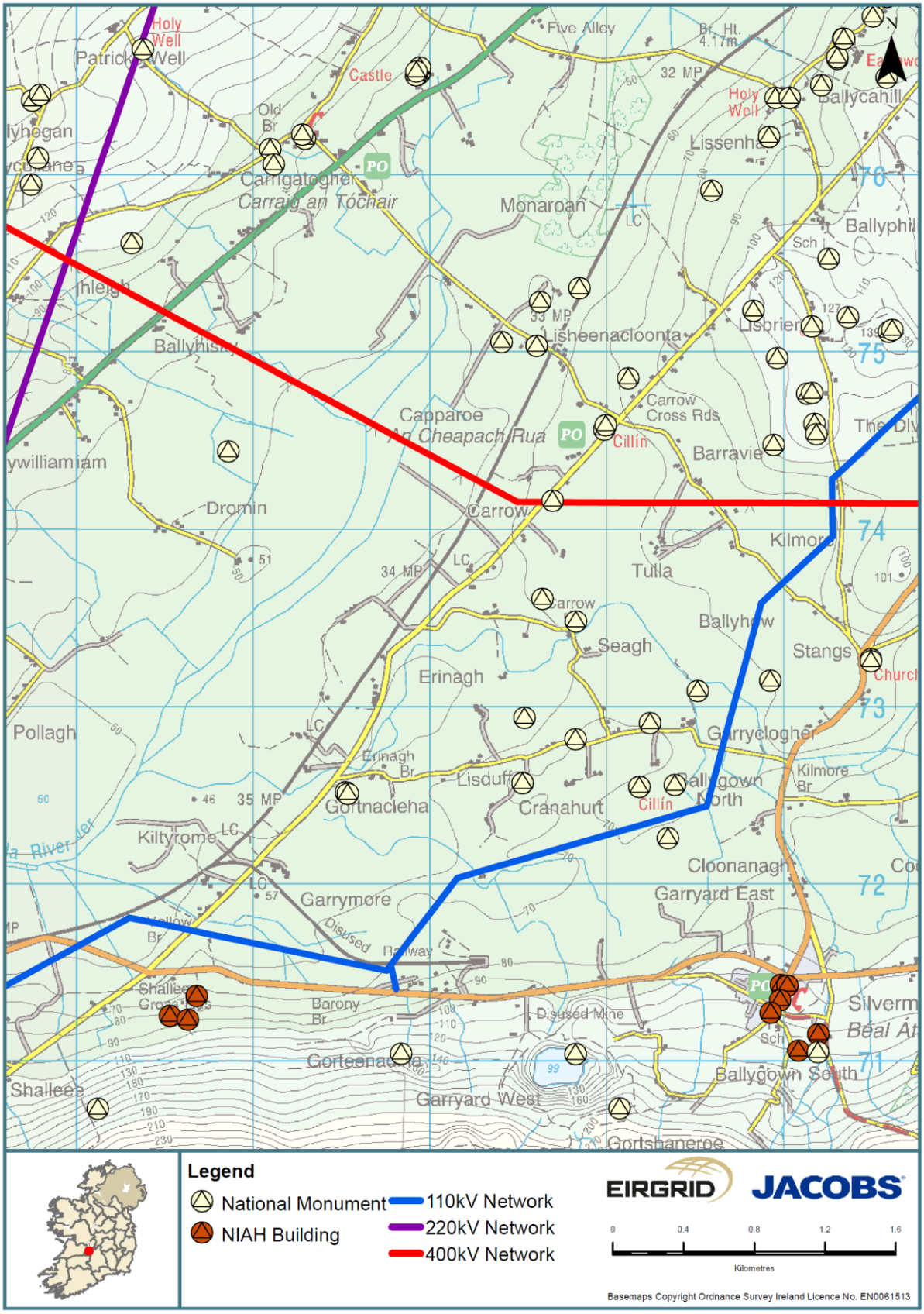


Figure 6.5: Sample of Cultural Heritage Assets within Ireland

6.5.2 Future Trends (Evolution of the Baseline)

The archaeological, architectural and cultural heritage within Ireland is a finite resource and protection of this resource is a continuous requirement set down in national legislation. Therefore, the existing cultural heritage environment is not expected to change significantly in the immediate future. There may be new features of archaeology and cultural heritage (i.e. RMP, RPS and NIAH) designated/undesignated as part of ongoing revision to these datasets. There are also a number of sites on the UNESCO tentative list that may be designated in the near future.

6.5.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- potential construction impacts on archaeological and architectural heritage including unknown/unidentified archaeology above or below ground;
- potential impacts on the setting of archaeological and architectural heritage due to the permanent presence of transmission infrastructure; and
- constraints on grid developments by the need to protect the character of areas of existing archaeological and architectural resources.

6.6 Geology and Soils

6.6.1 Current Conditions

Geology

The topography of Ireland varies greatly, comprising of a low-lying central limestone plain that is surrounded by coastal mountains. The mountains to the north-west (Galway, Mayo and Donegal) and east (Wicklow Mountains) of the country are comprised of granite. The north-east of Ireland is covered in a basalt plateau and to the south; the mountains run in an east-west direction and is largely composed of a red sandstone rock, as shown in **Figure 6.6**.

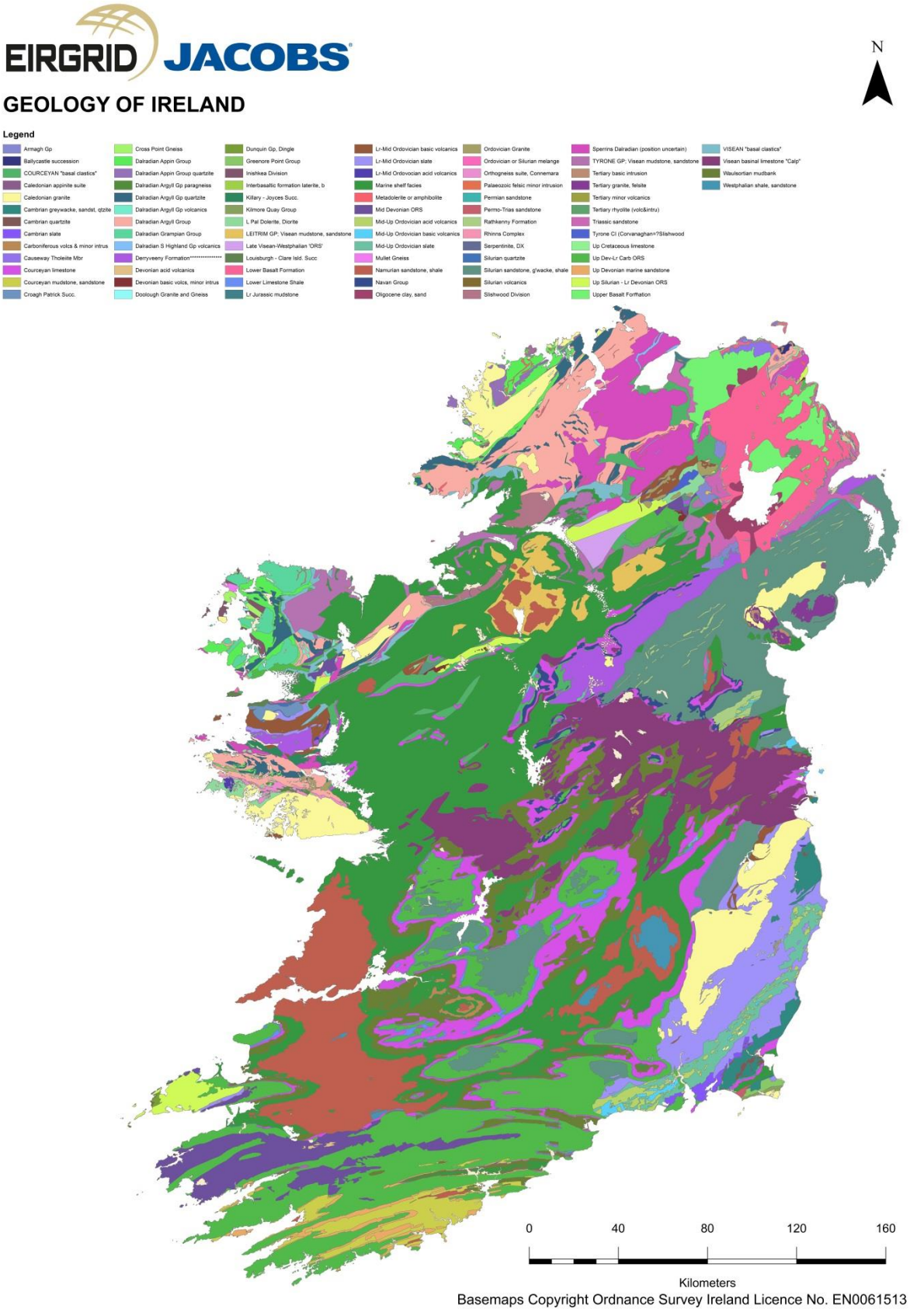


Figure 6.6: Geology of Ireland (Source: GSI)

As part of the Irish Geological Heritage (IGH) Programme, a partnership between GSI and the NPWS, the GSI have identified important geological and geomorphological sites which could be conserved as NHAs. Until designation is confirmed, these sites are classified as Irish Geological Heritage Sites (IGHS). There are over 900 IGHS identified around Ireland.

Soils

Subsoils in Ireland are made up of glacial and post-glacial sediments. Glacial till makes up the majority of subsoil, while other subsoils found in Ireland are sand and gravel, lake deposits, alluvium and peat.

Soil quality in Ireland is regarded as generally good. However, soil is increasingly under pressure from population growth and land use changes such agriculture, erosion, afforestation and overgrazing. Agricultural activity has had a huge impact on soil in Ireland, where the excessive use of nutrients (i.e. phosphorus) has had a knock-on effect for water quality deterioration. Soil contamination can also occur from leakages, spillages from industry, old mining sites and landfills. Diffuse pollution will usually arise from primary activities such as agriculture, forestry and horticulture.

There is no legislation solely directed to soil protection in Ireland. In 2006, the European Commission (EC) developed a Soil Thematic Strategy that aims to protect soils and ensure the sustainable use of soils across Europe. A Soil Framework Directive had been proposed, but in 2014 this was withdrawn.

In Ireland, peatland areas comprise 20.6% of our land area (An Taisce, 2016). Peatlands include blanket bogs, raised bogs, fens and wet and dry heath. The main threats to peatland areas in Ireland are peat extraction, habitat changes, invasive alien species, nutrient pollution and climate change (Teagasc, 2016). The loss and degradation of peatlands can affect biodiversity, flooding and climate change (carbon sinks).

EirGrid have carried out a study in relation to the electricity network and its potential to impact on soils and geology as part of their Evidence Based Environmental Study 7 Soils and Geology (EirGrid, 2016b). A summary of this study is outlined in **Section 6.14.7**.

6.6.2 Future Trends (Evolution of the Baseline)

Geology

The IGH sites referred to above are in the process of being reviewed by the NPWS to determine which sites shall be designated as NHAs and therefore afforded statutory protection.

Soil

In January 2014, the Seventh Environment Action Programme came into force with the objective of recognising that soil loss and degradation is a major challenge across Europe. Loss of soil quality has serious implications for ecosystems, climate, the economy and human health. By 2020, the Programme aims to ensure land is managed in a sustainably manner across the EU by reducing soil erosion, increasing soil organic matter and remediating contaminated sites.

The EPA's National Soil Database (NSDB) produced a national baseline database of soil geochemistry including spatial maps of major nutrients, and essential trace elements. This study provides Ireland with a good baseline of soil geochemical properties should any future soil protection policies be developed.

6.6.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- Construction phase impacts resulting from soil movement, siltation and sedimentation and/or contamination due accidental fuel/cement spillages;
- potential for impacts on geological resources (primarily related to karst) or geological designations;
- potential impacts to soils (land) vulnerable to erosion; and

- potential for disturbing contaminated material during construction works.

6.7 Land Use

6.7.1 Current Conditions

Information on land use in Ireland can be obtained from the CORINE Land Cover (CLC) inventory. The total land area of Ireland is almost 7 million hectares and agriculture accounts for two-thirds of this landmass cover. Peatlands and wetlands are the second most widespread land cover type covering almost one-fifth (20.6%) of the country. Bord na Móna own 7.5% of all Irish bogs, while forested areas cover about one-tenth (9.2%), much of which consists of commercial plantation of conifers, owned by Coillte (EPA, 2016).

Over the past thirty years, the main changes to land use in Ireland have seen a decrease in the total amount of agricultural land and peatland areas and an increase to forested land and artificial areas.

In Ireland 81% of agricultural land is devoted to pasture, hay and grass silage (3.6 million hectares), 11% to rough grazing (0.5 million hectares) and 8% to crops, fruit and horticulture production (0.37 million hectares). The average size of an Irish farm holding is 32.7 hectares (CSO, 2011) (DAFM, 2015).

Land and Soil (EPA, 2016)

The majority of the Irish landscape is comprised of agricultural land, wetlands and forests (CORINE). Land use has changed significantly in Ireland since the early 1990's. A reduction in agricultural land and peatland has been influenced by an increase forested land and artificial areas.

National policies for forestry, agriculture, peatlands and the built environment will continue to influence land use change and resource management. Land use changes will be heavily influenced by agricultural policies (Food Harvest 2020 and the 2025 Agri-food strategy) and by the National Forestry Programme.

The equine sector is important to the Irish Economy and Ireland has been successful internationally with horse breeding, horse racing and in many other equestrian disciplines. The Irish equine sector has two significant segments; the thoroughbred industry and the sport horse industry. This industry creates employment in areas where there are very few other forms of employment available.

Forests in Ireland are relatively young, with almost 40% of total forest areas planted since 1990 (EPA, 2016). This is particularly significant for climate change, as the annual carbon store in afforestation can be used to offset emissions from other sectors and help achieve Ireland's targets to reduce greenhouse gas (GHG) emissions. All forestry operations are required to be carried out in compliance with the principles of Sustainable Forest Management (SFM). The Forestry Environmental Protection Scheme (FEPS) provided incentives to farmers to plant woodland with emphasis on environmental gain, rather than solely for economic gain. Approximately 54% of forest is cover is under public ownership, mainly that of Coillte. The majority of private forest owners in Ireland are farmers.

Planning and land use policy over the last twenty years was reviewed as part of EirGrid EBES No. 9. This study demonstrated that Development Plans in the 1990s displayed a varied awareness of the importance of transmission infrastructure. However, by the mid-2000s, plans referred to the grid and renewable energies, as well as to protection of sensitive landscapes and residential amenity. Since the mid-2000s, ESB clearance distances have been articulated in Development Plans and some Development Plans refer to specific transmission projects within their functional areas. EirGrid have carried out a study in relation to the electricity network and its potential to impact on land use as part of their Evidence Based Environmental Study 9 Settlement and Land Use (EirGrid, 2016f). A summary of this study is outlined in **Section 6.14.9**

6.7.2 Future Trends (Evolution of the Baseline)

The future of Irish agriculture depends on initiatives such as Food Harvest 2020 (which aims to increase Irish agri-food export by 2020), Bord Bia's Origin Green Initiative (which enables farmers and producers to set targets aimed at protecting the environment) and the Sustainable Healthy Agri-food Research Plan (SHARP) to make the best use of research and new technology in agriculture.

The equine industry in Ireland is continuously making advances in technology and these technologies are predicted to drive this industry forward in the future. However, the equine industry is potentially affected by the impacts of Brexit as there is a strong business link between Ireland and the UK.

The Irish Government has made a commitment to increase the forest area to 17% of the total land area by 2030. As referred to above, all new forestry is managed in line with the SFM principals, including a guideline of development of a buffer of natural riparian vegetation along rivers and streams (Forestry Service, 2000) (OPW, 2013).

The Forestry Service have produced a GIS based Forest Inventory Planning System (FIPS) to act as an aid in the long term spatial planning of national forest, and to provide guidance to forestry grants. This data provides further detail to that provided by the CORINE database, such as tree species.

In 2015 Coillte carried out a Business Area Unit[11] strategic plan review and produced new plans for the period 2016-2020.

As discussed in **Section 6.3.1**, the NPWS have prepared a *National Peatland Strategy*, a *Draft Raised Bog SAC Management Plan*, and a *Raised Bog NHAs Review*, to protect and manage significant peatlands in Ireland, which are designated under EU and National legislation. Additionally, the DAHRRG will be preparing SAC Management Plans for Blanket Bogs.

BNM have developed a '*Strategic Framework for the Future Use of Peatlands'* to guide future decision making in relation to potential future uses and developments on their cutaway bogs. BNM have also established an in-house Land Use Review System to continuously assess and evaluate the potential of the company's land bank (BNM, 2011). Some options for future land use include alternative energy (wind), biodiversity managed land, forestry and reclaimed agricultural land. In 2015, BNM announced that by 2030 approximately 125,000 acres of its bog land will have stopped harvesting peat for power generation and will have transitioned to a new sustainable business. Irish bogs will provide new biodiverse habitats that can also support new eco-tourism and community amenity resources.

[11] Coillte's estate is divided into 321 forests which are combined into 8 business area units (BAUs) such as the BAU 1 Northwest, BAU 2 West etc. (Colite, 2016)

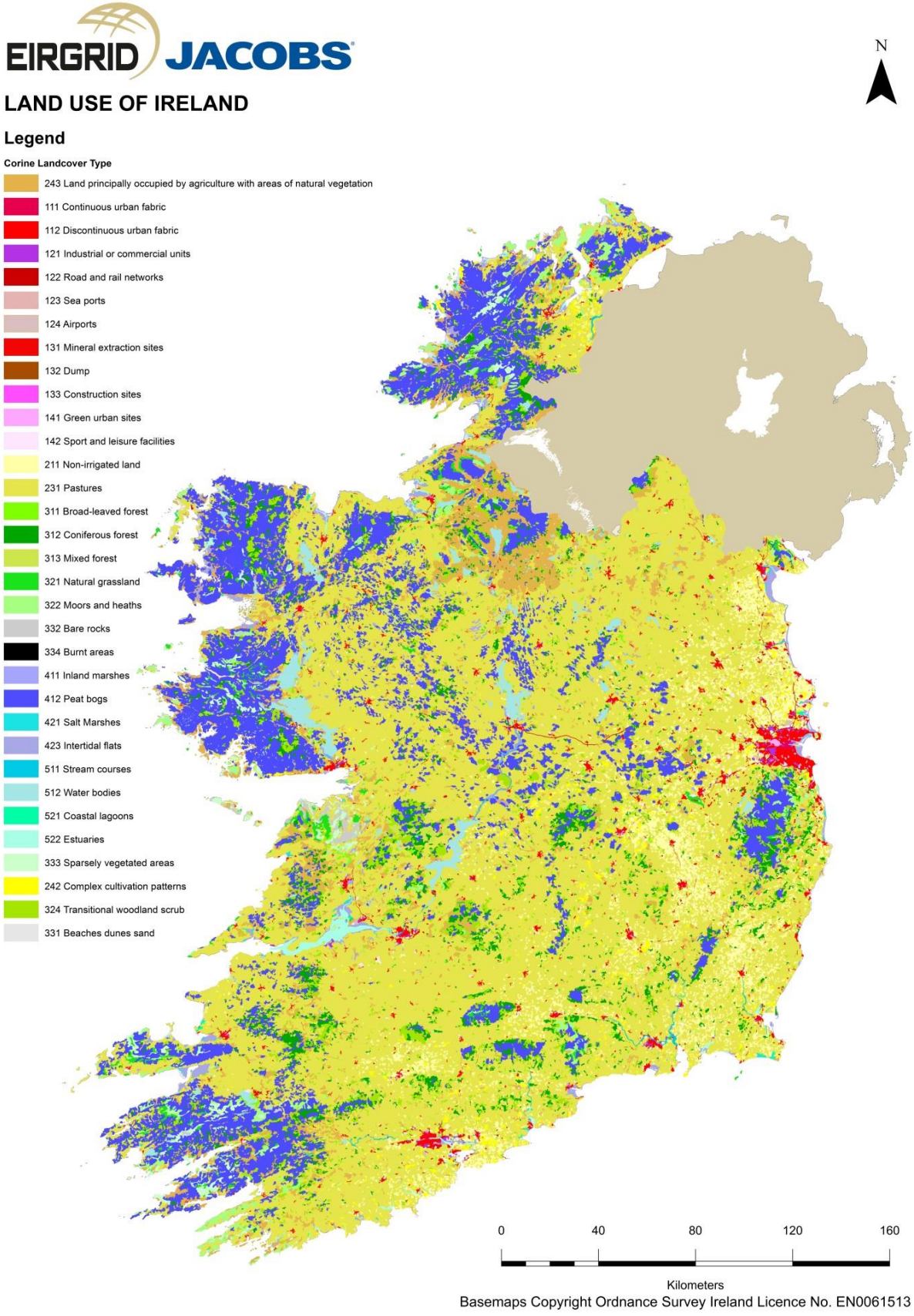


Figure 6.7: Land Use of Ireland (Source: EPA-CORINE)

6.7.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- Land take from agriculture areas, forestry and/or peatland;
- impacts on agricultural areas such as restriction on land use; primarily related to underground cabling and tower structures; and
- potential to restrict future planting of forestry

6.8 Air Quality and Noise

6.8.1 Existing Conditions

Under the Clean Air for Europe Directive, EU member states must designate "Zones" for the purpose of managing air quality. There are four such zones in Ireland as follows:

- Air Zone A: Dublin conurbation;
- Air Zone B: Cork conurbation;
- Air Zone C: Other cities and large towns; and
- Air Zone D: Rural Ireland.

Air Quality (EPA, 2016)

Current air quality in Ireland is of an acceptable standard and remains within the European Union (EU) legislative and target values. However, ozone, particulate matter and polycyclic aromatic hydrocarbons (PAHs) are emerging as pollutants of concern in the short term, when compared with World Health Organisation (WHO) guidelines and European Economic Area (EEA) reference level values. Levels of Nitrogen Oxide (NO) are also expected to increase. Under WHO and EU estimate, approximately 1200 deaths in Ireland are attributable to air pollution. Emissions of specific air pollutants from power generation have reduced in recent years.

The report outlines that improvements to air quality will rely on the continued/future regulation of emissions from fossil fuels and technology advances.

Air Quality

The air quality in Ireland is of good quality and compares favourably with other EU member states. In the last EPA Air Quality Report (2015), EU limit values were not exceeded. However, when comparisons were made between pollutant levels and the stricter non-legislative WHO guidelines and European Economic Area (EEA) reference levels, particular pollutants of note in an Irish context are emerging e.g. Ozone (O_3), Particulate Matter (PM_{10} / $PM_{2.5}$) and Polycyclic Aromatic Hydrocarbons (PAH) (EPA, 2015).

Scientific knowledge of the threats posed to people's health and the environment by air pollutants is improving. It is now clear that air pollution causes more damage than previously understood. The Department of Communications, Climate Action and Environment are therefore currently developing a National Clean Air Strategy with the aim of promoting policies to enhance and protect the quality of air in Ireland. The Strategy will provide the strategic policy framework necessary to identify and promote integrated measures across government policy that are required to reduce air pollution and promote cleaner air while delivering on wider national objectives.

Having a National Strategy will assist Ireland in developing the necessary policies and measures to comply with new and emerging EU legislation. The Strategy should also help tackle climate change. The Strategy will also consider a wider range of national policies that are relevant to clean air policy such as transport, energy, home heating and agriculture. In any discussion relating to clean air policy, the issue of people's health is paramount, and this will be a strong theme of the Strategy.

The European Commission held its first Clean Air Dialogue with Ireland in March 2017, to promote actions to improve air quality and contribute to Ireland's implementation of EU clean air legislation. (DCCAE, 2018)

The biggest contributors to air pollution in Ireland are vehicle emissions, electricity generation, industry and agriculture (EPA, 2016).

The persistent problem of 'smoky' emissions from the use of solid fuel in homes is one of the key present challenges in relation to air pollution. National estimates indicate that they are a key source of particulate matter (PM2.5). They are responsible for around 60% of all national emissions, though providing less than 5% of national energy demand. (DCCAE, 2018)

Noise

Noise is defined as unwanted sound and can be harmful to human and ecosystem health (WHO, 2003). The Noise Directive (2002/49/EC) relates to the assessment and management of environmental noise was transposed into Irish national legislation via the Environmental Noise Regulations (S. I. No. 140 of 2006). This Directive called for the development of strategic noise maps and action plans for major roads, railways, airports and cities. To date these have been produced for the road network only.

EirGrid have carried out a study in relation to the electricity network and its potential to impact due to noise emissions as part of their Evidence Based Environmental Study 8 Noise (EirGrid, 2016e). A summary of this study is outlined in **Section 6.14.8**.

6.8.2 Future Trends (Evolution of the Baseline)

Although air quality in Ireland is good, there is potential for emerging pollutants to rise above limits/targets in the future. Key contributors to emissions in Ireland are the transport and agriculture sectors. Agriculture emissions are projected to grow on an annual basis out to 2020 which reflects the impact of Food Harvest 2020 and removal of the milk quota. In total, agriculture emissions are projected to increase by 12% by 2020 on current levels. Transport emissions are also projected to show strong growth over the period to 2020 with a 12-22% increase on current levels depending on the level of policy implementation (EPA, 2013).

Future noise trends are difficult to predict. The Environmental Noise Regulations 2006 may be revised in future to enforce a stricter level of noise management, and further strategic noise maps and plans are to be developed.

6.8.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- Temporary, negative, construction phase impacts on air quality and create noise pollution.

6.9 Water

6.9.1 Current Conditions

The EU Water Framework Directive (2000/60/EC) establishes a framework for the protection of both surface and groundwater. Transposing legislation outlines the water protection and water management measures required in Ireland to maintain high status of waters where it exists and to prevent any deterioration in existing water status. The first cycle of the River Basin Management Plan (RBMP) ran from 2009-2015, where separate plans were devised for all eight River Basin Districts (RBDs) with the objective of achieving at least '*good*' status for all waters by 2015.

The second cycle of the *River Basin Management Plan: 2015-2021* is currently underway and this time the Eastern, South Eastern, South Western, Western and Shannon River Basin Districts have merged to form one national RBD. For the North Western and Neagh Bann International RBD (IRBD) a single administrative area was established in Ireland and management plans will coordinate with authorities in Northern Ireland.

Water quality data is collected by the EPA on a three-year cycle to provide an overall status of water quality. The river monitoring programme was set up, as part of the WFD, to assess not just water quality but water trends of rivers in relation

Inland & Marine Waters (EPA, 2016)

The current quality of water in Ireland is considered among the best in Europe. However, as acknowledged in the EPA report there are a number of issues that need to be addressed to bring all water bodies to a satisfactory level and to continue to protect water bodies which are currently in good condition.

Measures to improve water quality are being implemented in order to achieve Water Framework Directive (WFD) targets. These include the control and licensing of industrial discharges and the development of the River Basin Management Plan (RBMP).

to ecological and physico-chemical quality. This includes all major rivers and important tributaries. The WFD status of rivers in Ireland ranges from high to good, moderate, poor and bad.

In Ireland there are a total of 3,051 monitoring sites used for ecological status assessments representing 1,624 river water bodies. 1,500 of these stations are used to assess the physico-chemical quality of Irish rivers. Between 2010 and 2012, 53% of monitored river water bodies were classified as being at high or good ecological status, with 47% classified at less than good ecological status (EPA, 2015). The below figure shows the WFD status within each region.

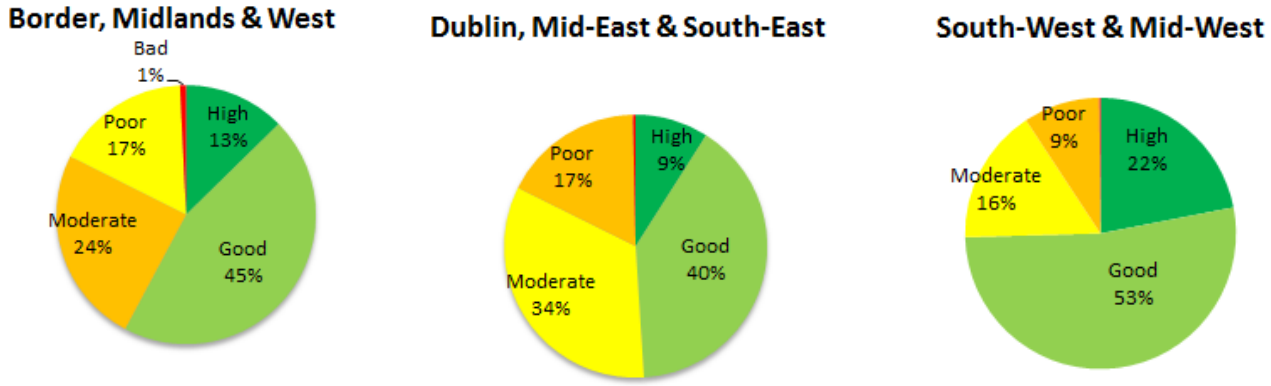


Figure 6.8: Waterbody WFD Status per Regional areas (Source: EPA)

There are approximately 12,000 lakes in Ireland, most of which are in the west and midlands. Due to high rainfall levels and little disturbance, many of the lakes in Ireland have a good ecological status. Like the river monitoring programme, a national lake monitoring programme was set up under the WFD.

The EPA undertakes water quality surveys for transitional and coastal waters bodies. Overall, the water quality status for estuaries and coastal waters is classified as good. The majority of Ireland's population live on or near the coast and this creates pressure for transitional waters. Pollution from agricultural runoff (nitrate) and urban wastewater pose the biggest threat to transitional and coastal waters.

The EU Groundwater Directive (2006/118/EC) uses a holistic approach to groundwater by addressing the relationships between groundwater, surface water and ecological receptors. Groundwater monitoring programmes have been established, under the WFD, to determine the environmental status of groundwater. Groundwater is considered by its ecological status, which is based on two assessments; chemical and quantitative status. Both of these need to be in good condition for the overall water body to be classified as good. The majority of groundwater in Ireland is at *good* status.

The Marine Strategy Framework Directive (MSFD) requires Ireland, to reach good environmental status (GES) in the marine environment by the year 2020. Since 2016 a programme of measures (POM) and monitoring programme has been in place to facilitate the overarching aim of the directive which is to protect and preserve the marine environment.

Flooding, particularly from fluvial and coastal sources, is an increasing problem in Ireland and there have been notable flood events over the last ten years with 2009 and 2014 being particularly bad. The OPW is the lead agency tasked with the management of flood risk in the ROI. In 2017, the OPW published their Flood Risk Management Plans (FRMP). The purpose of each FRMP is to outline the long-term strategy to manage flood risk in Ireland.

EirGrid have carried out a study in relation to the electricity network and its potential to impact on the water network as part of their Evidence Based Environmental Study 6 Water Quality and Aquatic Ecology (EirGrid, 2016c). A summary of this study is outlined in **Section 6.14.6**.

6.9.2 Future Trends (Evolution of the Baseline)

Ireland currently has a good understanding of the causes of water pollution, due to the implementation of the WFD. Proposed future development must meet the requirements of the WFD and aim to drive improvements and maintenance of water quality in the short term and provide a basis for the continued maintenance of good status in the future.

The EPA will continue to monitor the status of surface and groundwater bodies and are currently implementing the second cycle of RBMP.

The implementation of the POMs and monitoring for the MSFD is ongoing.

Key Action: Restore and Protect Water Quality (EPA 2016)

Continue to implement measures to achieve ongoing improvements to the environmental status of water bodies.

With the publication of the OPW FRMPs there will be a number of flood management projects rolled out across the country in the next number of years, and like the RBMP, these will be updated on a five-year cycle.

6.9.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- Potential for impacts to water quality and aquatic ecology associated with the management of the site (release of sediments or accidental spillages into the aquatic environment) during the construction phase.

6.10 Materials Assets and Infrastructure

6.10.1 Existing Conditions

National Material Assets and Infrastructure

National level material assets include transport infrastructure (road, rail, canal, airports and ports), power generation plants and supply networks, water supply, wastewater treatment infrastructure and waste disposal sites among others.

The road network in Ireland is approximately 5,000km long and is comprised of motorways, dual carriageways and single lane roads. Motorways now account for 1,187km of the national road network.

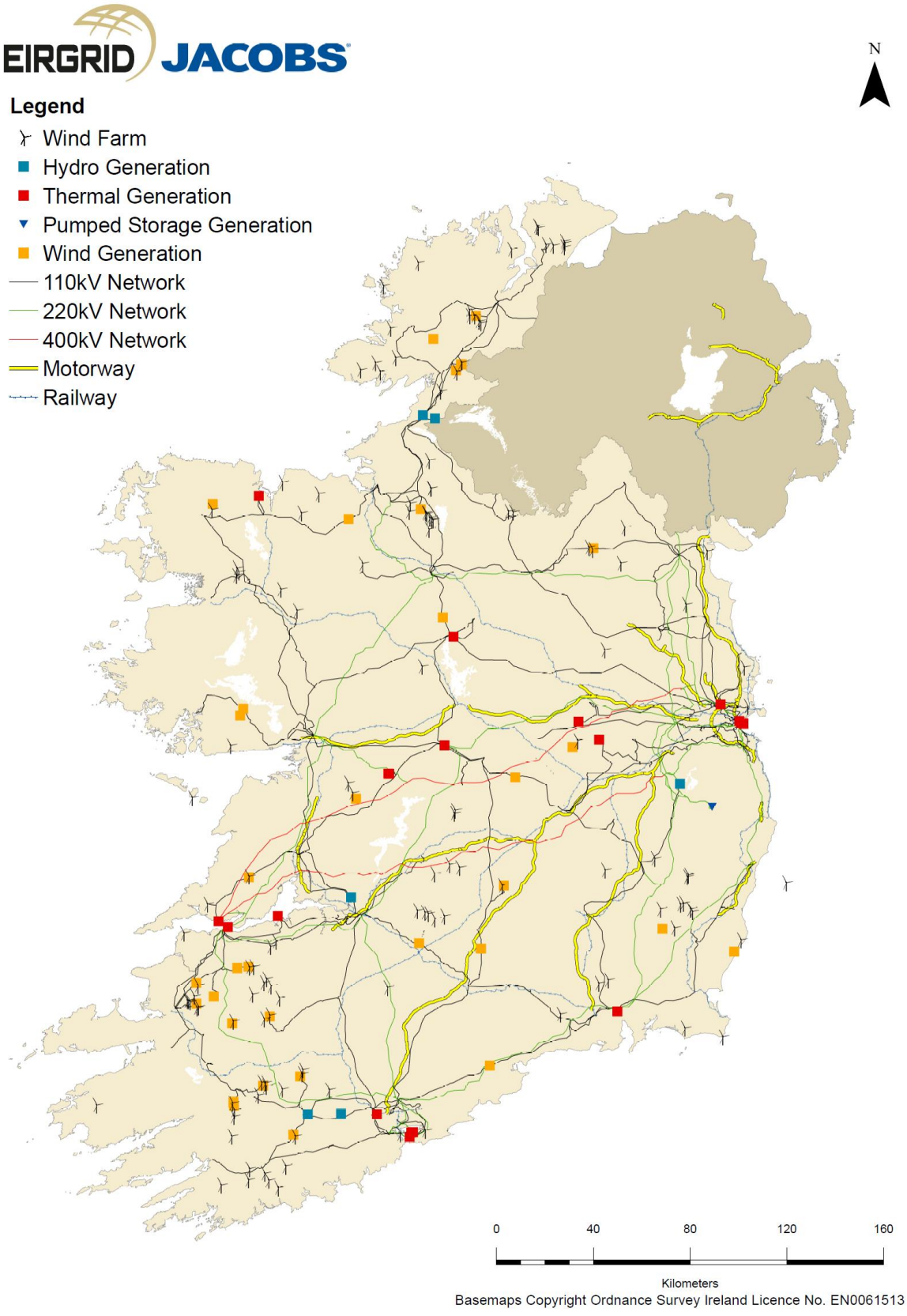


Figure 6.9: Material Assets (Source: Various)

The Iarnród Éireann rail network currently extends to approximately 2,400km of track. The network includes main line, Dublin suburban and commuter passenger routes, together with freight-only routes. There is a cross-border connection to the railway system in Northern Ireland between Dundalk and Newry. There is also the Dublin rail system serving Dublin City, Malahide, Howth and Greystones.

The three main airports servicing the country are Dublin, Cork and Shannon. There are also several regional airports including Donegal, Galway, Kerry, Knock, Sligo and Waterford.

The main Irish ports, in terms of tourism and trading, are Dublin Port, Rosslare Port and Cork Port. Dublin Port is the centre of unitised trade and has benefited greatly from the construction of the Dublin Port Tunnel. The tunnel links the port to the M50 which is highly important as the majority of Ireland's freight is distributed by road. Irish Ports handled 50.7 million tonnes of goods in 2015, an increase of 6.7% compared to 2014 (CSO, 2016).

There are eight main canal networks in Ireland including:

- The Grand Canal (144km), spanning from Dublin to the Shannon; and the Royal Canal (146km), spanning from the River Liffey in Dublin to the Shannon;
- Shannon Erne Waterway (63km), Leitrim Village to Upper Lough Erne;
- Shannon Navigation; and
- The Ulster Canal, spanning from Northern Ireland into parts of Monaghan.

Other important infrastructure types across the ROI include wastewater and water treatment plants now under the jurisdiction of Irish Water and landfill and other waste disposal/treatment facilities as licenced by the EPA.

Energy Related Material Assets and Infrastructure

During the period 1990-2016, energy requirements across all sectors[12] in Ireland grew by 52%. **Table 6-4** shows the breakdown of Energy Requirement (ktoe) and Percentage Share between 1990 and 2016. The use of oil has remained relatively steady over that period with the use of coal and peat more than half their 1900 figure. The use of natural gas has almost doubled during this period, but the most notable increase is in renewables with the percentage share increasing from approximately 2% to 8%. In 2016 renewable electricity generation (wind, hydro, landfill gas, biomass and biogas) accounted for 22.7% of gross electricity consumption (SEAI, 2017).

The Environment and Energy (EPA, 2016)

As indicated in the EPA's report, Ireland's energy systems will face a major transformation in the coming decades due to an international requirement to address and limit climate change. An important element of this transition is the decarbonisation of Ireland's electricity generation system. At present, fossil fuels provide approximately 90% of Ireland's energy supply. Fossil fuels are planned to be phased out through the deployment of renewable energy resources.
Investment in energy infrastructure, including energy efficiency and innovative energy management systems, distribution and smart grid systems by both public and private sectors is required to address current barriers. The transition to a fossil energy-free Ireland can provide short-, medium- and long-term benefits, including enhanced energy security and reduced costs, as well as significant co-benefits for human health, the environment and socio-economic development.

[12] Industry, Transport, Residential, Services and Agriculture.

Table 6-4: Ireland's Energy Requirement by Fuel (ktoe) and Percentage Share between 1990 and 2016 (SEAI, 2017)

Total Primary Energy Requirement (ktoe)										% Share		Trend 1990-2014
	1990	2000	2005	2010	2012	2013	2014	2015	2016	1990	2016	
Coal	2,085	1,815	1,886	1,241	1,493	1,323	1,262	1,426	1,373	22	9.5	↓
Peat	1,377	803	786	743	771	723	768	759	734	14.5	5.1	↓
Oil	4,422	7,859	9,130	7,294	6,246	6,300	6,249	6,672	6,911	46.6	48	↑
Natural Gas	1,446	3,059	3,477	4,701	4,033	3,841	3,721	3,761	4,231	15.2	29.4	↑
Renewables	168	235	373	688	835	901	1,021	1,150	1,158	1.8	8	↑
Wastes	-	-	-	9	44	58	63	62	66	-	0.5	↑
Elec. Imp.	0	8	176	40	36	193	185	58	-61	0	-0.4	↓
Total	9,497	13,780	15,828	14,716	13,457	13,339	13,270	13,888	14,412			

Specific to electricity generation natural gas is the dominant fuel increasing to approximately 48.5% since 1990. The most evident decrease has been in the use of oil for electricity generation. As of 2016 renewable electricity generation (wind, hydro, landfill gas, biomass and biogas) accounted for 27.2% of gross electricity consumption (SEAI, 2017).

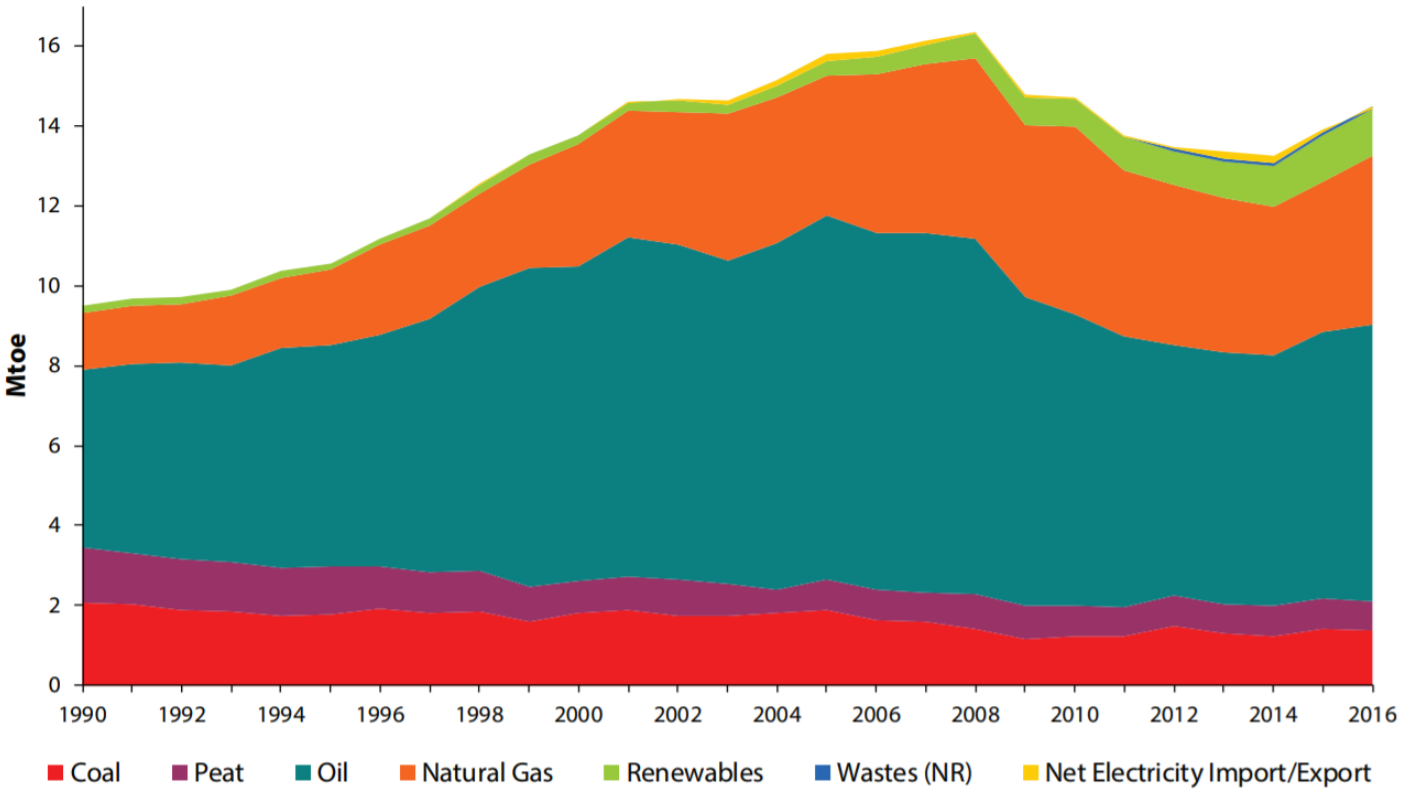


Figure 6.10: Primary Fuel Mix for Electricity Generation 1990 – 2016 (Source: SEAI)

Transmission connected generation includes:

- hydro generation;
- thermal generation;
- pumped storage generation; and
- wind generation.

The majority of connected thermal generators are in urban areas including Dublin, Cork and Belfast. Major hydro generators are located at Pollophuca and Ardnacrusha. The majority of wind generators on the transmission system are located in the south-west and north-west of the country.

The generation of renewable energy has been increasing over the past ten years, with a growth in the number of wind farms. There are over 200 wind farms operating in ROI, with total installed capacity of 2,441MW (megawatt).

The major power generation stations run by the ESB in Ireland include:

- Dublin: North Wall, Poolbeg and Dublin Bay Power;
- Cork: Aghada and Marina;
- Clare: Moneypoint;
- Offaly: West Offaly Power; and
- Longford: Lough Ree Power.

Waste (EPA, 2016)

Ireland is gradually moving away from reliance on landfills through the increasing focus on waste prevention, reuse, maximising recycling and using waste as a fuel in replacement of fossil fuels. This is being achieved by government policy which concentrates on waste as a resource. The report recognises that economic growth and an increase in construction will place increasing pressures on how waste is handled and managed.

EirGrid operate the transmission system primarily comprising 400kV, 220kV and 110kV lines, cables and substations spanning across Ireland, see **Figure 1.2**. EirGrid also operate the East West Interconnector, a 500MW High Voltage Direct Current (HVDC) link between the transmission grids of Ireland and Great Britain.

6.10.2 Future Trends (Evolution of the Baseline)

Transport Infrastructure Ireland (TII) has a number of projects in planning and construction phases. A major public transport scheme which has recently commenced operation is the Luas Cross City scheme. Road schemes which are currently in construction include the M11 Gorey to Enniscorthy project and a number of national road projects in Kilkenny, Roscommon, Galway and Cork. Road network schemes pertinent to the Grid IP which are currently in the planning stages of development include national road projects in Donegal, Mayo, Sligo, Galway, Cork, Kerry, Kildare and Meath. The continued expansion of the road, rail and other public transport networks will have a major influence on future economic and development trends in Ireland and, for which, the role of energy supply will have to factor in order to facilitate future demand.

The Government has implemented reforms to the water sector, which included the establishment of a state-led utility and a water metering programme run by Irish Water. This will continue to influence the prospects for and management of water-related infrastructure.

There are a number of national strategies and plans in place for Ireland's energy needs with specific plans developed regarding renewable energy including the Government's White Paper *Ireland's Transition to a Low Carbon Energy Future (2015-2030)*. One of the most recent is the government publication of the Department of Energy, Communications and Natural Resources (DECNR) *Offshore Renewable Energy Development Plan.*

The SEAI Strategic Plan 2010-2015 promoted renewable energy both on a large commercial scale and as microgeneration. SEAI is currently preparing to develop a new strategic plan to cover up to 2020.

In addition, a number of counties have developed stand-alone County Wind Energy and Renewable Energy Strategies which follow on from strategies outlined in individual County Development Plans.

There are a number of solar farms proposed throughout Ireland some of which have already received planning permission.

Energy Storage and other technologies may be more widely used in the future.

6.10.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- contribution to renewable energy targets through provision for connections for new energy sources and accommodating changing technologies and demand; and

- effects of construction on current infrastructure such as road/rail/waterway networks.

6.11 Tourism and Recreation

6.11.1 Existing Conditions

Tourism and recreation is influenced by a range of factors in Ireland. For example, natural heritage in Ireland is characterised by a range of scenic landscapes which offer tourism and recreational opportunities such as walking, beaches, equestrian activities and golfing.

As a result of tourism being impacted by the economic downturn in 2008, the Government and tourist bodies developed a number of initiatives to counteract the negative impact and to begin promoting Ireland as a tourist destination. One such project '*The Gathering'* attracted over 250,000 visitors to Ireland in 2013 (Fáilte Ireland, 2013).

Environmental Health & Wellbeing (EPA, 2016)

Ireland has a high level of green spaces (parklands, woods, open countryside) and blue spaces (lakeshores, seashores, ponds and rivers) which contribute to good health and healthy lifestyles. The protection of these resources is seen as essential to environmental health and wellbeing.

International tourism has increased in recent years. Approximately 25 million passengers passed through Dublin Airport in 2015 and 1.7 million passengers in Shannon. There was an overall 12.5% increase in the number of passengers travelling through Irish airports in 2015 when compared with 2014 figures. A total of 193 cruise vessels arrived into Irish ports in 2015, carrying approximately 241,872 passengers (CSO, 2016).

Ireland supports a number of water-based activities such as fishing/angling, water sports, boating and surfing. Angling is an important amenity activity and some of the more popular angling areas include Lough Derg and Lough Ree in the midlands. There is a number of sea angling centres located around the coast of Ireland ranging from Dún Laoghaire (south of Dublin) to Donegal Bay on the west coast. The Shannon region encompassing parts of Co. Clare, and Co. Limerick is a popular boating and angling location in Ireland and is home to Lough Derg, as previously mentioned.

The newly developed Wild Atlantic Way managed by Fáilte Ireland, is a long-distance touring route along the west coast from Donegal to West Cork. This development aims to achieve greater visibility for the west coast of Ireland in overseas tourist markets. The route encompasses major scenic areas including Malin Head, Downpatrick Head, Cliffs of Moher, Skellig's Viewpoint, Mizen Head and Old Kinsale Head and cultural towns including Bundoran, Westport and Dingle. In addition, the WAW Irelands' Ancient East of the River Shannon, extending from Carlingford to Cavan and south to Cork City, including East County Cork and East County Limerick.

Many of the cutaway bogs of the midlands have been transformed into a sanctuary for wildlife and amenities. BNM harvested peat in the Boora Bogs during the twentieth century and, have since rehabilitated the site into the Lough Boora Parklands. The parklands are a tourist attraction with cycling and walking routes.

The National Trails Office promotes the use of recreational trails on a national basis in Ireland and maintains a National Trails Register, under which there are more than 780 trails listed, see **Figure 6.11** for these national trails in relation to the exiting transmission network.

Failte Ireland conducted a Visitor Attitudes Survey in 2016 and 'beautiful scenery', 'good range of natural attractions' and 'natural, unspoilt environment' scored highly on the importance of environmental factors for considering Ireland for a holiday, therefore this was considered in developing the transmission network. (Failte Ireland, 2017)

Cultural heritage sites in Ireland also support heritage-related tourism and recreation, and landscape is also an important aspect in terms of tourism.

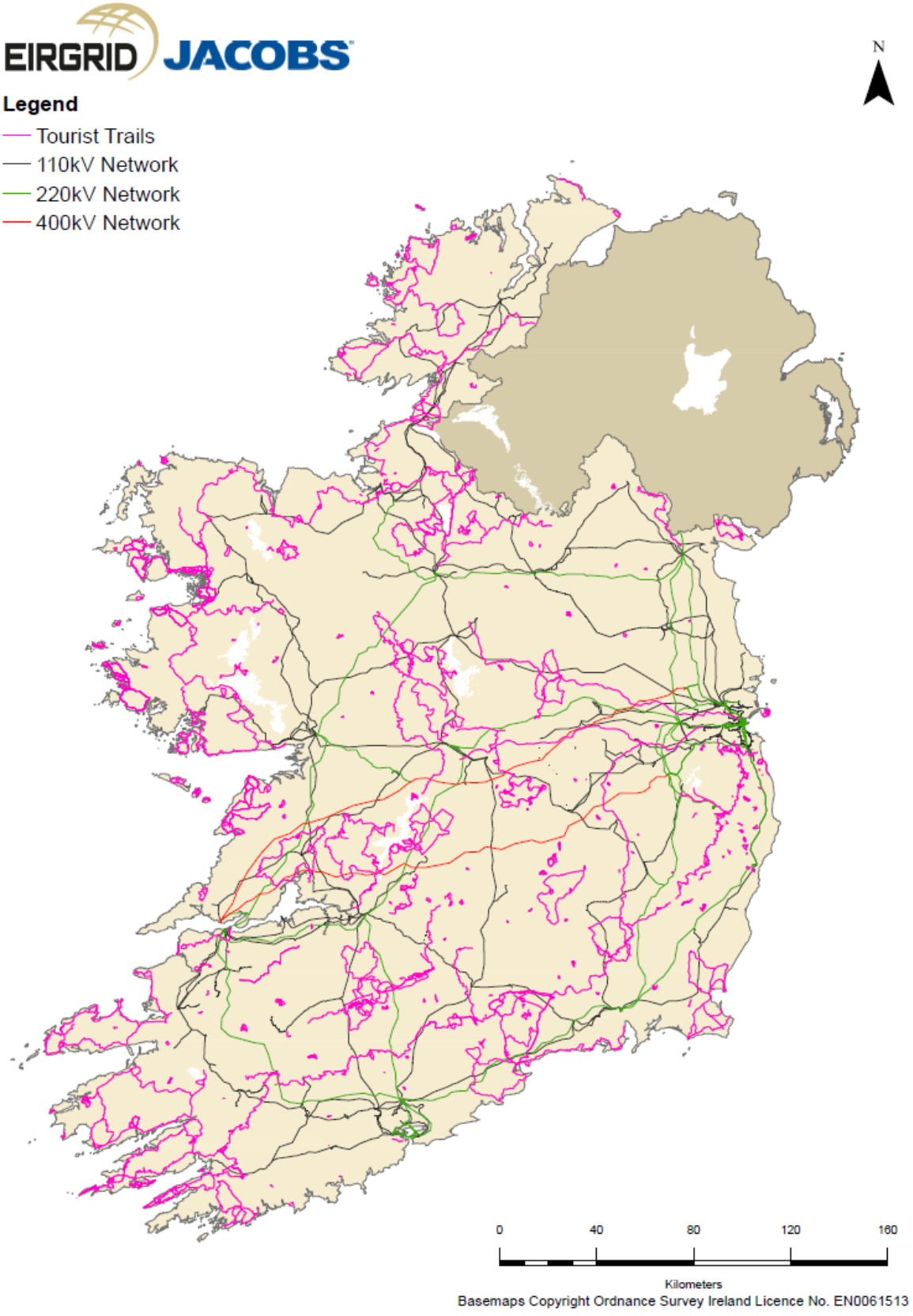


Figure 6.11: National Trails Ireland (Source: National Trails)

6.11.2 Future Trends (Evolution of the Baseline)

Many of the County Development Plans report that the growth of tourism plays a major role in future development.

Transport infrastructure is continuously developing to cater for increased tourism. Dublin Airport Authority (DAA) is currently in the planning stages of delivering a new runway, which is expected to be completed in 2020.

Dublin Port Company prepared a Masterplan covering the period 2012-2040 in order to allow planning for sustainable growth of the Port including increased cruise liner capacity.

Uncertainty surrounding the decision in the UK to leave the EU is already having an effect on the rate of sterling and Ireland's tourism business from Britain may be negatively impacted.

National Strategy for Angling Development 2015-2020 will govern the protection of angling infrastructure innovation and promotions up to 2020. The Grid IP aims to maintain job stability in this sector and ensure that fish stocks are protected and enhanced for both their economic and recreational benefit to the visitors they serve across Ireland.

EirGrid have made a number of commitments under this initiative: *Your Grid, Your Views, Your Tomorrow*. Responding to Tourism Concerns that will influence the development the Grid into the future include:

- give appropriate consideration to landscape when identifying and evaluating project options;
- identify the nature of tourism in the project area; and
- consider cumulative/in-combination impact on tourism.

6.11.3 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- potential to restrict or reduce the quality of resources important for recreation and/or tourism.

6.12 Climate Change

6.12.1 Background

The recent Climate Action and Low-Carbon Development Act 2015 was established to provide for the approval of plans by the Government in relation to climate change.

The internationally agreed Kyoto Protocol established emissions reduction targets in order to reduce greenhouse gas emissions. Ireland's initial emission target for GHGs was to limit the increase in their combined emissions during the five-year period 2008-2012 to 13% above 1990 levels. Compliance with the Kyoto Protocol limit was achieved (EPA, 2013).

Climate Change (EPA, 2016)

Ireland's Green House Gas (GHG) emissions, per capita were the tenth highest in Europe in 2014. Fossil fuel combustion (60.1%) is the principal source of emissions, followed by agriculture (32.2%). Ireland is considered particularly vulnerable to extreme weather events and sea-level rises caused by climate change.

The report outlines that to achieve the 2020 emissions targets (20% below 2005 levels), continuous reductions are required. Emissions from large industrial sources such as electrical power generation are addressed through the EU Emissions Trading System (EU ETS). The other sectors to be targeted in Ireland are the agriculture and transport sectors.

The EU emissions trading system (EU ETS) was launched in 2005 as an international company-level 'cap-and trade' system for reducing emissions of greenhouse gases. The EU ETS was established under Directive 2003/87/EC and was implemented in Ireland under S.I. 490 of 2012 and S.I. No. 261 of 2010 as amended. Irish participants in the ETS reported 7% fewer greenhouse gas emissions for 2013 than in 2012 (EPA, 2016).

Ireland has been set a target to reduce non-ETS sector emissions by 20% below 2005 levels. The latest EPA projections estimate that, at best, an 11% reduction of non-ETS emissions will be achieved by 2020. The main sectors that will influence our target are agriculture and transport, which are both set to continuously increase.

National policy aims to achieve an 80% reduction in CO_2 emissions by 2050, compared to 1990 levels. Policy is focusing on achieving this across the electricity generation, built environment and transport sectors and aims to move toward a carbon-neutral approach in the agricultural and land-use sectors.

Key Action: Climate Change (EPA, 2016)
Need to accelerate the implementation of mitigation measures/adaptation to reduce GHG emissions/increase resilience to adverse climate impacts.

All forms of renewable energy have experienced growth over the last number of years and the overall share of renewables in primary energy stood at 7.7% in 2014 (SEAI, 2015). The Government's Energy White Paper *Delivering a Sustainable Energy Future for Ireland - the Energy Policy Framework 2007-2020*, includes a target for the meeting of 40% of electricity consumption from renewable energy by 2020.

Future changes in climate and associated impacts on sea level, rainfall patterns/intensity and river flow will influence flooding frequency and extent in the future. Local Authorities in compliance with the Regional Planning Guidelines requirements are attempting to adopt sustainable flood risk strategies in areas likely to be at risk of flooding in the future in the context of climate change and changing weather patterns. Changes to climate could lead to an increase in flooding events in Ireland. The OPW has undertaken a number of Flood Risk Management Studies for different River Basin Districts (RBDs) in Ireland. One of the most affected areas in Ireland is the Shannon region. These studies have identified the areas which are most at risk and future management plans have been advised. In some cases, mitigation measures will involve the construction of physical flood defenses.

6.12.2 Key Interactions with the Plan

The projects proposed in the Grid IP have the potential to have the following impacts on the baseline environment:

- construction impacts on or constraints from flood risk areas and the location of any proposed flood defence schemes;
- resilience of infrastructure to extreme weather events; and
- support for reduction of greenhouse gas emissions.

6.13 Transboundary Issues

The SEA considers, where relevant and/or appropriate, potential transboundary effects in Northern Ireland. In addition, mitigation which has been developed as part of this SEA can be applied for any potential transboundary effects in the same manner in which they are applied for effects in the Republic of Ireland. The key issues are similar to those outlined under each theme in the previous sections but the key findings in relation to Northern Ireland are detailed in the table below.

Table 6-5: Northern Ireland Baseline Environment

SEA Topic	Key Findings
Population, Human Health and the Economy	The latest figures from NISRA show that in June 2016, the Northern Ireland population was estimated to be 1,862,137, an increase of 6.8% over the decade from 2006 and an increase of 20.9% since 1971. The population is projected to top 1.90 million by 2021, with further growth to 1.97 million by 2032. The 2 million milestone is anticipated to be reached by 2040.
Biodiversity, Flora and Fauna	Many habitats in Northern Ireland could be affected by implementation of the Grid IP. A number of internationally and nationally designated sites should be considered when proposing cross-border strategies. • Special Protection Areas (SPA) – 16;

SEA Topic	Key Findings
	• Special Areas of Conservation (SAC) – 58; • Ramsar Sites - 20; • Nature Reserves – 48; • Marine Nature Reserves – 1 (Strangford Lough); • Areas of Special Scientific Interest (ASSI) – over 400; • Sites of Local Nature Conservation Importance (SLNCIs) – over 100; • Areas of Outstanding Natural Beauty – 9; • World Heritage Site – 1 (Giant's Causeway).
Landscape and Visual Amenity	The landscape environment and trends are similar in Ireland and Northern Ireland and therefore the same key issues should be considered.
Cultural Heritage	Cultural Heritage designations of Northern Ireland should be considered when making plan recommendations. • Sites and Monuments – approximately 16,000; • Monuments in State Care – almost 200; • Scheduled Historic Monuments – almost 2,000; • Historic Buildings – over 9,000; • Listed Buildings – approximately 8,500; • Areas of Significant Archaeological Interest – 10; • Conservation Areas – 60; • Defence Heritage Features – over 600; • Battlefields – over 30; • Heritage Gardens Inventory – over 154; and • World Heritage Sites – 1 (The Giant's Causeway). The Northern Ireland Department of Communities historic environmental datasets have been important in consideration of potential transboundary impacts on the setting of heritage assets along the border region. These are available at: https://www.communities-ni.gov.uk/services/historic-environment-map-viewer
Geology and Soils	Similar geological make up in terms of the presence of predominantly limestone, but also granite, sandstone and basalt. Numerous ASSI's have been designated for geological value and should be considered when making plan recommendations.
Air Quality and Noise	There are 28 Air Quality Management Areas that are leading the activity to tackle air quality problems. There is continued improvement in air quality, but problems do remain for nitrogen dioxide emissions due to transport. Agricultural emissions from ammonia remain high and threaten ecosystems and habitats. Continued effort is required to reduce air pollution from key sources such as road transport and agriculture. Noise emissions are of a similar level to Ireland with similar sources.
Water	There are numerous waterbodies which cross the Irish border which have the potential to cause transboundary impacts. Cross border catchments in Ireland include: • Lough Neagh and Lower Bann: This catchment includes the area drained by the River Bann and by all streams entering tidal water between the Barmouth and Ballyaghran Point, Co. Derry. This is a cross border catchment with a surface area of 5,787km², 374km² of which is located within the Republic of Ireland (RoI). • River Foyle: The Foyle catchment includes the area drained by the River Foyle and by all streams entering tidal water between Culmore Point, Co. Derry and Coolkeeragh, Co. Derry. This is a cross border catchment with a surface area of 2,919km², 914km² of which is located within the Republic of Ireland (RoI). The eastern half of the catchment, located in Northern Ireland, drains most of County Tyrone and a small part of north western County Derry. The part of the catchment located in Donegal is largely mountainous.

SEA Topic	Key Findings
	• Newry, Fane, Glyde and Dee: This catchment includes the area drained by the Newry, Fane, Glyde and Dee rivers, and by all streams entering tidal water between Murlough Upper and The Haven, Co. Louth. This is a cross border catchment with a surface area of 2,125 km², 1390 km² of which is located within the Republic of Ireland (RoI). The cross-border impacts to these waterbodies should be considered when making recommendations within PLUTO 2040. Any proposals that might involve construction within Northern Ireland should consider the wider water environment of Northern Ireland.
Materials Assets and Infrastructure	Viable agricultural land is a key asset to the Northern Ireland economy; approximately 75% of Northern Ireland's land is used for agriculture. Forestry is also a significant asset to Northern Ireland. Forests and woodlands provide important habitats, natural resources and diversity to landscapes. NI has the lowest level of tree cover (8%) of any UK regional territory or EU member states. Resource depletion is becoming an increasingly significant issue at a global and national level. Registered forest and woodlands are recognised for the significant part the play in tourism and recreation as well as enhancing and protecting habitats and biodiversity. Given the role forestry plays in carbon offsetting, and the current low levels of afforestation at present it is expected that the area covered by forest will not increase significantly but the level of protection will remain high. Ireland has many important road connections with Northern Ireland in addition to a cross-border rail connection between Dundalk and Newry. Northern Ireland has three commercial airports, in Belfast International Airport and Belfast City Airport and City of Derry Airport, as well as five commercial ports in Belfast, Larne, Londonderry, Coleraine and Warrenpoint. Any proposals in proximity to Northern Ireland should assessed in terms of the potential to impact or reduce access to transport networks in or to Northern Ireland.
Tourism and Recreation	Tourism Ireland in its 2018 Marketing Plan has committed to promoting tourism in Northern Ireland including major themes attractions such as the Causeway Coastal Route, Titanic Belfast, the Giant's Causeway, National Trust properties and 'Screen tourism' such as the Game of Thrones tours and attractions. (Tourism Ireland, 2017) Many overseas visitors take the opportunity to visit Northern Ireland when visiting Ireland and vice versa. Any proposals in proximity to Northern Ireland should assessed in terms of the potential to impact or reduce access to tourism and recreation attractions in Northern Ireland.
Climate Change	There is evidence that the climate in Northern Ireland is changing. There has been a reduction in greenhouse gas emissions, but road transport emissions are still increasing. There are government targets towards reducing greenhouse gas emissions of at least 35% by 2025 based on 1990 levels but this will prove challenging. The UK Climate Change Act commits the UK to reducing emissions by at least 80% by 2050 from 1990 baseline levels. In 2015, Northern Ireland's total greenhouse gas emissions accounted for 4.2% of the UK total. Since the base year (1990), Northern Ireland's total greenhouse gas emissions have decreased by 17.8% from 25.2 to 20.7 million tonnes of carbon dioxide equivalent (MtCO2e). This is less than the reduction seen for the UK as a whole, which saw a decrease of 38.2% compared to the base year.

6.13.1 Key Interactions with the Plan

The plan does not include proposals for projects within Northern Ireland, however depending on the projects implemented there is potential for transboundary effects from infrastructure physically close to the border and from related requirements for upgrading or new infrastructure. The interactions with the plan and the environment of Northern Ireland and the mitigation measures required are expected to be similar in type to those identified in Ireland.

6.14 Summary of EirGrid Evidence Based Environmental Studies (EBES)

This section summarises the EBES which have informed the development of the EirGrid guidance documents which are being utilised in the development of current and future EirGrid development projects. **Table 6-6** indicates how these EBES have direct and indirect relevance to the baseline aspects detailed in **Section 6.2** to **6.12** above and have supported consideration of likely significant effects on the environment of the Grid IP.

Table 6-6: EBES in relation to Baseline Aspect

Aspect	EBES									
	EBES 1 - EMF	EBES 2 - Cultural Heritage	EBES 3 - Bats	EBES 4 - Habitats	EBES 5 - Birds	EBES 6 - Water Quality & Aquatic Ecology	EBES 7 - Soil and Geology	EBES 8 - Noise	EBES 9 - Settlement & Land Use	EBES 10 - Landscape & Visual
Population, Human Health and the Economy	√√	√		√		√	√	√	√√	√
Biodiversity, Flora and Fauna			√√	√√	√√	√√				√
Landscape and Visual Amenity		√		√					√	√√
Cultural Heritage		√√								√
Geology and Soils							√√		√	
Air Quality and Noise								√√		
Water				√		√√				√
Materials Assets and Infrastructure									√√	
Tourism and Recreation		√		√					√	√
Climate Change										

√√ - EBES has direct relevance

√ - EBES has indirect relevance

6.14.1 Evidence Based Environmental Study 1: Electromagnetic Fields (EMF)

This study addressed and reviewed the potential human health impacts of EMFs.

The most recent published electric field and magnetic field reference levels as recommended by the International Commission on Non-Ionizing Radiation Protection[1] (ICNIRP, 2010) are 200 μT for magnetic and 5 kV m-1 and electric field strength.

Responsibility for managing potential health impacts of EMF in Ireland lies with the Department of Housing, Planning, Community and Local Government and the Environmental Protection Agency (this function was formally with the Radiological Protection Institute of Ireland (RPII) which merged with the EPA in 2014). In statements regarding EMF and health, the department refers to compliance with ICNIRP guideline exposure limits, although there is no specific transposition of the EC Recommendation (1999/519/EC) for adoption of 1998 ICNIRP guidelines into Irish Government policy.

The aim of this study was to compile a robust evidence base from high-voltage transmission in Ireland to scientific knowledge relating to potential health impacts. The EMF surrounding overhead lines (OHL) (110kV, 220kV and 400kV) was measured at distances between 0-100m and Under Ground Cables (UGC) (110kV and 220kV) at distances between 0-12m and 0-50m respectively. The EMF emitted from substations was also measured at distances between 0-50m.

Magnetic field strength depends directly on the load (amount of power) carried by the different transmission infrastructure types, and so it is necessary not only for such an assessment to take account of measurements taken under typical operating conditions, but also for measurements and analysis to consider (real-world) high-load conditions i.e. during periods when the load on the transmission grid is greater than average.

The maximum magnetic field strengths measured at all OHLs, UGCs and substation perimeters surveyed were below the ICNIRP reference levels for EMF. The maximum electric field strengths measured at all OHLs and substation perimeters surveyed were also below the ICNIRP reference level. UGCs produce no electric field above ground. Under the EC recommendation (1999/519/EC), these public exposure guidelines are applicable primarily to long-term, residential exposure. The maximum electric field strength measured from the highest-voltage overhead line (400 kV) is relatively close to the ICNIRP reference level for electric fields.

A key subject that has emerged in recent years regarding EMF and existing or proposed high-voltage electricity transmission infrastructure is that it is essential to address public perceptions of the health risk, in addition to managing the actual risk. Perceived risk and anxiety regarding health (or other effects) can itself induce stress that can lead to adverse health outcomes. Remaining within the guideline reference level is considered appropriate to protect health. However, health protection bodies suggest that public perception of risk can be addressed through the application of a precautionary approach in which unnecessary magnetic field exposure is further reduced, based on health impacts research literature in this field. Although remaining within the guideline reference level is considered appropriate to protect health. EirGrid typically aim, on the grounds of residential amenity and visual impact, to site new high-voltage transmission infrastructure away from populated areas and to maintain at least a 50m distance from individual dwellings, where possible. This existing approach offers a further reduction in magnetic field exposure, as the field strength decreases rapidly with distance from the power line.

6.14.2 Evidence Based Environmental Study 2: Cultural Heritage

This study examined the actual effects of the construction, presence and operation of high voltage transmission projects on Ireland's cultural heritage. The study reviewed available monitoring and excavation reports undertaken for transmission projects over the last 40 years and found limited issues in terms of negative effects on cultural heritage resources.

This study determined that individual designated monuments, protected structures, NIAH structures and gardens tend to be limited in physical extent, and are therefore, not difficult to avoid and were generally successfully

avoided for previous infrastructure projects. Significant but undesignated archaeological sites, buildings and designed landscapes also generally tend to be limited in extent and can most often be avoided.

In order to facilitate early identification and avoidance of cultural heritage sites, early stakeholder engagement, the completion of robust constraints and route selection studies and EIS reports and field survey/investigative work is important.

The study identified that good practice for the construction of transmission projects depends on:

- early and appropriate consultation and correspondence with relevant authorities and stakeholders;
- robust cultural heritage reporting throughout the planning stages;
- community involvement in the identification and reporting of non-designated assets from an early stage;
- consideration for the interaction between cultural heritage and landscape and visual impacts;
- full consideration of possible routing or technology options, informed by archaeological assessment/architectural heritage surveys; and
- appropriate mitigation.

6.14.3 Evidence Based Environmental Study 3: Bats

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

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

The primary issue identified was not the physical presence of transmission network infrastructure and EMF but the potential for the removal of habitats and the 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 possible.
- Where complete clearance of vegetation 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 affirmed 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.

6.14.4 Evidence Based Environmental Study 4: Habitats

This study examined the impacts of high voltage transmission infrastructure on natural and semi natural habitats in Ireland and provided a factual basis for the updating of the *Ecology guidelines for transmissions projects in Ireland* (in prep). The field study focused on peatland habitats and semi-natural grassland habitat.

The field study and review of literature found that construction and maintenance of electricity transmission infrastructure can affect 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 will allow for significant impacts to be avoided or reduced on sensitive habitats. Peatlands were

determined to be the most sensitive habitats to impacts due to construction works and grassland habitats were determined to recover rapidly following construction related disturbance.

The study showed that in peatland habitats, local plant composition and richness can vary between the area adjacent to transmission infrastructure and control sites. However, changes in overall habitat classification were not identified. At the sites examined peatland species displayed some differences in composition related to distance from transmission infrastructure. The abundance of *Sphagnum spp,* cottongrass, deergrass and lichen decreased close to the structures (where the most disturbance would have occurred during construction) whereas species including sedges, purple moor-grass and rush increased closer to the structures. There was no statistically significant difference determined for grassland habitats.

6.14.5 Evidence Based Environmental Study 5: Birds

Study 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 guidelines for transmission projects in Ireland* (in prep).

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 collisions. 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 bird collisions include line route assessment in the first instance and line marking to increase visibility to birds where risks remain after routing.

6.14.6 Evidence Based Environmental Study 6: Water Quality & Aquatic Ecology

This study examined the potential impacts of electricity transmission infrastructure on water quality and protected aquatic species.

The study assessed the impacts of the construction, maintenance and operation of OHLs, UGCs, substations and associated infrastructure. Potential impacts are usually 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.

Field based studies involved the collection of biological, physical and chemical samples from watercourses, both upstream and downstream of construction points. Results of the study varied with higher sediment, oxygen and nutrient values being detected downstream on some sites and upstream on others. Likewise, a number of sites showed no change before or after construction, while others displayed higher sediment and nutrient readings post-construction. Therefore, no consistent change to downstream suspended sediment level was found. The study further found that the cause of increased levels varied between sites, with sources including construction works taking place near watercourses with limited/no buffer zone, site clearance, damage/alteration to river banks/riparian zones, or site flooding.

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. Full restoration of any physical changes to river banks were recommended to avoid long-term impacts due to erosion and the release of sediments.

6.14.7 Evidence Based Environmental Study 7: Soils & Geology

Study 7 examined the actual 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.

6.14.8 Evidence Based Environmental Study 8: Noise

This study assessed the actual noise effects of construction and the presence of high voltage transmission infrastructure (OHLs and substations) in Ireland. UGCs were excluded from the study as they do not create any significant noise.

The types of audible noise associated with electricity infrastructure are:

- corona noise (crackling/hissing sound) emanating from high voltage transmission lines when the voltage gradient exceeds a certain critical value;
- noise resulting from dirty damaged or cracked insulators and substation equipment; and
- aeolian noise resulting from wind blowing through electricity infrastructure.

Noise surveys were carried out at locations along 110kV, 220kV and 400kV OHLs and substations. Surveys were undertaken when the line was in operation (on) and switched out (off) in order to compare noise levels for these two survey types.

Corona noise can become a significant issue from 300-500kV and above, and therefore significant noise impacts are not likely for 110kV and 220kV transmission lines. Evidence provided from the study of 400kV lines, determined that these lines produce significant corona noise effects under certain conditions (i.e. at night or under humid and wet weather conditions). Steady-state noise levels were recorded in the vicinity of substation boundaries for all voltages.

Planning for 110kV and 220kV lines should not be significantly constrained based on potential noise issues. The study recommended a distance of 200m and 100m between any property and 400kV towers and OHL, respectively. It also recommended that, a minimum distance of 5m, 20m and 150m is maintained between the land boundary of any sensitive receptor and a 110kV, 220kV and 400kV substation, respectively.

6.14.9 Evidence Based Environmental Study 9: Settlement & Land Use

Study 9 examined the actual effect of construction and the presence of high voltage transmission infrastructure on patterns of settlement and land use in Ireland.

The existing network generally avoids urban areas and aims to avoid areas of environmental significance. However, the network interacts with urban outskirts and passes through agricultural and rural areas. There is an absence of recorded significant impacts on settlement patterns and land use and this is attributed to the large amount of published information regarding best practice route design and site design guidelines which account for a variety of conditions and environments.

The study examined 31 cases including 17 existing OHL circuits, ten substations and four sites under construction. These sites were located in urban, urban/rural and rural areas. Coexistence of buildings and transmission infrastructure, development density, planning policy and planning application were also considered. Low levels of coexistence were observed in rural areas. Coexistence increased in urban/rural and urban areas. However, coexistence within 0-30m of OHLs is minimal due to health and safety regulations. The study found that there was no significant variation in development density with distance from transmission infrastructure and current plans and policies tend to integrate the grid and renewables into their decision-making process.

The study identified no evidence to suggest that the construction or existence of transmission infrastructure causes significant impacts on settlement and land use. Impacts tend to be localised, occurring within the vicinity of towers and circuits. In built-up areas, issues are mainly linked to restrictions on future land use. Planning policy in respect to this type of infrastructure is increasing and planning authorities are implementing stricter controls in terms of safety distances and impacts on settlement and sensitive land uses.

6.14.10 Evidence Based Environmental Study 10: Landscape & Visual

This study examined the actual visual and landscape effect of towers and substations over a range of Ireland's typical landscapes.

In order to assess how landscape character affects the impact of transmission infrastructure and how this changes over distance, the visual impact from 100 to 3,200 metres was examined in the study. The landscape and visual effects from 110kV, 220kV and 400kV towers and substations were found to be significant for all sites included in the study. The study found that the majority of significant effects were within 400m of all towers (96%) and substations (86%) and impacts were significantly reduced with distance. In addition, no visual effects were found after 800m.

The study determined that screening aids such as tree and hedgerow planting can help to reduce the impact of 110kV towers. However, screening is not as effective at reducing the prominence of 220kV and 400kV. Therefore, the routing of lines to maximise 'backclothing' can be utilised to reduce the impact of 220kV and 400kV towers.

Landscape and visual effects from 110kV, 220kV and 400kV towers and substations were found to be significant for all sites included in the study. Effective screening would be required to reduce the impacts associated with 110kV lines and back-clothing can be utilised to reduce the impact of 220kV and 400kV towers.

Key Messages from Chapter 6:

- The purpose of the baseline data gathering is to inform the key issues and identify the likely significant effect from the Grid IP.
- Desk based baseline information was collated over a range of 11 aspects as follows:
  - Population, Human Health and the Economy;
  - Biodiversity
  - Landscape and Visual Amenity
  - Cultural heritage
  - Geology and Soils
  - Land use
  - Air Quality and Noise
  - Water
  - Material Assets
  - Tourism and Recreation
  - Climate Change
- The EPA State of the Environment Report, which outlines the current understanding of the environment in Ireland and sets seven key actions to address ongoing issues, was reviewed to inform the key issues and identify the likely significant effects of the Grid IP.
- A review of the EirGrid EBES was undertaken and the key findings of these studies over a number of aspects helped to inform the key issues and identify the likely significant effects of the Grid IP.

7. Programme, Plan and Policy Review

7.1 Introduction

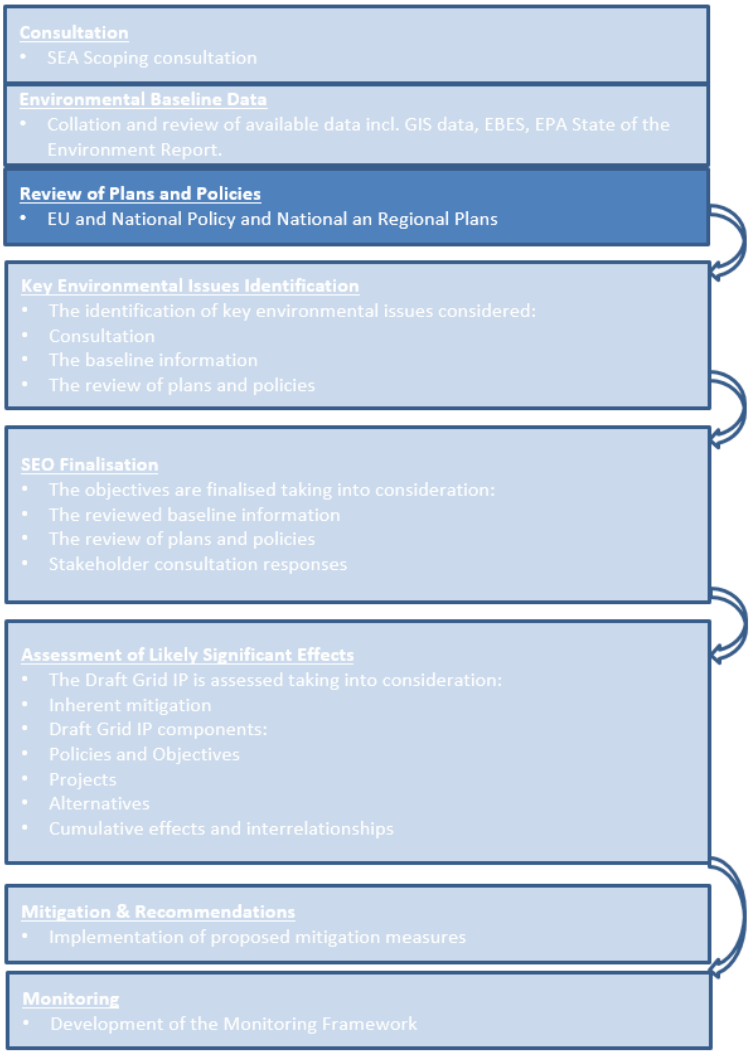
SEA requires a review of other programmes, plans and policies (PPP's) in order to identify any potential relationship[13] between the Grid IP objectives and these other PPPs.

Additionally, an initial review of PPP's was conducted at the scoping stage of the SEA. The main purpose of the review at this stage was to assist in providing context to the SEA assessment and to inform our understanding of relevant baseline information.

Table 7-1 below lists the main PPP's as relevant to the key themes of the SEOs.

The potential relationship of the Grid IP in combination with other key plans and programmes such as those relevant due to sector or geographic influences has been assessed and is presented in **Section 11.6.2** and **Table 11-25** of this Environmental Report.

A summary of all the key documents reviewed at the scoping stage of the SEA can be found in **Appendix B**.



[13] SEA Directive – "an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;"

Table 7-1 summarises the PPP's in relation to the SEO themes of the Grid IP.

Table 7-1: List of the Programmes, Plans and Policies relevant to SEO Theme

SEO Theme	Key PPP Sources
All	• Your Grid, Your Tomorrow: Ireland's Grid Development Strategy 2016. • Transmission Development Plan (TDP). • Strategic Environmental Directive (2001/42/EC) and associated Irish legislation. • Environmental Impact Assessment Directive (2014/52/EU) and associated Irish legislation. • Ireland 2040 Our Plan - National Planning Framework (2018). • National Development Plan (2018-2027). • National Development Plan (2007-2013). • Regional Spatial and Economic Strategies (RSES). • County and Local Area Development Plans National Planning and Development Regulations. • Government Policy Statement on Strategic Importance of Transmission and Other Energy Infrastructure (2012). • Renewable Electricity Policy and Development Framework (DCCAE, ongoing).
Population, Human Health & the Economy	• Environmental Impact Assessment Directives (2011/92/EU & 2014/52/EU) and associated Irish legislation. • Capital Investment Plan 2016-2021. • National Development Plan (2018-2027). • National Development Plan (2007-2013). • Ireland 2040 Our Plan - National Planning Framework (2018).
Biodiversity, Flora & Fauna	• The Habitats Directive (92/43/EEC). • The Birds Directive (2009/147/EC). • National Biodiversity related Regulations. • EU Biodiversity Strategy. • National Biodiversity Plan. • County & City Heritage Plans.
Landscape & Visual Amenity	• A National Landscape Strategy for Ireland (NLS) incl. the future National Landscape Character Assessment. • County Landscape Character Assessments.
Cultural Heritage - Archaeology & Architectural	• National Cultural Heritage related legislation. • National Heritage Plan. • County & City Heritage Plans.
Geology and Soils	• The Irish Geological Heritage Programme 1998-ongoing.
Land use	See theme All above. • Discussion document for the preparation of a National Policy Statement on the Bioeconomy.
Air Quality & Noise	• Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC). • Environmental Protection Agency Act 1992. • EU Environmental Noise Directive 2002/49/EC.
Water	• Water Framework Directive (2000/60/EC) and associated Irish legislation. • Environmental Quality Standards Directive 2008/105/EC. • Marine Spatial Planning Directive (2014/89/EC)

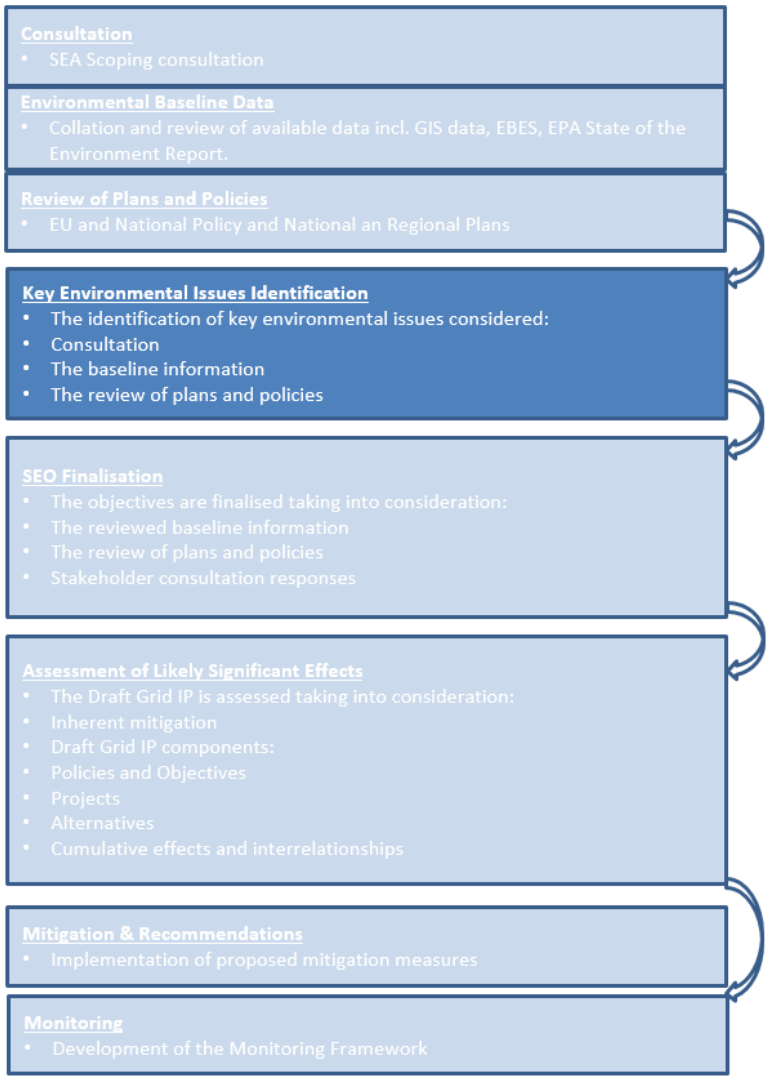
SEO Theme	Key PPP Sources
	• Marine Strategy Framework Directive (2008/56/EC) and associated Irish legislation. • Flood Directive (2004/60/EC) and associated Irish legislation. • River Basin Management Plans. • Flood Risk Management Plans (FRMP) (2017). • National Catchment Flood Risk Assessment and Management (CFRAM) Studies. • National water protection related Regulations. • Water Service Strategic Plan.
Material Assets & Infrastructure	• County based waste management strategies and mineral plans. • National Policy Framework on Alternative Fuels Infrastructure for Transport (AFF). • Wind Energy Development Guidelines 2006.
Tourism & Recreation	• County-based recreation strategies.
Climate Change	• The Kyoto Protocol. • The Climate Action and Low Carbon Development Act 2015. • Climate Change Adaptation Framework. • Energy White Paper: Delivering a Sustainable Energy Future for Ireland-the Energy Policy Framework 2007-2020. • 2020 Climate and Energy Package. • National Renewable Energy Action Plan. • Offshore Renewable Energy Development Plan incl. interim review. • Wind Energy Development Guidelines 2006 (currently under review). • County Wind Energy Strategies. • County Renewable Energy Strategies. • Flood Directive (2004/60/EC) and associated Irish legislation. • Ireland and the Climate Change Challenge - Connecting How Much with How to (2012). • National Mitigation Plan (NMP). • Renewable Electricity Policy and Development Framework. • National Energy Efficiency Action Plan 3 (NEEAP) (2014).

Key Messages from Chapter 7:

- EirGrid have developed a number of policies and objectives in the Grid IP which will support the relevant legislative policies, programmes and plans.
- There are a number of relationships between the Grid IP and other plans and programmes. These are detailed in Section 11.
- Development within the Grid IP will need to comply with legislative requirements and have regard to National and Regional Plans.

8. Key Environmental Issues

To establish the likely significant environmental effects[14] of the Grid IP and grid development in general we must first achieve an understanding of the key environmental issues and considerations.



[14] In accordance with Annex I of the SEA Directive, the 'effects' to be considered should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

Table 8-1 summaries the major environmental issues identified as relevant to each aspect from the Grid IP based on the baseline data gathering exercise, the EPA State of the Environment Report, the review of the EirGrid EBES and the consultation undertaken as part of the SEA Scoping Report.

Table 8-1: Environmental Issues Relevant to the Grid IP

Theme	Environmental Issues and considerations
Population, Human Health & the Economy	• although EMF levels are within acceptable guideline levels for public health, a precautionary approach must be applied due to public perception (EBES No. 1); • perceived risk and associated anxiety regarding issues such as loss of amenity or property value as a result of grid development can itself induce stress that can lead to adverse health outcomes population and development growth will potentially influence the energy requirement within Ireland; • existing settlement patterns can influence the location of transmission development projects; • the construction of transmission infrastructure can cause temporary disruption to the local community, such as noise, dust, disruption to services/utilities and traffic etc.; • potential visual effect of transmission lines; • potential safety risk from transmission lines; and • the impacts of Brexit on the potential future planning scenarios and in turn the implementation of the Grid IP is currently uncertain.
Biodiversity, Flora & Fauna	• the presence of grid infrastructure does not act as a deterrent to bats but, commuting and/or foraging habitats will need to be taken into consideration in plans for new lines (EBES no. 3); • construction and maintenance of electricity transmission infrastructure can affect semi-natural and sensitive natural habitats, particularly peatland habitats (EBES no. 4); • collision is the main risk to bird species and measures including careful line route assessments and marking of lines to increase their visibility to birds is required to reduce bird strike (EBES no. 5); • the potential for effects on protected areas: National and European sites (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), RAMSAR), National sites (e.g. Natural Heritage Areas (NHAs)) and other Natural Heritage Sites and Conservation Interest Sites e.g. refuge for fauna or flora, wildfowl reserves; • the requirement for ecological protection can pose restrictions to existing/future transmission development; • the potential for effects on non-designated biodiversity features e.g. important habitats and species outside designated sites; • the potential to spread invasive species during construction.
Landscape & Visual Amenity	• effects of transmission infrastructure on areas of designated landscape quality and scenic views etc.; • grid development options can be constrained by the need to protect the landscape character and features; • sensitivity of the landscape to change from transmission infrastructure; and • visual intrusion on receptors from transmission infrastructure.
Cultural Heritage - Archaeology & Architectural	• archaeological and cultural heritage sites are generally limited in physical extent, and are therefore, not difficult to avoid when appropriate planning is applied (EBES no. 2) however they may contain more extensive, previously unidentified, below ground archaeological remains; • the potential impact of the construction of transmission infrastructure on archaeological and architectural heritage including unknown archaeology; • the potential impact on the setting of archaeological and architectural heritage due to the permanent presence of transmission infrastructure; and

Theme	Environmental Issues and considerations
	• grid development options can be constrained by the need to protect the character of areas of existing archaeological and architectural resources.
Geology & Soils	• impacts to soils and geology are mainly associated with the construction phase resulting from soil movement, siltation and sedimentation. There is also a potential for contamination due accidental fuel/cement spillages (EBES no. 7); • potential for impacts on geological resources (primarily related to karst) or geological designations; • potential impacts to soils (land) vulnerable to erosion; and • potential for unearthing contaminated material.
Land Use	• there is no evidence to suggest that the construction or presence of transmission infrastructure causes significant impacts on settlement and land use (EBES no. 9); • land take from agriculture areas, forestry and/or peatland; • impacts on agricultural areas such as restriction on land use; primarily related to underground cabling and tower structures; and • restrictions on the planting of forestry.
Air Quality & Noise	• transmission developments, particularly during the construction phase, may have a temporary negative impact on air quality and create noise pollution; and • significant noise impacts are generally associated with 400kV OHLs and towers. It is recommended that a minimum distance of 200m and 100m be applied between properties and 400kV towers and OHLs, respectively (EBES no. 8).
Water	• impacts to water quality and aquatic ecology are mainly associated with the management of the site during the construction phase and are linked to the release of sediments into the aquatic environment. Mitigation measures such as silt barriers and buffer zones are essential for reducing the risk of sediments and contaminants entering watercourses (EBES no. 6); and • potential pressures and impacts on water body status from the construction of transmission projects i.e. increased sedimentation and accidental spillages.
Material Assets & Infrastructure	• economic growth and development of infrastructure will potentially increase the energy requirement within Ireland; • requirement to meet a renewable energy targets; and • effects of construction on current infrastructure such as road/rail/waterway networks.
Tourism & Recreation	• transmission development may have the potential to restrict or reduce the quality of resources important for recreation and/or tourism and this can be strongly linked to effects on landscape and visual elements.
Climate Change	• the Grid IP is aimed at contributing toward the renewable energy targets, as set out in the Government White Paper 2015; • the location of the future transmission network (existing or planned) should consider flood risk and the location of any proposed flood defence schemes; and • the potential impact of changes in climate including flooding and temperature increases should be factored into the Grid IP; • the need for the Grid IP to incorporate resilience of the network to the effects of climate change such as more extreme weather events including storms, high winds, lightning strikes, mudslides and wildfires.
Transboundary Effects	• the key issues are similar to those outlined under each theme above for Northern Ireland.

Key Messages from Chapter 8:

- Key environmental issues have been identified across all aspects of the Grid IP based on existing baseline data, professional judgment and the review of the EBES.

9. SEA Objectives, Target & Indicators

9.1 Introduction

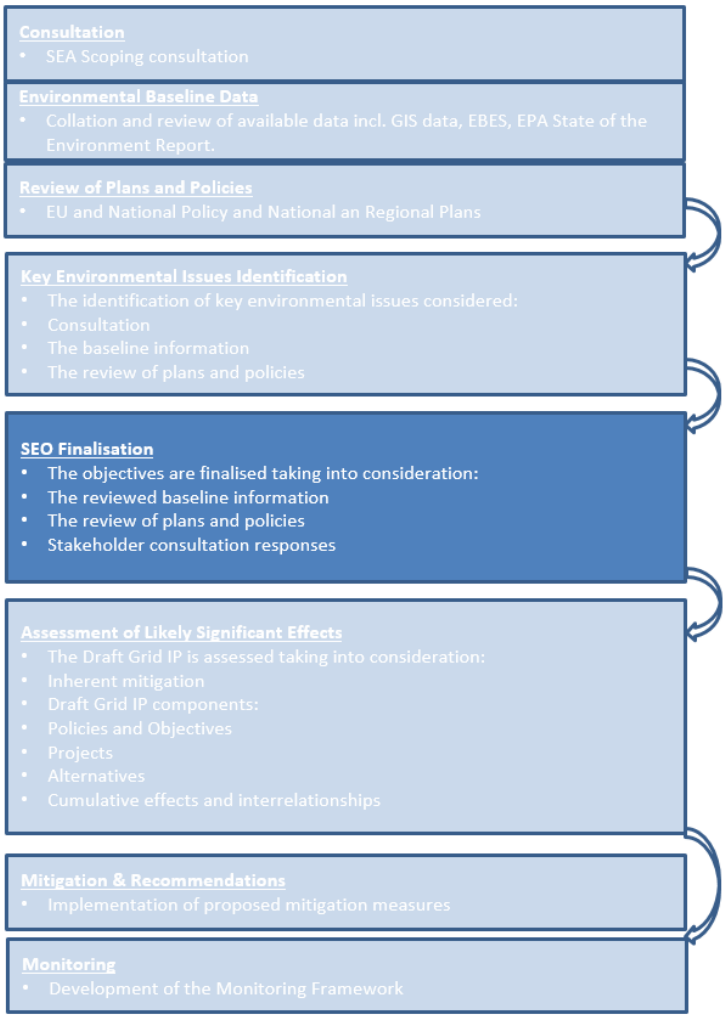
The SEOs are methodological measures developed from policies which usually govern environmental protection objectives established at an EU or national level. The SEOs are used as standards against which the components of the Grid IP can be evaluated in order to identify the provisions which have the potential to result in likely significant environmental effects.

The development of the SEOs also has regard to the baseline conditions (as set out in **Section 6.2** to **6.12**.), consultation and the identification of the key environmental issues. The development of these objectives ensures that the SEA focuses only on those issues that are most relevant and of significance to the Grid IP and the Study Area.

The SEOs are separate to the objectives contained within the Grid IP itself.

The SEOs have been divided into themes as follows with at least one SEO for each theme:

- Population, Human Health & the Economy;
- Biodiversity, Flora & Fauna;
- Landscape & Visual Amenity;
- Cultural Heritage (Archaeology & Architectural);
- Water;
- Material Assets & Infrastructure (including soil and landuse);
- Tourism & Recreation; and
- Climate Change.



9.2 Development of the SEA Objectives, Targets and Indicators

The SEA objectives, as set out in **Table 9-1** and each objective has an associated target and indicator. The target is the desired environmental end-state that needs to be met for an option to have no negative effect. The indicators are measurable parameters and numeric where possible, against which the 'success' of an option in meeting a particular objective can be evaluated.

Table 9-1: Strategic Environmental Objectives

Theme	Objective	Target	Indicator
Population, Human Health & the Economy	**PHH1:** To minimise the proximity of development to concentrations of population and to mitigate potential effect of development in order to reduce actual and perceived environmental effects.	**PHH1_T1:** Noise levels emanating from the proposed development following commissioning, when measured externally at a noise sensitive location shall not exceed recommended guideline values.	**PHH1_I1**: Maximum noise level emanating from the installation at the façade of any near sited residential properties shall not exceed levels specified in the EPA's Guidance Note for Noise (NG4).
		PHH1_T2: Ensure compliance with all authoritative international and national guidelines for Extremely Low Frequency (ELF) EMF exposure.	**PHH1_I2:** Compliance with all authoritative international and national guidelines for ELF EMF exposure.
		PHH1_T3: Avoid where possible routing of new overhead transmission line infrastructure within 50m of existing dwellings.	**PHH1_I3:** Number of existing dwellings within 50m of new overhead transmission line development.
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.	**BI_I1:** Number of EirGrid projects subject to Imperative Reasons of Overriding Public Interest (IROPI). **BI_I2:** Number of Adaptive Management requirements post project completion.
		B1_T2: No significant ecological networks or parts thereof which provide functional connectivity for SAC/SPAs 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 from development provided for by the Grid IP.	**B2_I1:** Number of significant impacts post mitigation (i.e. residual impacts) 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.
Landscape & Visual Amenity	**L1:** Avoid significant adverse impacts on landscape character and designations.	**L1_T1:** No avoidable significant impacts on the landscape resulting from development provided for by the Grid IP.	**L1_I1:** Number of significant impacts remaining on designated landscapes post establishment of mitigation (i.e. residual impacts) from development provided for by the Grid IP.

Theme	Objective	Target	Indicator
	L2: Avoid or minimise adverse visual effects on residential receptors.	**L2_T1:** No avoidable significant impacts on the landscape resulting from development provided for by the Grid IP.	**L1_I1:** Number of receptors i.e. people/properties affected by significant visual impacts post establishment of mitigation from development provided for by the Grid IP on properties.
Cultural Heritage - Archaeology & Architectural	**CH1:** Avoid impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPS and NIAHs).	**CH1_T1:** No developments occurring which result in full or partial loss to entries to the RMP and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	**CH1_I1:** Number of developments occurring which result in full or partial loss to entries to the RMP and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.
		CH1_T2: No developments occurring which result in full or partial loss to entries to the RPSs/NIAHs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	**CH1_I2:** Number of developments occurring which result in full or partial loss to entries to the RPSs/NIAHs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.
Geology and Soils	**GSL1:** To avoid or minimise effects on mineral resources or soils.	**GSL_T1:** No avoidable significant impacts on mineral resources or soils resulting from development provided for by the Grid IP.	**GSL1_I1:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.
Land use	**LU1**: To avoid or minimise effects on existing land use.	**LU1_T1:** No avoidable significant impacts on the lands use resulting from development provided for by the Grid IP.	**LU1_I1:** Area of land use change is greater or less than predicted from development provided for by the Grid IP.
Water	**W1:** Prevent impact upon the status of surface and groundwater in line with the objectives of the WFD as outlined in the River Basin Management Plan.	**W1_T1:** Not to cause deterioration in the status of any surface or water or affect the ability of any surface water to maintain or achieve '*good*' status.	**W1_I1:** WFD waterbody Status as indicated by the EPA.
			W1_I2: Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.
		W1_T2: Not to cause deterioration in ground waters or affect the ability of any groundwater to maintain or achieve '*good*' status.	**W1_I3:** Classification of Overall Status as indicated by the EPA.
			W1_I4: Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.

Theme	Objective	Target	Indicator
Material Assets & Infrastructure	**MAI1:** Minimise effects upon the sustainable use of the land, mineral resources or soils.	**MS1_T1:** To minimise impacts on farming practices and the extent of soil compaction in greenfield sites.	**MS1_I1:** The impact on farming practices and change in area farmed.
		MS1_T2: To consider the integration of new transmission infrastructure in proximity (0-1km) to motorways and dualled national primary roads.	**MS1_I2:** The integration of new transmission infrastructure in proximity (0-1km) to motorways and dualled national primary roads.
	MAI2: Minimise effects upon the existing and planned infrastructure.	**MS2_T1:** No significant impacts on infrastructure.	**MS2_I1:** Number of significant impacts or potential conflicts with planned developments post establishment of mitigation from development provided for by the Grid IP.
Tourism & Recreation	**TR1:** Minimise effects upon the tourism and recreation amenities.	**TR1_T1:** No significant impacts on tourism and recreation amenities and use.	**TR1_I1:** Number of significant impacts (i.e. area of land lost, change in setting) to tourism and recreation amenities post establishment of mitigation from development provided for by the Grid IP.
Climate Change	**CC1:** Help to facilitate the achievement of higher level targets contained in the Government's Energy White Paper, '*Ireland's Transition to a Low Carbon Energy Future 2015-2030'* and targets relating to the Kyoto Protocol. [15]	**CC_T1:** Contribute towards an increase in electricity generation from renewable energy (ultimately 40% by 2020).	**CC_I1:** Percentage electricity generation from renewable energy facilitated by EirGrid.

Key Messages from Chapter 9:

- The SEOs have been developed with regard to the baseline conditions, consultation, the plan and policy review and key environmental issues identified.
- Thirteen SEOs have been developed over ten aspects.
- The SEOs are used to assess the likely significant effects of the implementation of the Grid IP.

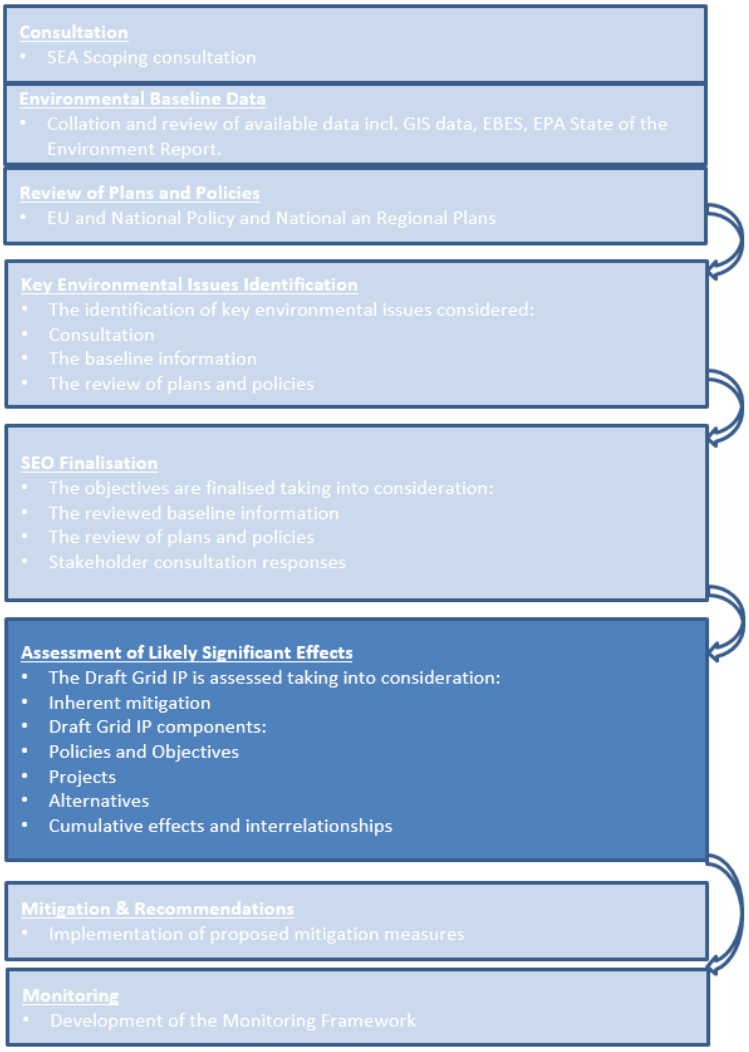
[15] It is noted that EirGrid have no input into energy generation.

10. Assessment Methodology

10.1 Scoping and Consultation Feedback

Details of the Screening (Stage 1) and SEA Scoping (Stage 2) are provided on **Section 4.2**. An overview of the Stage 3 process for the Grid IP is provided in **Section 4.2.2** and shown in **Figure 4.2**. This section details the specific assessment methodology and criteria used.

Feedback received from the consultation to date is provided in **Appendix C**. This feedback has been accounted for in the development of the SEA methodology and assessment as appropriate.



10.2 Influencing the Grid IP through SEA

The Grid IP sets out how the 2017 Strategy for the planning and sustainable development of the Grid will be implemented across Ireland. As part of this the Grid IP outlines a number of policies and objectives for 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, ensuring that key issues identified through the SEA scoping and assessment phase are addressed. The review of plan and policy document has identified some gaps in the draft policies and objectives initially proposed, and additional policies and/or objectives have been recommended for inclusion in the Grid IP, as presented in **Section 11.3.1**.

Future projects outlined in the Grid IP are taken from those identified in the TDP 2016-2026. The Grid IP itself does not identify new or alternative grid development projects outside the 2017 strategy and TDP. This SEA for the Grid IP assesses the likely significant effects of these projects against the SEO and proposes mitigation measure, recommendations and monitoring in relation to these projects.

10.3 SEA Assessment Criteria

The Grid IP plan components (the policies and objectives, the projects, and the plan alternatives) have been assessed against the SEOs in line with the criteria outlined in **Table 10-1**. This criterion was presented in draft format in the SEA Scoping Report issued for consultation. The assessment process has been undertaken with the assumption that the inherent mitigation measures (as set out in **Section 11.2)** are and will be in place for development proposed in the Grid IP.

Table 10-1: SEA Assessment Criteria

Description of Likely Significant Effect (LSE)	Effect
The plan component is likely to have a positive effect on the environmental receptors associated with this SEO	+
The plan component is likely to have a negative effect on the environmental receptors associated with this SEO	-
The plan component effects are uncertain/there is insufficient information on which to determine effect on the environmental receptors associated with this SEO	?
The plan component is likely to have a neutral effect on the environmental receptors associated with this SEO	*
The plan component is likely to have a mixed positive & negative effect on the environmental receptors associated with this SEO with stronger positive effect	+/-
The plan component is likely to have a mixed negative & positive effect on the environmental receptors associated with this SEO with stronger negative effect	-/+

10.4 Inter-relationships & Cumulative Effects

In accordance with the SEA Directive, it is important to recognise the inter-relationships between environmental aspects, as changes to one environmental aspect can directly and indirectly influence others. Potential inter-relationships between environmental aspects are identified and explained in **Section 11.6.1**. These inter-relationships are typically indirect negative and positive effects associated with direct effects on other SEO receptors.

The potential inter-relationship with the other plans is considered in **Section 11.6.2**. This section outlines how the Grid IP and the objectives and policies therein have had regard to other national and regional plan and policy documents (PP). **Section 11.6.2** outlines the relevant policies and objectives that have been included in the Grid IP and how these relate to these PP. It also identifies any gaps between the Grid IP policies and objectives and the requirement of these PP. Where gaps have been identified, mitigation in the form of further policies and objectives to be included in the Grid IP has been recommended.

This SEA considered the potential cumulative effects between projects within the Grid IP and these are assessed against the SEOs similar to the methodology set out in **Table 10-1** in **Section 11.6.3**. In addition, the SEA also considers potential cumulative effects between the Grid IP components and other infrastructural developments identified. A discussion on this is provided on **Section 11.6.4**.

10.5 Appropriate Assessment

The AA process is being undertaken in accordance with the following guidance documents:

- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (Department of Environment, Heritage and Local Government (DEHLG[16]), 2010);
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC Environment Directorate-General, 2000);

16 Now the Department of the Environment, Community and Local Government (DECLG).

- 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 (The EC, 2002); and
- EPA Integrated Biodiversity Impact Assessment (EPA, 2013).

Full detail of the assessment in relation to the EU Habitats Directive is included in the NIS for the Grid IP.

In addition, European Court of Justice judgements and relevant case law publications (EC, 2006; CVRIA, 2014) have informed the approach to AA and have been taken into consideration during the preparation of screening for AA and the NIS for the Plan.

10.6 Data Gaps and Limitations

This SEA is being undertaken using best available data and methodologies at the time of assessment. However, there remain a number of data gaps and limitations which limit the scope and content of the assessment. These include:

- This baseline description is not intended to be an exhaustive description of all baseline environmental data for Ireland.
- The lack baseline data to cover all SEA aspects/issues, such as landscape character assessment designations across some development areas.
- The Grid IP has reference to the adopted TDP 2016-2026 and the SEA has not influenced the list of projects. Mitigation measures and monitoring measures have been developed however and integrated into the Grid IP.
- As the projects referenced in the Grid IP are based on the adopted TDP 2016-2026 new projects may arise over the lifetime of the IP. The system of environmental appraisal for each annual TDP ensures that a high level of environmental assessment is undertaken annually in line with provisions set out in the SEA and NIS.
- The nature of the process of grid development is that for a number of projects, the details are relatively un developed. The need for projects is identified but specific elements are not known such as the location or technology to be used.

Future revisions of the Grid IP will incorporate any additional and 'up to date' data, not available at the time of writing this report.

Further details of the datasets used are provided in **Appendix E**.

Key Messages from Chapter 10:

- The SEA and AA have influenced the development of the Grid IP.
- The SEOs have been used to assess the likely significant effects of the Grid IP components.
- The NIS was undertaken in line with relevant guidance.
- Some data gaps and limitation have been identified.

11. Assessment of the Grid IP

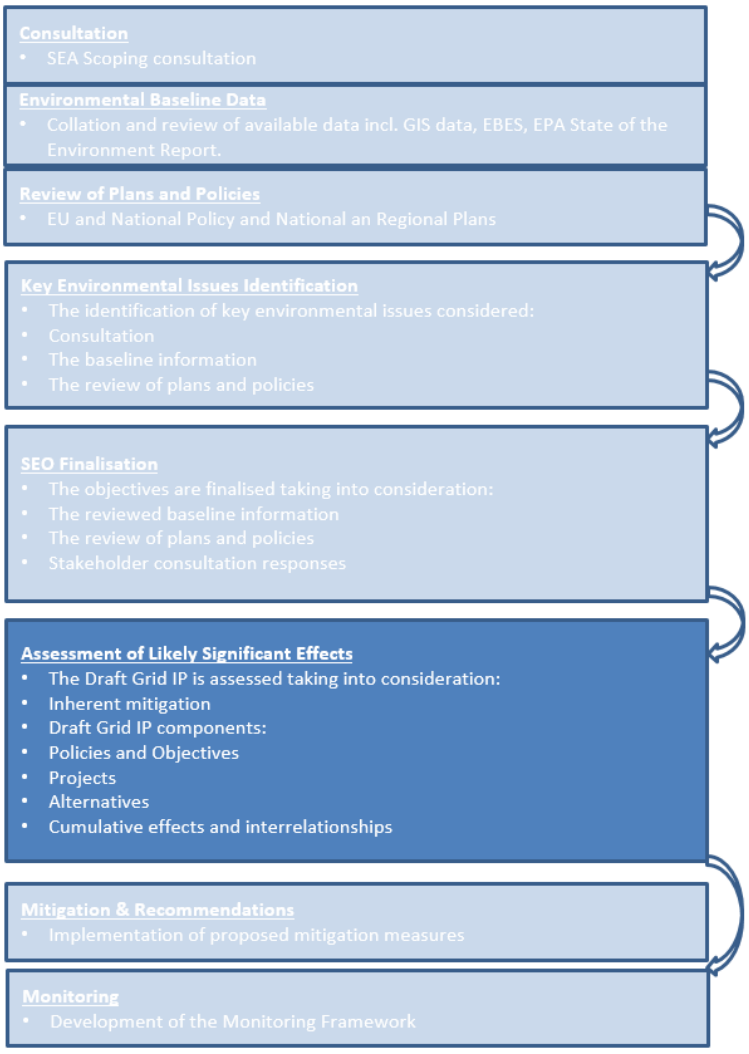
11.1 Introduction

This section details the results of the assessment of the plan component (the policies and objectives, and the projects) outlined within the Grid IP against the SEOs.

The section also includes an assessment of alternatives to the Grid IP and considers potential high-level effects associated with the potential future grid scenarios.

The section outlines the inter-relationships between individual aspects such as between cultural heritage and landscape and the inter-relationships with other plans where these exist.

The assessment of potential cumulative effects (i.e. a number of elements contributing to an effect on a common receptor) both in the Grid IP and with other projects is also presented here.



11.2 Inherent Mitigation

Projects outlined within in the Grid IP are subject to a range of statutory and EirGrid in house processes and procedures that will work to avoid in the first instance and mitigate potential environmental effects of development from the Grid IP. While the applicability of processes and particular measures will be dependent on the nature and scale of each project, examples of typical inherent mitigation (processes and measures that will be implemented where applicable at the different stages of project execution) are set out below. It is important to note that mitigation will also apply to any potential transboundary effects in Northern Ireland, in the same manner that it will be applied for projects within the Republic of Ireland. The assessment of likely significant effects has been undertaken with the assumption that these inherent mitigation measure are and will be in place for development proposed in the Grid IP.

EirGrid will develop an SEA compliance check within the six-step framework for grid development to facilitate the SEA monitoring as outlined in **Section 12** of this SEA Environmental Report. The SEA compliance check will be adapted for each stage of the six-step Framework for Grid development and will be proportionate to the project scale i.e. from projects that are exempted development to SID projects.

EirGrid also has developed an internal process for decisions in relation to exempted development. This requires, in part, a comprehensive Screening for Appropriate Assessment of the proposed development, undertaken or managed by EirGrid's Senior Ecologist. Where deemed necessary or appropriate, a statutory Declaration of Exempted Development, in accordance with Section 5 of the Planning and Development Act 2000 (as amended), is obtained from the relevant Planning Authority. All grid development projects will be subject to the applicable planning and/or consent processes as outlined in **Table 11-1**.

Table 11-1: Grid Development Planning Processes

	Strategic Infrastructure Development (SID) Planning application	Local Authority Planning application	Statutory Declaration of exempted development	EirGrid in-house sign off for exempted development
Who	An Bord Pleanála	Local Authority	Local Authority	EirGrid
What	Formal Application	Formal Application	Formal Application	Planning/AA report
Planning Content	Planning Act & Regulations	Planning Act & Regulations	Planning Act	Internal Process
Decision	Approval	Permission	Section 5 Declaration	Declaration
Timeline	c.18 weeks +	c. 8 weeks (+4)	c. 4 weeks	c. 2 weeks

Depending on the above planning process route, as a minimum the following will be required:

- Screening for EIA; and
- Screening for AA.

Subject to the screening assessments above the following further assessments may be required:

- Statutory EIA - Environmental Impact Assessment Report (EIAR); and
- AA - NIS.

11.2.1 EirGrid In-House Processes and Procedures

11.2.1.1 Six-Step Framework for Grid Development

The new six step Framework for Grid Development as outlined in **Section 2** ensures that environmental considerations are engrained into all aspects of the grid development process. This is a 'beginning-to-end' process, from the identification of a need to develop the grid to the eventual construction and operation of a project. This approach integrates the technical development of a project with increased and enhanced engagement with stakeholders, communities and landowners.

EirGrid are progressing with a managed transition to full implementation of this approach across their grid development projects. This has commenced with the testing of the new Framework over a number of 'Pilot Projects', of different levels of complexity and/or scale, and at different points in the progression of project development. This has facilitated a 'lessons learned' approach which will identify any necessary revisions to the Framework process, and which will facilitate the subsequent roll-out of the Framework across all grid development projects.

11.2.1.2 Social Impact Assessment

EirGrid are committed to undertaking social impact assessment of transmission infrastructure developments on the receiving environment as appropriate and in accordance with EirGrid's methodology for Social Impact Assessment.

11.2.1.3 Environmental Considerations Report (to support planning)

In the absence of the requirement for statutory EIAR due to a subthreshold project for EIA, EirGrid undertake a project level environmental assessment of the potential impacts of that project. This assessment is scoped and adapted to the scale of the individual project. This process is documented through an Environmental Considerations Report and this accompanies the planning application of the proposed project.

11.2.1.4 Grid IP Policies and Objectives

As part of the Grid IP, EirGrid have developed a series of policies and objectives for future grid development. All projects outlined within the Grid IP will be subject to the requirement of these policies and objectives going forward. More details of these policies and objectives and their likely significant effects are provided in **Section 11.3.1.**

11.2.1.5 EirGrid Consultation processes and procedures

The new six step Framework for Grid Development provides opportunities for consultation and engagement before the final decisions are made on the project location, technology and route. In addition, EirGrid has been active in preparing a number of processes to implement the 12 commitments to consultation including:

- An Engagement Handbook – confirming our commitments in respect of consultation; and
- An Engagement Toolkit – the various methods we use when consulting.

More details on this is provided in the Grid IP.

11.2.1.6 EirGrid Guideline Documents

EirGrid has developed a series of guideline documents which aim to ensure a standard approach to environmental assessment of high voltage transmission projects and the development of these guidelines was informed by the EBES as outlined in **Section 6.14**.

EMF and You (Public Guide)

The '*EMF & You*' public information guide was produced to give an overview of the electricity transmission system and associated electric and magnetic fields (EMF) in Ireland. The main aim of the guide is to provide the public with factual information on EMF, in relation to both underground and overhead grid development.

EirGrid's position on EMF and health is built on the conclusions and recommendations of established national and international health and scientific agencies that have reviewed the main body of scientific research on the topic. These agencies have concluded that the research consistently indicates that EMF does not cause any adverse health effects at the levels encountered in our environment, and that compliance with standards set out by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) provides sufficient protection to public health.

The guide addresses the main questions raised by the public in relation to EMF by providing an understanding of EMF, the studies that have been carried out and discussing human health and national/international guidance on exposure. The guide also addresses questions related to exposure of animals to EMF and whether special precautions against EMF are required.

The guide recognises that public concerns remain about health impacts in relation to EMF and highlights the commitment that EirGrid has made to address these concerns through the continued:

- design and operation of the transmission system in accordance with the ICNIRP EMF guidelines, as reviewed by the WHO and endorsed by the EU and Irish Government;
- monitoring of engineering and scientific research in the area of EMF; and
- provision of information and reassurance to the public and staff on the issue.

Ecology Guidelines (Project Development Guide)

The purpose of the Ecology Guidelines for grid development projects are to:

- provide best practice guidance and a systematic approach for ecological impact assessment (EcIA) of grid development projects; and

- provide best practice guidance on ecological topics of particular relevance to grid development projects including:
  - risk of collision by birds with high voltage overhead power lines; and
  - impacts of electricity transmission projects on sensitive habitats, most notably wetlands, peatlands and watercourses.

The main aim of the guidelines is to standardise the approach to EcIA of grid development projects and associated infrastructure and to provide a higher level of consistency. These guidelines have been informed by the review of Environmental Impact Statements (EIS) and Environmental Reports which have previously been prepared for grid development projects, published international and national best practice and legal obligations in relation to protected flora, fauna and habitats.

The guidelines are divided into two sections.

- Part I introduces ecological impact assessment and its role in EIA and the planning process for grid development projects. This section describes the major components of the natural environment and the potential impacts of grid development projects on ecology.
- Part II provides a comprehensive technical guidance for the ecological assessment at the various stages of the planning and design processes for grid development projects. This section also provides recommendations for monitoring the effectiveness of proposed mitigation measures, following construction. Recommendations are also provided to support the development of environmental management plans.

EirGrid are currently updating these Ecology Guidelines for Transmission Projects.

Cultural Heritage Guidelines (Project Development Guide)

The purpose of the Cultural Heritage Guidelines for grid development projects are to:

- standardise the approach for all cultural heritage impact assessment during the planning process; and
- assist with the formulation of a consistent, best practice approach to cultural heritage at all stages of grid development projects.

These guidelines are based on national and international best practice guidance and legal requirements relating to the identification, protection and avoidance of heritage assets.

11.2.2 Best Practice during Construction

Construction mitigation for all grid development projects shall include, but not be limited to, the following best practice guidance:

- Construction Industry Research and Information Association (CIRIA) 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA, 2001);
- CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C649 Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al. 2006);
- Inland Fisheries Board Guidance Document (formerly developed by Eastern Fisheries Board) "Requirements for the protection of fisheries habitat during Construction and development works at river Sites";
- UK Environment Agency: Pollution Prevention Guidelines; and
- BS 5228: Part 1 and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001.

11.3 Grid IP Assessment

The assessment is based on the methodology set out in **Section 10** of this report and has taken account of the inherent mitigation set out above in **Section 11.2**. In summary, the matrices in the tables contain an evaluation of each of the policies and objectives or the projects against each of the SEOs; a plus (+) indicates potential positive impact, a minus (-) indicates a potential negative impact, plus/minus (+/-) or vice versa indicates that both positive and negative effects are likely, a question mark (?) indicates that the impact is unknown and a neutral or no impact is indicated by an asterix (*). A table key is provided below for ease of reference.

SEO	Topic	Description
PHH1	Population, Human Health & the Economy	To minimise the proximity of development to concentrations of population and to mitigate potential effect of development in order to reduce actual and perceived environmental effects
B1	Biodiversity (Flora & Fauna)	Ensure compliance with the Habitats Directive with regard to protection of designated European Sites including Article 10.
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).
L1	Landscape & Visual Amenity	Avoid significant adverse impacts on landscape character and designations
L2		Avoid or minimise adverse visual effects on residential receptors.
CH1	Cultural Heritage	Avoid impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPS and NIAHs).
GS	Geology & Soils	To avoid or minimise effects on mineral resources or soils.
LU	Landuse	To avoid or minimise effects on existing land use.
W1	Water	Prevent impact upon the status of surface and groundwater in line with the objectives of the WFD as outlined in the River Basin Management Plan
MAI1	Material Assets & Infrastructure	Minimise effects upon the sustainable use of the land, mineral resources or soils.
MAI1		Minimise effects upon the existing and planned infrastructure.
TR1	Tourism	Minimise effects upon the tourism and recreation amenities.
CC1	Climate Change	Help to facilitate the achievement of higher level targets contained in the Government's Energy White Paper, 'Ireland's Transition to a Low Carbon Energy Future 2015-2030' and targets relating to the Kyoto Protocol.

Description of Effect	Effect
Likely to have a positive effect	+
Likely to have a negative effect	-
Effects are uncertain/there is insufficient information on which to determine effect	?
Likely to have a neutral effect	*
Likely to have a mixed positive & negative effect	+/-
Likely to have a mixed negative & positive effect	-/+

11.3.1 Assessment of Objectives and Policies

Table 11-2 to **Table 11-13** outlines the assessment of the Grid IP policies and objectives with regard to both positive and negative likely significant effects. All likely significant effects are considered long term unless otherwise stated.

Table 11-2: Environmental Policy Assessment

No	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
ENVP1	To apply best environmental practice in the design and appraisal of transmission development projects.	+	+	+	+	+	+	+	+	+	+	+	+	+	No significant negative effect anticipated. By applying best practice in the design and appraisal of TDPs this policy will have a positive effect on the receptors associated with the SEOs as it will allow in the first instance avoidance of significant effects and appropriate routing/option development having regard to environmental considerations.
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.	+	+	+	+	+	+	+	+	+	+	+	+	+	No significant negative effect anticipated. The continued development of EirGrid's approach to the environment should have a positive effect on the receptors associated with the SEOs similar to ENVP1.
ENVP3	That any transmission development project, either individually or in combination with other projects, that has the potential to give rise to significant effect on the integrity of any European (Natura) site(s) shall be subject to Appropriate Assessment (AA) in	*	+	+	*	*	*	*	*	+	*	*	*	*	No significant negative effect anticipated. This policy (ENVP3) is a requirement under the Habitats Directive and the associated National regulations and it is stated here for clarity and emphasis. This will have a positive effect on the receptor associated with B1 and B2 by ensuring the requirements of AA are meet at a project level for all project regardless of scale. There is a potential indirect positive

No	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	accordance with Article 6 of the EU Habitats Directives.														effect on W1 due to the inter-relationship between biodiversity and water.
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. 84 of 1999), the European Communities (Birds and Natural Habitats) Regulations 2011 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.	*	+	+	*	*	*	*	*	+	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive effect on B1 and B2 and will ensure that protected habitats and species are afforded protection even outside of the SAC, SPA and NHA networks. There is a potential indirect positive effect on W1 due to the inter-relationship between biodiversity and water.
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.	*	+	+	+	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive effect on B1 and B2 by ensuring TDP minimises potential impacts to biodiversity featured and an indirect positive effect on L1 due to inter-relationship of woodlands, trees and hedgerows features with landscape character and designations.
ENVP6	To protect and restore (where possible) habitats which	*	+	+	+	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive

No	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive.														effect on B1 and B2 and an indirect positive effect on L1 due to the association of woodlands, trees and hedgerows with landscape character and designations.
ENVP7	To integrate measures to address climate change and climate change resilience into grid development, by way of effective mitigation and adaptation responses, in accordance with current guidance and best practice.	?	?	?	?	?	?	?	?	?	?	?	?	+	No significant negative effect anticipated. This policy will have direct positive effect on CC1, however it is unknown whether these measures to address climate change could have an effect on other environmental receptors associated with SEOs.
ENVP8	To support the Government's target of having 40% of electricity consumption generated from renewable energy sources by the year 2020.	?	?	?	?	?	?	?	?	?	?	?	?	+	No significant negative effect anticipated. This policy will have direct positive effect on CC1. However, it is unknown whether this could have other effect on other environmental receptors associated with the SEOs as these may facilitate increased wind power or offshore development.
ENVP9	To facilitate new technologies on transmission infrastructure which minimise/mitigate significant noise emissions.	+	+	+	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive effect on people (PHH1) by minimising potential noise emissions. It is noted that the primary focus on this policy is people but there is a potential indirect positive effect on B1 and B2 due to the management of noise from grid development.
ENVP10	To seek to preserve and maintain noise quality in	+	+	+	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive

No	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	accordance with good practice and relevant legislation.														effect on people and an indirect positive effect on B1 and B2 as outlined in ENVP9.
ENVP11	To have regard to the objectives and actions of the National Landscape Strategy in its transmission development projects.	+	+	+	+	+	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive effect on landscape character and designations and residential receptors and an indirect positive effect on B1, B2 and people (PHH1) due to inter-relationships with these aspects.
ENVP12	To continue to protect and enhance landscapes and visual amenity through the sustainable planning and design of transmission infrastructure development.	+	+	+	+	+	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive effect on landscape character and designations and residential receptors and an indirect positive effect on B1, B2 and people (PHH1) similar to ENVP11.
ENVP13	To seek to avoid and reduce visual impact on residential receptors in the development of transmission projects.	+	*	*	*	+	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This will have a direct positive effect on PHH1 and L2 as this will influence scheme development to avoid adverse or reduce visual effects on residential receptors and local populations where this is possible based on routing and technology selection.
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	*	*	*	+	*	+	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive effect on cultural heritage designations and an indirect positive effect on landscape character due to the inter-relationships of landscape with cultural heritage.

No	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	options for transmission infrastructure development.														
ENVP15	To protect known and unknown (potential) archaeological material in transmission infrastructure development, by avoidance or by best practice mitigation measures.	*	*	*	*	*	+	*	*	*	*	*	*	*	No significant negative effect anticipated. This policy will have a direct positive effect on cultural heritage resources affording protection to those undesignated features in the progression of TDPs.
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	+	*	*	*	*	*	*	*	+	*	*	*	*	No significant negative effect anticipated. It is a requirement to have regard to these Guidelines during the development process. This objective will not significantly affect the SEO receptors. This policy will have an indirect positive effect on water features due to prevention of flood water runoff and an indirect positive effect on people (PHH1) by ensuring TDP do not result in increased flooding.

No	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
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.	*	+	+	*	*	*	*	*	+	*	*	*	*	No significant negative effect anticipated. This will have a direct positive effect on W1 as impacts upon the status of surface and groundwater in line with the objectives of the WFD will be protected against. This will also have an indirect positive effect on B1 and B2 as the protection is afforded to the environment and aquatic ecology.
ENVP18	To seek to preserve and maintain air quality in accordance with good practice and relevant legislation in the construction of its transmission projects.	+	+	+	*	*	*	*	*	*	*	*	*	?	No significant negative effect anticipated. There will be a direct positive effect on people (PHH1) but potentially some indirect positives effect associated with B1, B2 due to preservation of air quality even in the short term (i.e. during construction). The construction of a transmission project is not considered to contribute to climate change but the effect with CC1 remains unknown.
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.	*	*	*	+	*	+	*	*	*	*	*	+	*	No significant negative effect anticipated. There will be a direct positive effect on TR1 but potentially some indirect positives effect associated with L1 and CH1 due to the inter-relationships between landscape and cultural heritage resources to tourism in Ireland.
ENVP20	To promote a pro-active good practice approach to marine management in grid	*	+	+	*	*	*	*	*	+	*	*	*	*	No significant negative effect anticipated. This will have a direct positive effect on B1 and B2 due to the management of

No	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	development, with the aim of minimising the impact of transmission development on the marine environment.														projects in the marine environment to ensure that the impact of development is minimised in terms of important and protected habitats and species. This will also have an indirect positive effect on W1, as the management of development in the marine environment will minimise the impact of development on marine water quality.
ENVP21	To protect the marine environment, in accordance with any plans made under the EU Directive 2014/89/EU (Marine Spatial Planning).	*	+	+	*	*	*	*	*	+	*	*	*	*	No significant negative effect anticipated. This will have a direct positive effect on B1 and B2 due to the management of projects in the marine environment to ensure that the impact of development is minimised in terms of important and protected habitats and species. This will also have an indirect positive effect on W1, as the management of development in the marine environment will minimise the impact of development on marine water quality.
ENVP22	To ensure that geological heritage features are protected to the greatest extent possible when considering site or route options for transmission infrastructure development.	*	*	*	*	*	*	+	*	*	*	*	*	*	No significant negative effect anticipated. This will have a direct positive effect on GSL1 as effects on mineral resources or soils will be afforded the greatest extent of protection possible during route selection and infrastructure development.

Table 11-3: Environmental Objectives Assessment

No	Objective	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
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: EMF & You, Cultural Heritage Guidelines, Ecology Guidelines.	+	+	+	+	+	+	+	+	+	+	+	+	*	No significant negative effect anticipated. The EirGrid environmental Guidelines are based on the EBES which looked at the actual effects of transmission development. The use of these best proactive guidelines for future development will help to reduce the potential negative effect on many SEO receptors. No significant effect ton CC1 is anticipated.
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.	+	+	+	+	+	+	+	+	+	+	+	+	+	No significant negative effect anticipated. Ongoing work on the EBES will increase the understanding of the impact from transmission development projects and help to inform best practice and thus decrease potential impact on many of the SEO receptors going forward. These studies can also contribute to the implementation of adaptive mitigation where existing infrastructure is found to be having a negative effect.
ENVO3	To develop the environment space on the EirGrid website as a tool for sharing environmental information in respect of transmission development.	+	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. The development of the EirGrid environmental information portal will help to reduce the perceived environmental effects with increased information sharing therefore a potential positive effect on people (PHH1).
ENVO4	To assist towards meeting national and EU targets, in particular by means of having regard to EirGrid's	?	?	?	?	?	?	?	?	?	?	?	?	+	No significant negative effect anticipated. This objective will help to facilitate SEO CC1. However, it is unknown what effect

No	Objective	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	Climate Change Adaptation Plan in undertaking grid development projects.														this objective would have on other SEO objective receptors.
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.	*	*	*	*	*	*	*	*	*	*	+	*	+	No significant negative effect anticipated. This objective will help to facilitate SEO CC1. There is a potential indirect effect on MAI2 due to decreases in energy consumption and subsequent reduction in fossil fuel usage.
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.	+	*	*	*	+	*	*	*	*	*	*	+	*	No significant negative effect anticipated. Under ENVO6 Noise sensitive receptors are considered to be people therefore this objective will support PHH1 and TR1. Potential indirect positive effect on L2, visual receptors.
ENVO7	To have regard to any future National Landscape and/or Seascape Character Assessment in the development of its transmission projects.	+	+	+	+	+	+	*	*	*	*	*	+	*	No significant negative effect anticipated. This objective will have a direct positive effect on L2. There may be some indirect beneficial effect to other SEO receptors due to the inter-relationship of ecology (B1 & B2), cultural heritage (CH1) and tourism (TR1) to residential receptors (L2).
ENVO8	That all grid development proposals, and, substation developments, shall carry out, to an appropriate level of detail, a site-specific Flood Risk Assessment that shall demonstrate compliance with all current	+	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This objective will not impact upon the majority of SEOs however potential positive effect on people by ensuring flood risk is addressed during transmission development projects.

No	Objective	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	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.														
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.	*	+	+	+	+	+	*	*	+	*	*	+	*	No significant negative effect anticipated. This objective will have a direct positive effect on TR1. There may be some indirect beneficial effect to other SEO receptors due to the inter-relationship of ecology, cultural heritage, landscape and water to the tourism industry.
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: EMF & You, Power Lines and Your Health - Answering Your Questions and any future EirGrid guideline documents.	+	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This objective will have a direct positive effect on PHH1. Environmental assessment will assess and mitigate potential health impacts resulting from grid development which will benefit the health of the population.

Table 11-4: Technical Policy Assessment

No.	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
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 Ireland's Grid Development Strategy, legislative requirements, relevant guidance and best practice.	?	?	?	?	?	?	?	?	?	?	?	?	+	By its very nature the provision of development (new grid infrastructure) could potentially have a significant negative effect on the receptors associated with the SEOs. All grid development projects will be subject to the inherent mitigation therefore LSEs remain unknown. The intent to maximise existing transmission grid could reduce significant effects on SEO receptors by utilising existing infrastructure and reducing significant effects associated with the provision of new infrastructure. In contrast the promotion of grid development will help to achieve the government's renewable energy target therefore CC1 is a positive effect.
TP2	To consider all practical technology alternatives and their associated environmental effects in the development of its projects, including maximising use of the existing transmission grid.	?	?	?	?	?	?	?	?	?	?	?	?	+	All technology solutions will be based on a number of factor including environmental. All grid development projects will be subject to the inherent mitigation therefore LSEs remain unknown. The intent to maximise existing transmission grid could reduce significant effects on SEO receptors by utilising existing infrastructure and reducing significant effects associated with the provision of new infrastructure. The promotion of grid development will help to achieve the government

														renewable energy target therefore CC1 is positive.
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.	?	?	?	?	?	?	?	?	?	?	?	?	+	The potential implication of new technology is not known however it would be envisaged that these would contribute to future renewable targets therefore CC1 is positive.

Table 11-5: Technical Objective Assessment

No.	Objective	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
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.	+	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This objective will have a direct positive effect on people (PHH1) by proactively engaging them in the grid development process at both a project a non-project level.

Table 11-6: Project Development Policy Assessment

No.	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
PDP1	To have regard to EirGrid's approach to developing the grid and any associated guidelines, policies and processes, to ensure the	+	+	+	+	+	+	+	+	+	+	+	+	+	No significant negative effect anticipated. By complying with the internal guidelines, policies and processes, this should avoid potential negative effects on SEO receptors by considering the environment

No.	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	structured development of all its transmission projects.														in the future transmission project routing and technology options used.
PDP2	To promote sustainable grid development by balancing complex and/or competing technical, economic, environmental, social and deliverability goals and priorities in decision-making.	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+	There are potential positive and negative effects associated with the implementation of this objective as it may not always be possible to provide the least environmental impactful development on the balance with economic and technical goals. The promotion of grid development will help to achieve the government renewable energy target therefore CC1 is positive.

Table 11-7: Project Development Objective Assessment

No.	Objective	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
PDO1	To undertake a timely and appropriate managed transition of our transmission projects to the new approach to grid development.	*	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated.
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	+	+	+	+	+	+	+	+	+	+	+	+	+	No significant negative effect anticipated Potential positive effect to all SEO by improvements to internal approach end guidelines.

No.	Objective	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
	sustainable structured approach to the development of transmission projects														

Table 11-8: Planning and Consent Policy Assessment

No.	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comments
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.	+	+	+	+	+	+	+	+	+	+	+	+	+	No significant negative effect anticipated. Potential positive effect to all SEO by adherence to legislative requirement and guidance.
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	?	?	?	?	?	?	?	?	?	?	?	?	?	The effect associated with this objective is unknown however it is likely to be positive for several SEO receptors.

No.	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comments
	development projects, including matters of EIA and AA.														
PCP3	To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making.	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	+ -	There are potential positive and negative effects associated with the implementation of this objective as it may not always be possible to provide the least environmental impactful development on the balance with economic and technical goals.

Table 11-9: Planning and Consent Objective Assessment

No.	Objective	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
PCP1	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.	+	+	+	+	+	+	+	+	+	+	+	+	*	No significant negative effect anticipated. Continuous improvement to internal policies and processes will have a positive benefit on the majority of SEOs.

Table 11-10: Consultation Policy Assessment

No.	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Comment
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.	+	+	+	+	+	+	+	+	+	+	+	+	+	No significant negative effect anticipated. Engagement with stakeholders and the public will have positive effect on many of the SEOs. For example, the identification of unknown environmental constraints.
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.	+	+	+	+	+	+	+	+	+	+	+	+	*	No significant negative effect anticipated. Engagement with stakeholders and the public will have positive effect on many of the SEO receptors as in CEP1.
CEP3	To ensure consultation and engagement feedback is appropriately considered in decision making and that this process is documented.	+	+	+	+	+	+	+	+	+	+	+	+	*	No significant negative effect anticipated. Engagement with stakeholders and the public will have positive effect on many of the SEOs.
CEP4	To facilitate a formal complaints system and to resolve such complaints in a timely manner.	+	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. Potential positive effect on people (PHH1).

Table 11-11: Consultation Objective Assessment

No.	Objective	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	
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.	+	+	+	+	+	+	+	+	+	+	+	+	*	No significant negative effect anticipated. This objective will have a direct positive effect on the majority of SEOs.
CEO2	To maintain and update as required EirGrid's Complaints procedure.	+	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This objective will have a direct positive effect on people (PHH1).

Table 11-12: Social Objective Assessment

No.	Policy	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	
HBSP1	To consider and address social impact and the impact on human beings and health in the development of transmission infrastructure projects as appropriate.	+	?	?	+	+	?	?	?	?	+	+	+	?	No significant negative effect anticipated. This policy will have a direct positive effect on people (PHH1) and some associated SEOs where an inter-relationship exists, the effect other SEO is unknown at this time.

Table 11-13: Social Objective Assessment

No.	Objective	PHH 1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	
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	+	*	*	*	*	*	*	+	*	*	*	+	*	No significant negative effect anticipated. This objective will have a positive effect on people (PHH1). Other potential indirect effect on some SEOs.
HBSO2	To ensure that all grid development projects are screened for the requirement for a Social Impact Assessment, and where so required, that such Assessment will accompany an application for statutory consent.	+	*	*	*	*	*	*	+	*	*	*	+	*	No significant negative effect anticipated. This objective will have a positive effect on PHH1, LU1 and TR1 due to the incorporation of social impact assessment and the inter-relationship that exists between these aspects.
HBSO3	To promote and deliver Community Funds and Proximity Payments for certain categories of transmission infrastructure projects, in accordance with established terms of reference.	+	*	*	*	*	*	*	*	*	*	*	*	*	No significant negative effect anticipated. This objective will have a positive effect on people (PHH1).

The majority of Grid IP objectives and policies are deemed to have a positive or neutral likely significant effect when assessed against the SEOs. Many of the positive effects from the implementation of these policies and objectives are long term and direct in nature by firstly making provisions to avoid potential effects e.g. ENVP4 "*To protect flora, fauna and habitats which have been identified in accordance with Articles 12 of the Habitats Directive…… Regulations 2011*" and secondly by making provisions to reduce or mitigate potential effects e.g. PDP1 "*To have regard to EirGrid's approach to developing the grid and any associated guidelines, policies and processes, to ensure the structured development of all its transmission projects*."

In some instances, there are indirect long term positive effects on SEO receptors due to inter-relationships with other aspects for example ENV17 "*To require the use of sustainable urban drainage systems in new developments where appropriate*" the use of SUDS will have a positive direct effect on W1 but also an indirect positive effect on B1 and B2 due to the protection of water quality by the use of SUDS and the inter-relationship between these aspects.

It is noted that EirGrid has committed to using existing infrastructure as far as reasonably practical but, by its very nature, the provision of new development (new grid infrastructure) associated with policies such as TP1 and TP2 could potentially have an adverse effect on the receptors associated with the SEOs. However, all future grid development projects will be subject to the inherent mitigation as set out in **Section 11.2** and the likely significant effects of these policies is therefore unknown at the project level. The overall aim of these policies however is to prevent adverse effects wherever possible and help towards achieving the government renewable energy target; thus, having a positive effect on CC1.

Some policies and objectives have the potential for both positive and negative effects, for example, "*To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making*" may have both positive and negative effects as it may not always be possible to provide the least environmental impactful development on the balance with economic and technical goals.

As outlined in **Section 6** of this report, the EPA has identified seven key environmental actions for Ireland. EirGrid recognises the importance of these key actions and **Table 11-14** outlines which of the Grid IP policies and objectives work to support these seven key actions. Full details of these objective and policies is provided in **Appendix D**.

Table 11-14: Key Actions identified in the State of the Environment Report and which Grid IP Policies and Objectives Support Them

No.	Theme	EirGrid Policies and Objectives supporting EPA key actions
1	**Environment and Health & Wellbeing**	ENVP1, ENVP2, ENVP3, ENVP4, ENVP5, ENVP6, ENVP9, ENVP10, ENVP11, ENVP12, ENVP13, ENVP16, ENVP17, ENVP18, ENVP19, ENVP20 (MWQ), ENVP21 (MWQ), ENVP22 (GS). ENVO1, ENVO2, ENVO3, ENVO6, ENVO7, ENVO9, ENVO1 (New)
2	**Climate Change**	ENVP7, ENVP8 ENVO4, ENVO5
3	**Implementation of Legislation**	ENVP3, ENVP4, ENVP6, ENVP10, ENVP11, ENVP16, ENVP17, ENVP18, ENVP19, ENVP21, PCP1 ENVO4, ENVO8
4	**Restore and Protect Water Quality**	ENVP16, ENVP17, ENVP20, ENVP21 ENVO8
5	**Sustainable Economic Activities**	TP1, PDP2, PCP3 PDO2
6	**Nature and Wild Places**	ENVP4, ENVP5, ENVP6, ENVP11, ENVP12, ENVP20, ENVP21 ENVO7
7	**Community Engagement**	CEP1, CEP2, CEP3, CEP4, HBSP1

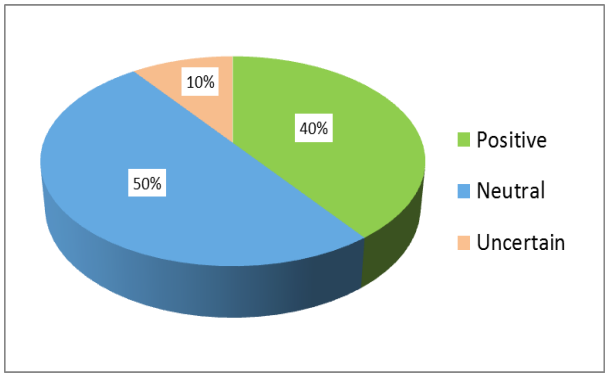
No.	Theme	EirGrid Policies and Objectives supporting EPA key actions
		CEO1, CEO2, HBSO1, HBSO2, HBSO3, TO1

Figure 11.1 and **Figure 11.2** provides a visual summary of the assessment of the Grid IP policies and objectives. It can be seen from these figures that overall the policies and objectives within the Grid IP are positive in nature. These policies and objectives will help to:

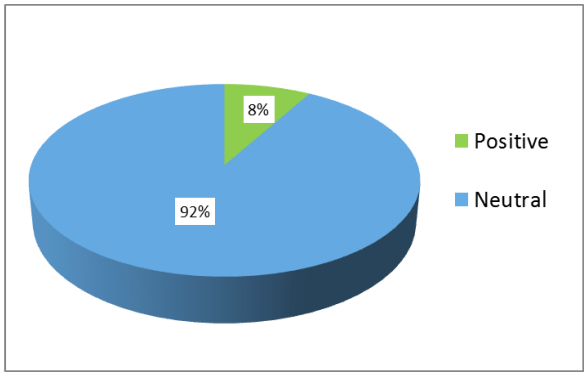
- serve the electricity needs of the county in a sustainable manner;
- make provisions to avoid and mitigate against potential environmental effects;
- promote the use of existing grid infrastructure when feasible;
- implement and improve existing internal guidance, processes and procedure when it comes to grid development;
- incorporate social impact assessment into the grid development process;
- promote new (and potentially less impactful) technologies in transmission infrastructure development;
- increase transparency and public participation in the grid development process;
- contribute to Irelands achievement of its renewable energy targets;
- contribute to combating climate change; and
- support the key actions outlined in the EPAs sixth State of the Environment Report (EPA,2016).

Recommendations and additions to further strengthen these policies and objectives are proposed as part of the SEA Mitigation and are provided in **Section 12.1.**

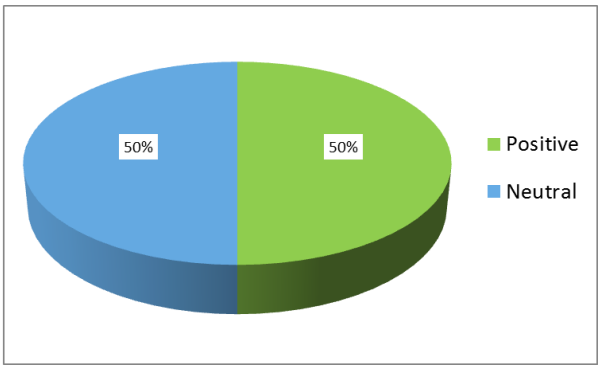
Environmental



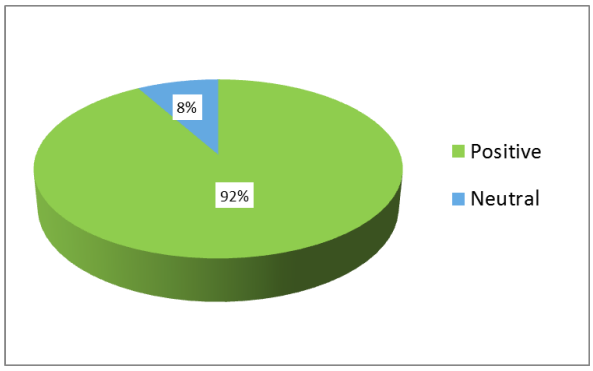
Technical



Project Development



Planning and Consent



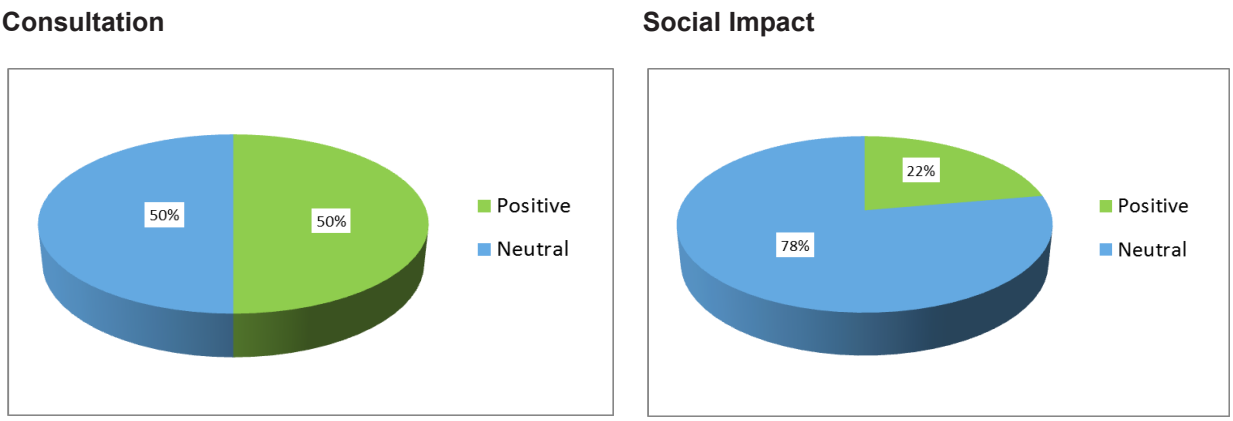
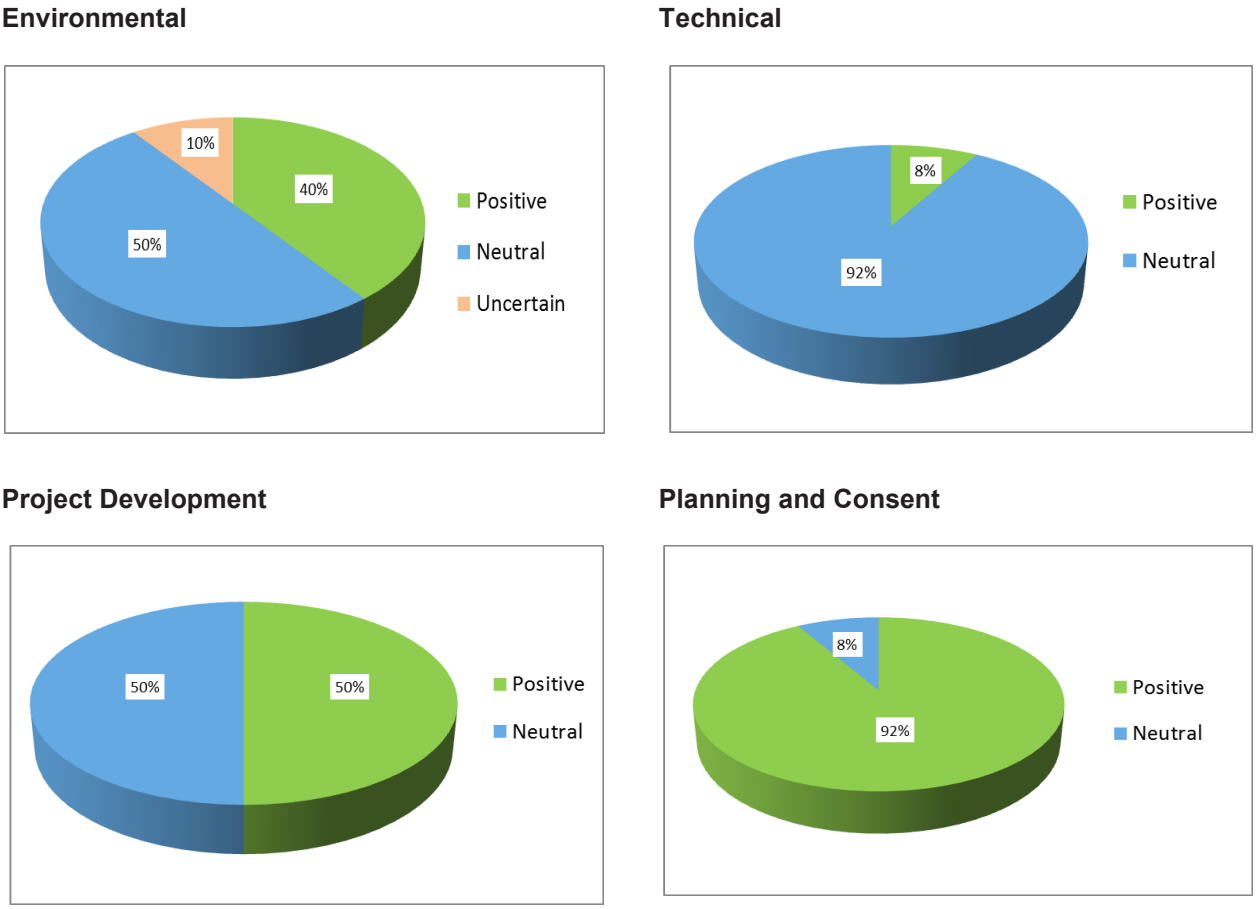


Figure 11.1: Summary of Grid IP Policy Assessment



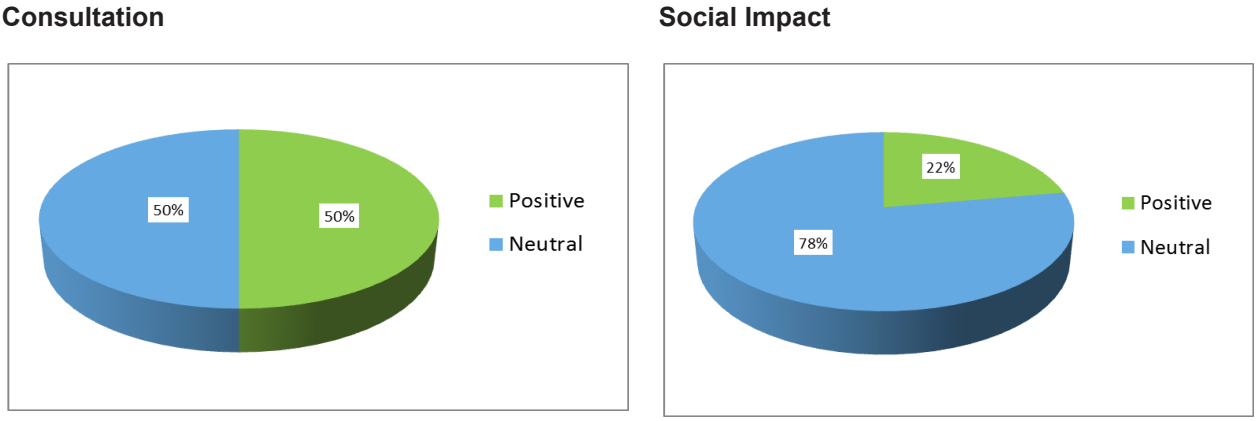


Figure 11.2: Summary of Grid IP Objectives Assessment

11.4 Grid Development under the Grid IP

The Grid IP has reference to the adopted TDP 2016-2026, with the projects referenced, based on those outlined in the TDP document. The recommendations, mitigation measures and monitoring measures outlined in **Section 12** SEA Recommendations and **Section 13** Monitoring Framework of this report have been developed, accounting for those projects and they are integrated into the Grid IP.

It is noted that new projects may arise over the lifetime of the Grid IP. The system of environmental appraisal required for each annual TDP, ensures that a high level of environmental assessment is undertaken annually in line with provisions set out in the Grid IP and associated SEA and AA reports.

As outlined in **Section 2** projects referenced in the Grid IP are set out on a regional basis. **Figure 11.3** outlines the percentage of projects per region. It can be seen from this figure that over 60% of the projects are in the B-M-W and the SW-MW regions.

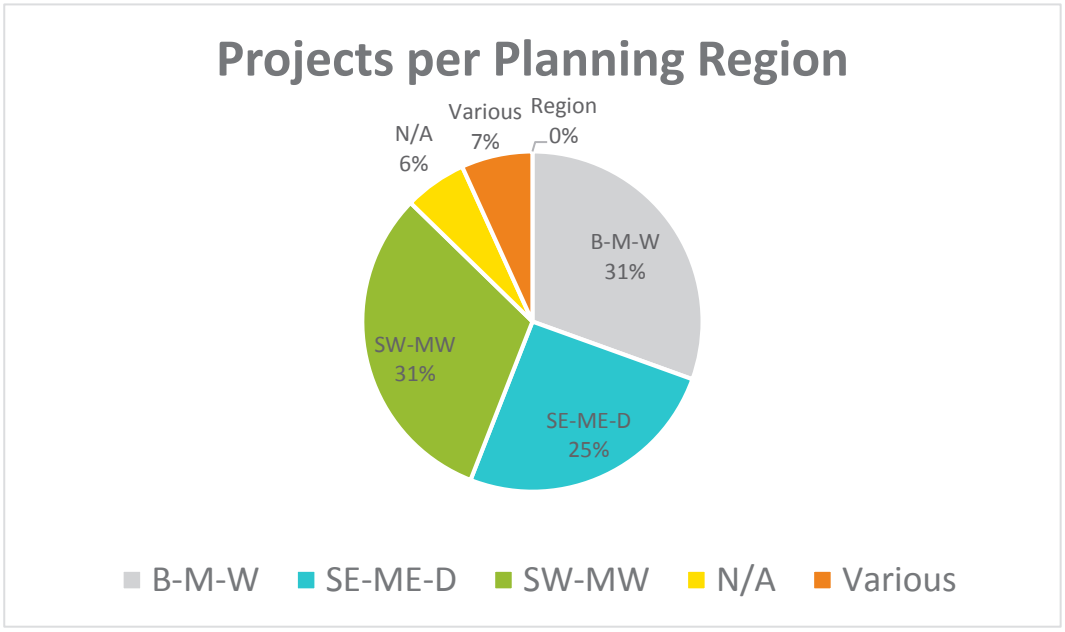


Figure 11.3: Project per Region

The projects outlined within the Grid IP are at various planning stages as outlined in **Section 2**. At the time of assessment 38% of projects within the Grid IP are still subject to planning and this can include determination as exempt development. The various planning routes for grid development projects are outlined in **Table 11-1**.

Figure 11.4 outlines the approach to project screening for the SEA project assessment. All projects outlined within the Grid IP (as outlined in the TDP 2016-2026) were taken forward to initial screening for the requirement to undergo assessment under the SEA. Projects that have gone through the necessary planning process or approval are not assessed but are considered in the cumulative assessment as appropriate.

After a review of the Grid IP and in consultation with EirGrid, 73 projects were deemed to have gone through the appropriate planning channels; ranging from already constructed, under construction, planning consented or deemed exempt development.

Since the development of the TDP 2016-2026, the Celtic Interconnector and the Regional Solution have progressed and are therefore included in this SEA project screening process.

In addition, the Grid West project 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 110 kV electricity infrastructure and associated uprating of existing infrastructure, not the 220 kV nor 400 kV infrastructure that was proposed under the TDP 2016-2026. This North Connacht 110kV project is now at Step 3 of the EirGrid six step framework.

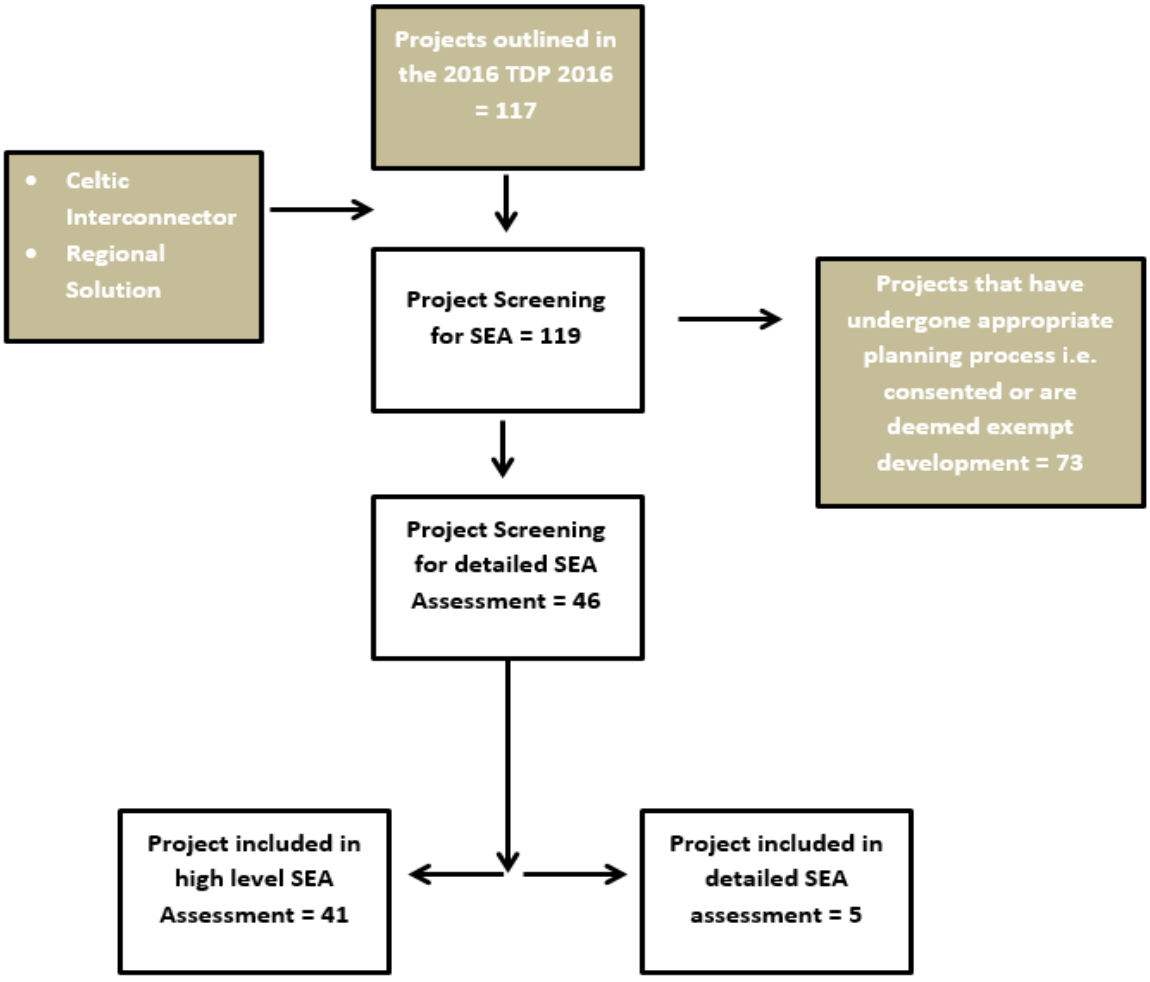


Figure 11.4: SEA Project Screening

Forty-six (or 38% of the) projects were identified through the first iteration of screening for SEA, these projects comprise of transmission development that will be subject to planning or deemed as exempt development. The

breakdown by project type is presented in **Figure 11.5.** This illustrates that over 90% of the projects under consideration under the SEA consist of uprates, modifications etc. to existing assets.

These projects were subject to a second level project screening exercise, and from this, five projects where taken forward for detailed assessment of the likely significant effects. These projects comprised three new build, one existing line uprate, and one project with a number of elements as follows:

- The North Connacht 110kV Solution – a new build project located in the west region;
- North-West Project – a new build project located in the border region;
- Celtic Interconnector - a new build project located on the southeast coast connecting to the northwest coast of France;
- Regional Solution – several elements including new build, series compensation and uprates; and
- Coolnabacky - Portlaoise 110kV Line Uprate – an existing 110kv line uprate.

All other projects were subject to a high-level assessment of likely significant effects as these projects comprised modifications to existing assets, refurbishment or uprating within existing stations (no line uprates). Due to their relatively small scale or nature prior to the assessment, significant effects were therefore deemed unlikely.

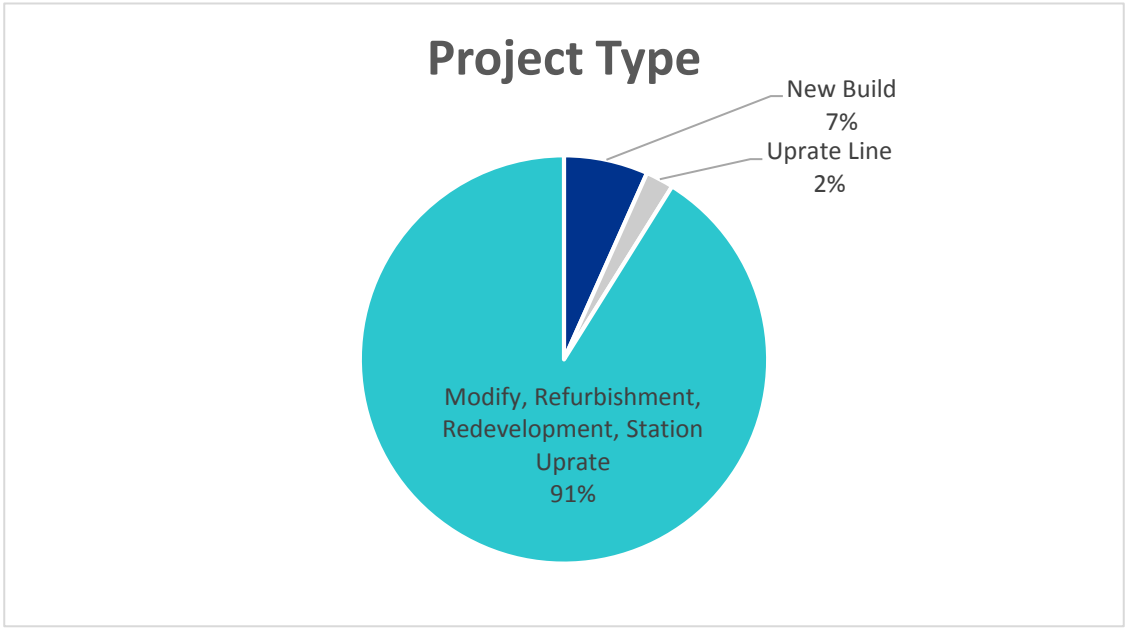


Figure 11.5: Projects by Type Considered in the SEA

11.4.1 Project Assessment

Table 11-15 to

Table 11-19 provide the detailed assessment for the five projects taken forward for more detailed assessment:

- The North Connacht 110kV Solution;
- North-West Project;
- Celtic Interconnector;
- Regional Solution; and
- Coolnabacky – Portlaoise 110kV line uprate.

Table 11-15: North Connacht 110kV Solution

The North Connacht 110kV Solution	
No	CP0816
Location – General study area under consideration	
EirGrid Planning Region	B-M-W
Regional Assembly	Northern Western
Project Type	New Build 110 kV circuit
Consideration of	The North Connaught project will be a 110 kV circuit and associated uprating of existing circuits. However,

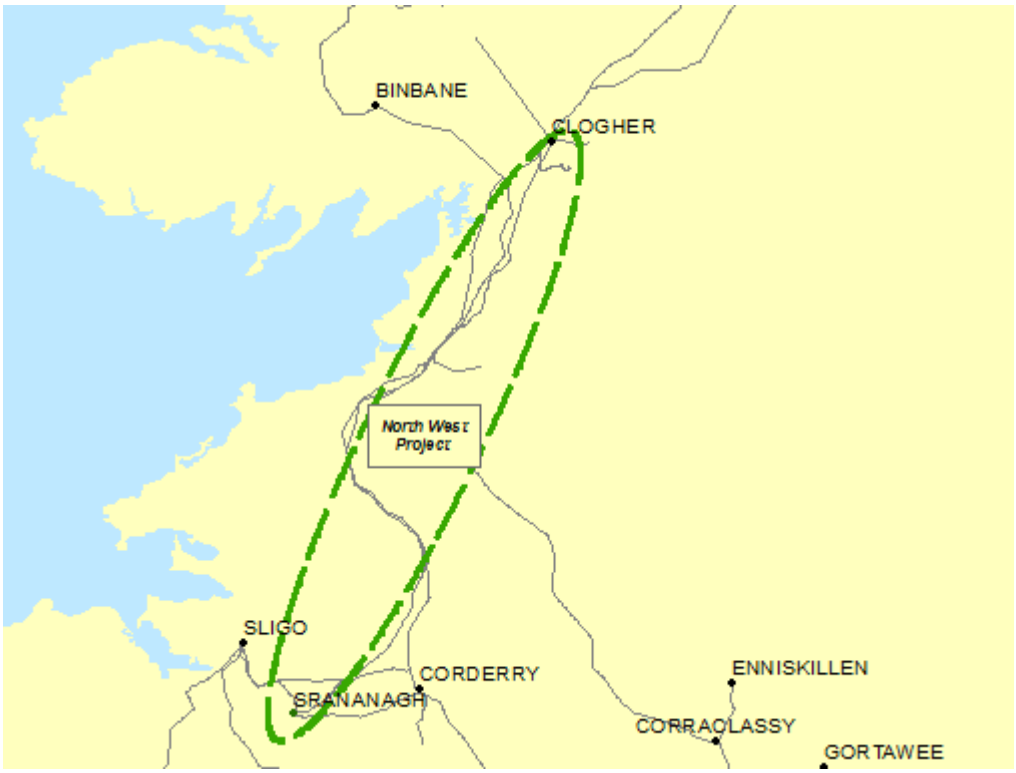
Project Alternatives	alternatives associated with the exact technology solution (for example under or over ground cables), location and timing of this project are currently being developed in accordance with the EirGrid project development process. This project will be subject to the relevant statutory processes and the EirGrid six step framework including Steps 2 and 4. The project is currently at Step 3, where a short list of technology options is being considered that could meet the identified project need. During Step 4, consideration will be given to the nature, extent and location of the specific future development.
Project Area Baseline	**Settlements:** The main settlements within the study area include Ballina Town, Castlebar Town, Sligo Town and Claremorris. **Ecology European Sites**: The study area is somewhat constrained in terms of European designated sites including the following non-exhaustive list; Bellacorick Bog Complex, Killala Bay/Moy Estuary, River Moy, Ox Mountains Bog, Lough Hoe Bog, Lough Gill and Ballysadare Bay SACs and Lough Conn and Lough Cullin, Killala Bay/Moy Estuary, Ballysadare Bay and Lough Gara SPAs. **Ecology National Sites**: The area is somewhat constrained in terms of national designated sites including the following non-exhaustive list: Forrew Bog, Croaghmoyle Mountain, Cunnagher More Bog and Slieveward Bog NHAs. There are also a large number of pNHAs, Ox Mountains Bogs, Lough Hoe Bog, Drumleen Lough and Lough Alick pNHAs being the largest within the study area. There are a number of National Trails including the Western Way. **Landscape Features:** Lough Conn, Lough Gara, Lough Key and Lough Arrow lie within the study area. The Nephin Beg Mountains lie to the north west of Castlebar and the Ox Mountains lie to the east of Ballina. The Wild Atlantic Way runs through Ballina. The Ballycrow National Park lies to the North West of Castlebar. **Cultural heritage:** There are a large number of NIAH/RMPs throughout the North Connaught study area the density of the RMPs is reduced as you cross further west of the study area. The RMPs/NIAHs are concentrated primarily in urban areas such as Ballina and Sligo. **Landuse:** The main landuse in the area is pastures and peat bogs. Additional landuse types include forestry and agriculture and continuous urban fabric around Sligo. **Water:** There are a number of watercourses in the area. Lough Conn, Lough Gara, Lough Arrow and Lough Key fall within or within close proximity to the study area. **Material Assets & Infrastructure:** The area is mainly comprised of national primary and secondary roads (N17, N5, N26, N58, N59, N61). Rail lines within the area include lines to Ballina, Westport and Sligo. Knock Airport lies to the south of the study area and there are several wind farms north/ south of the study area.
Inherent Mitigation	• EirGrid 6 step project development framework • Statutory Procedure • EirGrid Guidelines • Grid IP policies and objectives • Best Practice construction

SEOs

Assessment	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	**Potential Transboundary Effect (Y/N/?)**
	?	?	?	?	?	?	?	?	?	?	?	?	+	N
Discussion of Effects	The North Connaught has replaced the previous Grid West project which was listed as a major project in the 2017 Strategy and at the time was envisaged as either a 220 kV or 440 circuit. The North Connaught project will primarily comprise a new 110 kV circuit however the exact solution (for example under or over ground cables), location and													

	timing of this project is currently being developed. This project will be subject to the statutory processes and the EirGrid six step framework. The progression of this project through these processes will facilitate the avoidance of long term significant effects such as habitat loss, effects on SPAs/SACs, effects on the species requiring protection under the Habitats Directive, including European Eel (now an endangered species), effects on residential receptors and effects on cultural heritage and landscape features. There could be construction related impacts in relation to this project including the following: • disturbance to species; • disturbance to local residents from construction works i.e. noise or dust emissions; • temporary disturbance to local services; and • potential pollution of nearby watercourse(s). The project will be subject to the inherent mitigation and in particular the construction best practice and any measures set out in during the the statutory processes. The adherence to this construction best practice will facilitate the avoidance and reduction of significant effects. Considering the inherent mitigation which the project will be subject to, the potential for significant effects associated with the construction phase or any new infrastructure and land-take requirements are unlikely, but the overall magnitude of impacts remains unknown. The project is likely to facilitate renewable energy connection therefore the likely significant effects on SEO CC1 is positive. Due to the location of this project it is not considered that there is potential for transboundary effects.
Recommendation & Specific Mitigation of relevance	• ER1 • ER2 • ER3 • ER4 • EM2

Table 11-16: North West Project

The North West Project	
No	CP0800
Location – general study area under consideration	
EirGrid Planning Region	BMW
Regional Assembly	Northern Western
Project Type	New Build – No details at present

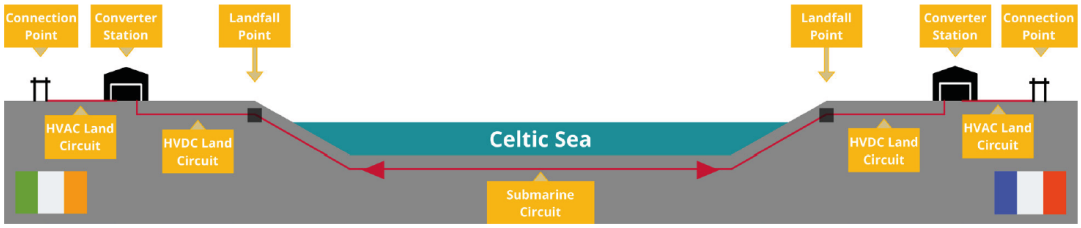
Consideration of Project Alternatives	The North West project has not been developed beyond the identification of potential future needs for this area. If progressed it will be new build infrastructure, but no further details are available at this stage. Alternatives associated with the exact technology solution (for example under or over ground cables), location and timing of this project will be considered if the project develops. This project will be subject to the relevant statutory processes and the EirGrid six step framework including Steps 2 and 4. At Step 2, a short list of technology options is developed that could meet the identified project need and at Step 4. The progression of this project through these processes will facilitate the avoidance of long term significant effects such as habitat loss, effects on SPAs/SACs, effects on the species requiring protection under the Habitats Directive, including European Eel (now an endangered species), effects on residential receptors and effects on cultural heritage and landscape features.
Project Area Baseline	**Settlements:** The main settlements within the North West Project Area include Laghy, Ballintra, Ballyshannon Town, Dromahair, Ballintogher, Ballygawley, Manorhamilton, Bundoran Town, Kinlough, Donegal Town and Sligo City are situated within close proximity to the study area. **Ecology European Sites**: The area is quite constrained in terms of European Sites including the following non-exhaustive list; Lough Gill, Benbulben, Gleniff and Glenade Complex, Lough Melvin and Lough Eske SACs and Sligo/Leitrim Uplands and Donegal Bay, Lough Derg (Donegal), Pettigo Plateau Nature Reserve, Durnesh Lough SPAs. **Ecology National Sites**: The area is quite constrained in terms of national designated sites including the following no exhaustive list: Barnesmore Bog, Aghavoghil Bog, Crockauns/Keelogyboy Bog NHAs and Dunragh Loughs/ Pettigo Plateau, Bonet River, Lough Gill and Donegal Bay pNHAs. **Landscape Features:** Lower Lough Erne lies to the east, Lough Melvin lies within the study area and Lough Gil is to the south, Ben Bulben lies to the west. The main settlements are detailed above. **Cultural heritage:** There are a large number of NIAH/RMPs within the North West study area. Sites are mainly concentrated to the west and the south of the study area. **Landuse:** The main landuse types in the North West study area include agricultural land, pastures, peat bog and some forestry. **Water:** There are a number of watercourses and rivers within the North West project study area including Lough Melvin, Lough Gill and Lough Erne. **Material Assets & Infrastructure:** The area contains mainly national primary and secondary roads including the N15, N3, N16 and A46 (Northern Ireland) and a number of regional roads run through the project area including the R232 and R280. The railway line to Sligo lies to the south and Sligo airport lies to the west. There are a number of windfarms within the project area with Golagh and Mulreavy located to the north. There is also a concentration of windfarms just outside of the project area to the south/ south-east.
Inherent Mitigation	• EirGrid 6 step project development framework • Statutory Procedure • EirGrid Guidelines • Grid IP policies and objectives • Best Practice construction

SEOs														
Assessment	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	**Potential for Transboundary Effect (Y/N/?)**

	?	?	?	?	?	?	?	?	?	?	?	?	*	Y
Discussion	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, location and timing of this project have yet to be developed. This project will be subject to the EirGrid six step project development framework and the statutory processes and the progression of this project through these processes will enable the avoidance of long term significant effects such as habitat loss, effects on SPAs/SACs, effects on residential receptors and landscape features. There could be temporary construction related impacts in relation to this project and these could include the following: • disturbance to species; • disturbance to local residents from construction works i.e. noise or dust emissions; • temporary disturbance to local services; and • potential pollution of nearby watercourse. The project will be subject to the inherent mitigation and in particular the construction best practice. The adherence to this construction best practice will facilitate the avoidance and reduction of significant effects. Considering the inherent mitigation which the project will be subject to, the potential for significant effects associated with the construction phase or any new infrastructure and land-take requirements are unlikely, but the overall magnitude of impacts remains unknown. The effect of the project on objective CC1 is uncertain at this time but its development may contribute to meeting the government renewable energy targets. Due to the proximity of the North-West Project to Northern Ireland there is a potential for transboundary effects prior to mitigation.													
Recommendation & Specific Mitigation of relevance	• ER1 • ER2 • ER3 • ER4 • EM1 • EM2													

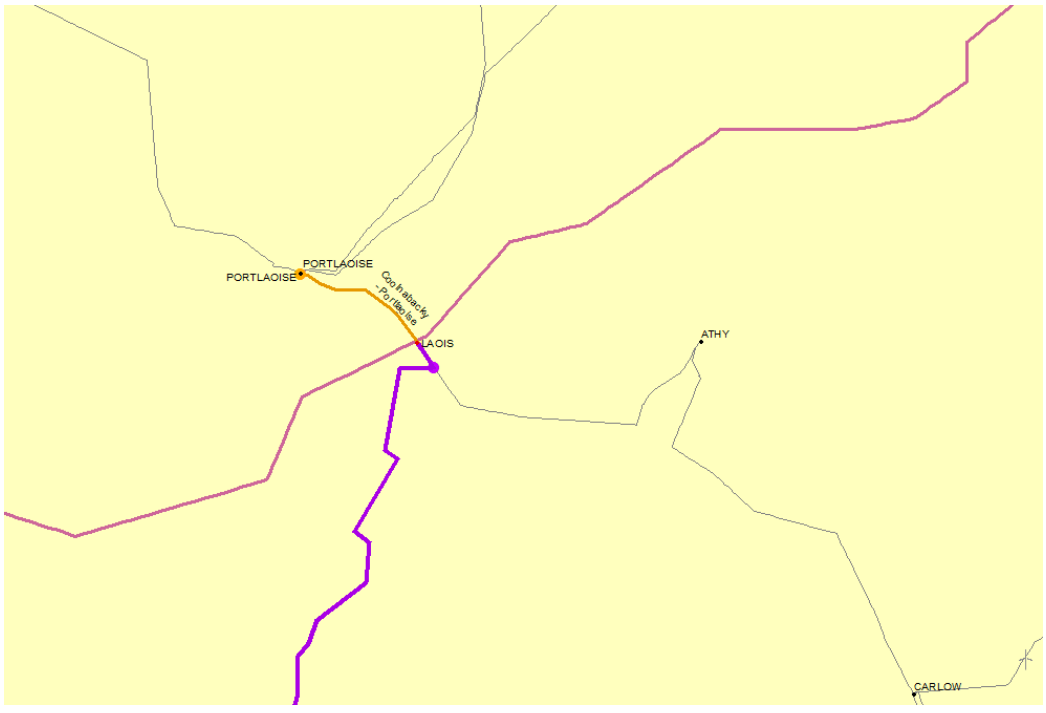
Table 11-17: Celtic Interconnector

The Celtic Interconnector	
No	n/a
Location – General feasibility study area	
EirGrid Planning Region	SW-MW.
Regional Assembly	Southern Region

Project Type	New Build and a Project of Common Interest (PCI). The project will consist of the following elements: • 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); and • A converter station to convert HVDC to HVAC. A HVAC land circuit between the converter station and the connection point to the Irish grid (existing substation) 
Consideration of Project Alternatives	The Celtic Interconnector project will be new build infrastructure. This project is subject to the EirGrid six step framework, including Steps 2 and 4 which consider various alternatives including those related to technical, cost and environmental aspects. As with all grid projects, it will be subject to the relevant statutory planning processes. The project is currently in Step 3 where a short list of technology options is being developed that could meet the identified project need. It has been established that, from a system technology perspective, the East Cork area as a landfall location is preferable to the West Wexford area. To date, possible sea cable routes have been investigated to determine the feasibility of the project. Various sea cable routes, landing point routes and possible convertor station location areas will be examined in the coming steps of the project along with opportunities for public participation.
Project Area Baseline	**Settlements:** The main settlements within the East Cork area include Cork City and Suburbs, Passage West Legal Town and its Environs, Cobh Legal Town and its Environs and Carrigtohill. **Ecology European Sites:** The Cork landfall area contains the following non-exhaustive list; Great Island Channel, Ballymacoda, and the Blackwater River SACs. There are a number of SPAs as follows; Cork Harbour, Ballcotton Bay, the Ballymacoda, and the Blackwater River SPAs. **Ecology National Site**s: The Cork landfall area has no NHAs. In terms of pNHAs there are a number including the following non-exhaustive list; Rostellan Lough, Aghada Shore and Poulnabibe Inlet. Great Island Channel, Ballycotton, Ballymacoda, Blackwater River and Estuary. **Landscape Features:** In East Cork, the main landscape features are the main settlements as detailed above. **Cultural heritage:** There are a large number of NIAH/RMPs within the East Cork area. Sites are scattered throughout the area but there is a particular concentration to the west and to the south. **Landuse:** The main landuse types in the East Cork area include discontinuous urban fabric, pastures and inland marshes. **Water:** The Celtic Sea lies between Ireland and France. In East Cork, the River Lee and Lough Mahon are the most significant waterbodies. **Material Assets & Infrastructure:** In East Cork, the M8 motorway, the N20, N22, N25, N27 and N28 are all in close proximity. The Cork to Midleton railway line lies within the area. Cork Airport and the Port of Cork are situated to the west and south respectively. DePuy and Jannsen's Wind Energy Project Wind Farms are located to the south.

Embedded Mitigation	• EirGrid 6 step project development framework. • Statutory Procedure. • EirGrid Guidelines. • Grid IP policies and objectives. • Best Practice construction.													
SEOs														
Assessment	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	Potential for Transboundary Effect (Y/N/?)
	?	?	?	?	?	?	?	?	?	?	?	?	?	N for France ? for UK
Discussion	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 south 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. However, following feasibility studies, it was determined that the East Cork options for the various elements of the interconnector are the most viable. Through marine geotechnical and geophysical surveys potential corridors from Cork ultimately terminating in either Rade de Brest or Pays de Leon have been identified as feasible. From the initial studies the emerging best performing option is to connect to France via East Cork. This project is moving through EirGrid's 6 step development framework and it is currently at Step 3 i.e. the project need has been proven (Step 1) and the technologies required to meet this need have been decided at a high-level (Step 2). The planning and appropriate assessment requirements of this project are yet to be determined. It is possible that this project will require EIA and likely AA at Step 5 and a number of detailed assessment will be undertaken for this project at that stage but in the interim a number of steps (2-4) of the framework need to be completed, including the selection of the technology solution and where to build. Consideration of the potential environmental effects will be undertaken during the selection of the preferred solution for the project (i.e. during steps 2-4) and the preferred solution will be subject to the policies and objective set out in the Grid IP. Considering the inherent mitigation which this project will be subject to, the potential for significant effects associated with the construction phase or any new infrastructure and land-take requirements are unlikely but on a precautionary basis the overall magnitude of impacts remains unknown. In relation to transboundary effects it is noted that the Irish and French TSO (EirGrid and RTE) are assessing the viability of this project jointly. RTE have conducted an SEA on their grid development plan and the direct impacts of the scheme within France will also be covered through the French and planning systems. Therefore, it is not considered that there are potential significant transboundary effects on the environment in France in addition to the direct environmental effects covered through this process. Three of these potential route crossings could enter the Territorial Waters of the UK. Therefore, there is a potential for transboundary effects.													
Recommendation & Specific Mitigation of relevance	• ER1 • ER2 • ER3 • ER4 • EM2													

Table 11-18: Coolnabacky to Portlaoise - Uprate on Existing 110kV Line

Coolnabacky to Portlaoise Line Uprate	
No	CP0835
Location	
EirGrid Planning Region	BMW
Regional Assembly	Eastern and Midland Region
Project Type	Line Uprate
Consideration of	The project consists of a line uprate. Whilst minimal changes would be expected with this project, it will be

Project Alternatives	subject to the statutory processes (as relevant) and the EirGrid six step framework including Steps 2 and 4. At Step 2, a short list of technology options is developed that could meet the identified project need and at Step 4, consideration will be given to the nature, extent and location of the future development.
Project Area Baseline	**Settlements:** The main settlements within the area of Portlaoise and Coolnabacky are Portlaoise and Stradbally. **Ecology European Sites**: The River Barrow and River Nore SAC, Ballyprior Grassland SAC and Slieve Bloom Mountains SPA are within 10km **Ecology National Sites**: Clonreher Bog NHA, Ridge of Portlaoise pNHA, Timahoe Esker pNHA, Dunamase Woods pNHA, Clopook Wood pNHA, Stradbally Hill pNHA and Kilteale Hill pNHA are within 10km. **Landscape Features:** Slieve Bloom Mountains lies to the north-west. **Cultural heritage:** There are a number of NIAH/RMPs in the immediate area of the Portlaoise to Coolnabacky line. There are also a number of sites within 5 km. **Landuse:** The main landuse types in the area are pastures and non-irrigated land. **Water:** There are a number of watercourses and rivers in the area, most notable the River Triogue. **Material Assets & Infrastructure:** Kilrush Airport is within 25km. The line is intersected by the M7 and the N80 and N77 are within close proximity. The Portlaoise to Dublin and Dublin to Cork/Limerick/Tralee rail line and Portlaoise station are also within the area of the line.
Embedded Mitigation	• EirGrid 6 step project development framework • Statutory Procedure • EirGrid Guidelines • Grid IP policies and objectives • Best Practice construction

SEOs

Assessment	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	**Potential for Transboundary Effect (Y/N)**
	?	*	?	*	*	?	?	?	?	?	?	*	*	N

Discussion	Where an uprate is taking place on an existing line, there are minimal changes associated with the operation of the line therefore no significant effects as a result of the operation of the project are likely. However, there could be construction related impacts in relation to the line uprate works. These could include but no be limited to the following: • habitat removal or disturbance to species for access requirements or line uprate works; • disturbance to local residents from construction works i.e. noise or dust emissions; • temporary disturbance to local services; and • potential pollution of nearby watercourse. This project will be subject to the inherent mitigation and in particular the construction best practice. The adherence to this best practice will facilitate the avoidance and reduction of potential significant effects. Therefore, the likely significant effects s associated with the construction works of this line uprate project are not likely to be significant however, on a precautionary basis the overall magnitude of impacts has been determined to be unknown for eight of the SEOs. There are no likely significant effects anticipated for the SEOs associated with landscape, tourism, climate change and the Habitats Directive.
Recommendation	• ER1

& Specific Mitigation of relevance	• ER2 • ER3 • ER4 • EM2

Table 11-19: Regional Solution

Regional Solution	
No	CP0945
Location – general study area under consideration	

	
EirGrid Planning Region	B-M-W, S-W-MW, SE-ME-D
Regional Assembly	Southern and Eastern Midland

Project Type	This project comprises of several elements:
	• Series Compensation on the existing 400 kV overhead lines that cross the country from Moneypoint in County Clare to Dunstown in County Kildare and Woodland in County Meath. The series compensation devices are planned for:
	  ○ Moneypoint;
	  ○ Oldstreet in County Galway; and
	  ○ Dunstown 400 kV stations.
	• **A new underwater cable, across the Shannon estuary. This will run from Moneypoint on the northern bank of the estuary to Kilpaddoge, a new station on the southern bank of the estuary.**
	• **Uprating the Great Island to Wexford and the Great Island to Kilkenny 110 kV circuits.**
	• Uprating of the busbar at Wexford 110 kV station.

Consideration of Project Alternatives	The project consists of a number of elements. It will be subject to the statutory processes and the EirGrid six step framework including Steps 2 and 4. At Step 2, a short list of technology options is developed that could meet the identified project need and at Step 4, consideration will be given to the nature, extent and location of the future development.
Project Area Baseline	**Settlements:** The main settlements within the area of the underwater cable are Kilrush to the North of the Shannon estuary, and Tarbert, Ballylongford and Glin to the South of the Shannon estuary. In relation to uprating the Great Island to Wexford and Great Island to Kilkenny 110 kV circuits the main settlements

	are Waterford, Kilkenny, New Ross and Wexford. Other smaller settlements include but are not limited to Slieverue, Inistioge, Campile, Taghmon and Barntown **Ecology European Sites:** The Lower River Shannon SAC and the River Shannon and River Fergus Estuaries and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPAs are within 10km. In relation to uprating works the River Barrrow and River Nore SAC, Lower River Suir SAC, Slaney River Valley SAC and the River Nore and Wexford Harbour and Slobs SPA are in close proximity to the existing line. **Ecology National Sites**: Bunnaruddee Bog NHA, Ballylongford Bay pNHA, Tarbert Bay pNHA, Scattery Island pNHA, St. Senan's Lough pNHA, Poulnasherry Bay pNHA, Clonderalaw Bay are within 10km. In relation to uprating works there are no NHAs in close proximity, there are a number of pNHA in close proximity to the existing lines including Barrow River Estuary, Lough Cullin, Inistioge, Red Bog Dungarven and the Wexford Slobs and Harbour pNHAs. **Landscape Features:** The Shannon river estuary is within the area and the Stack's to Mullaghareirk Mountains lies to the south east. In relation to uprating works the main landscape features include the River Suir Estuary and Wexford Harbour and the Barrow River **Cultural heritage:** There are a number of NIAH mainly within the settlement area of Kilrush, Tarbert, Ballylongford and Glin. In relation to uprating works there are a number of NIAHs within settlements in the vicinity of the existing line but also along the existing lines themselves. There are a number of RMPs throughout the area of the Shannon estuary and the existing lines from great island to Kilkenny and Wexford. **Landuse:** The main landuse types in the area are pastures, estuaries, urban are and some industrial commercial land, peat bog and coniferous forest. In relation to uprating works the main landuse types in the area are pastures, some coniferous forest **Water:** There are a number of watercourses and rivers in the area, most notable is the River Shannon Estuary. In relation to uprating works the main watercourse include the River Suir Estuary and Wexford Harbour and the Barrow River **Material Assets & Infrastructure:** The N67, N68 and N69 are within the study area. The Foynes port is some 25km up the estuary. In relation to uprating works the main roads are the M9 and the N25. The Waterford Kilkenny rail line is in the area.
Embedded Mitigation	• EirGrid 6 step project development framework. • Statutory Procedure. • EirGrid Guidelines. • Grid IP policies and objectives. • Best Practice construction.

SEOs														
Assessment	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1	**Potential for Transboundary Effect (Y/N)**

	?	?	?	?	?	?	?	?	?	?	?	?	?	N
Discussion	The elements of the regional solution that require detailed assessment under the SEA are in relation to the underwater cable and the line uprate. No significant effect is deemed likely for the busbar uprate and the series compensation elements. The project will be subject to the EirGrid six step project development framework and the statutory processes and the progression of this project through these processes will enable the avoidance of long term significant effect such as habitat loss, effects on SPAs/SACs, effects on residential receptors and landscape features. There could be temporary construction related impacts due to the provision of the underwater cable in relation to this project and these could include the following: • disturbance to species including aquatic; • disturbance to local residents from construction works i.e. noise or dust emissions; • temporary disturbance to local services; and • potential pollution of watercourse. Where an uprate is taking place on an existing line, there are minimal changes associated with the operation of the line therefore no significant effects as a result of the operation of the project are likely. However, there could be construction related impacts in relation to the line uprate works. These could include but no be limited to the following: • habitat removal or disturbance to species for access requirements or line uprate works; • disturbance to local residents from construction works i.e. noise or dust emissions; • temporary disturbance to local services; and • potential pollution of nearby watercourse. Since the proposed project crosses the Shannon Estuary it will need to adhere to the Shannon Integrated Framework Plan which sets out the overall strategy for the proper sustainable growth, development and environmental management of the Shannon Estuary Region for the next 30 years. Mitigation will be required to ensure that European Eel which are now endangered are afforded protection in the Shannon Crossing aquatic environment. The Implementation of Eel Management Plans for Ireland, would need to be adhered to in this area. The project will be subject to the inherent mitigation and in particular the construction best practice. The adherence to this construction best practice will facilitate the avoidance and reduction of significant effects. Considering the inherent mitigation which the project will be subject to, the potential for significant effects associated with the construction phase or any new infrastructure and land-take requirements are unlikely, but the overall magnitude of impacts remains unknown. Due to the location of this project it is not considered that there is potential for transboundary effects.													
Recommendation & Specific Mitigation of relevance	• ER1 • ER2 • ER3 • ER4 • EM2													

Table 11.20 outlines the high-level assessment carried out for other smaller scale projects within the Grid IP.

Table 11-20: Assessment of Other Projects – Modify, Refurbishment, Redevelopment, Station Uprate

Project Type	PHH1	B1	B2	L1	L2	CH1	GSL 1	LU1	W1	MAI1	MAI2	TR1	CC1
Modify (22 no.)	*	*	*	*	*	*	*	*	*	*	*	*	*
Redevelopment (3 no.)	*	*	*	*	*	*	*	*	*	*	*	*	*
Refurbishment (3 no.)	?	*	?	*	*	*	*	*	?	*	*	*	*
Uprate - existing station (7 no.)	*	*	*	*	*	*	*	*	*	*	*	*	*
New build in existing station (6 no.)	*	*	*	*	*	*	*	*	*	*	*	*	*
Discussion	Where a modification, uprate, redevelopment or refurbishment is taking place within a station there is minimal work required and this work will typically be undertaken within the footprint of an existing station. Where a refurbishment is taking place, there will be minimal change operationally but there is potential for some small-scale construction works. Therefore, there could be construction related impacts including but not be limited to the following: • habitat removal or disturbance to species for access requirements; • disturbance to local residents from construction works i.e. noise or dust emissions; and • potential pollution of nearby watercourse. These refurbishment projects will be subject to the inherent mitigation and in particular the construction best practice. The adherence to this construction best practice will facilitate the avoidance and reduction of significant effects. Therefore, the likely effects associated with the construction works from these refurbishments projects are not likely to be significant however, on a precautionary basis the magnitude of impacts have been determined to be unknown for three of the SEOs. There are no likely significant effects anticipated for the remaining SEOs.												
Consideration of Project Alternatives	The works associated with these projects would generally require minimal works. Each individual project will be subject to the statutory processes (as relevant) and the EirGrid six step framework including Steps 2 and 4. At Step 2, a short list of technology options is developed that could meet the identified project need and at Step 4, consideration will be given to the nature, extent and location of the future development.												
Potential for Transboundary Effect (Y/N)	N - unlikely due to the small scale.												

11.5 Assessment of Alternatives

Error! Reference source not found. provides a high-level assessment of the Grid IP plan alternatives as outlined in **Section 3**.

A No Plan, no development alternative was initially considered. However, this was not deemed a reasonable alternative, which would allow EirGrid to meet their legal obligations as a TSO and on this basis, was not considered further.

The plan alternatives presented in Error! Reference source not found. were identified as potential ways that EirGrid could achieve an appropriate and sustainable approach to the planning and consenting of transmission projects and were assessed on this basis. These where:

No Plan – no new development or upgrading - not considered a reasonable alternative as EirGrid would not comply with obligations and not considered other than for the baseline environment.

1) No plan with reliance on the Grid Strategy - so development without the framework of a plan covering targeted policy and objectives;

2) Continuation of Previous Plan- Grid 25 Implementation Programme - applying the policies and objectives from the previous plan; and

3) Grid Implementation Plan 2017- 2022 - applying new policies and objectives identified in draft Grid IP published for consultation and amended in response to comments.

These three alternatives include common elements as they are influenced by the overarching Grid Strategy. The focus is therefore on the areas of difference between the three potential approaches. While the plans provide a level guidance and direction for project development, it is noted that alternative options, routes and technologies will be considered in the development of individual schemes.

Table 11-21: Plan Alternatives Assessment

Alternative	SEOS											Consideration
	PHH1	B1	B2	L1	L2	CH1	W1	MAI1	MAI2	TR1	CC1	
1) No Plan - With reliance on the Grid Development Strategy	-/+	-/+	-/+	-/+	-/+	-/+	-/+	-/+	-/+	/+-	-/+	In the absence of the Grid IP grid development would still occur but it would not be framed by targeted policies and objectives designed to ensure sustainable grid development. This could result in a more ad hoc approach to grid development and there would be some uncertainty with regards achievement of the SEOs. There would be a mixture of positive and negative effects on the SEO's. Any development would be subject to planning/legal processes that would reduce potential environmental effects. However, this alternative does not take account of the environmental policies included in the Grid IP. These would have positive impacts in relation to protecting the environment with respect to future grid development.
Comparative assessment	Overall greater likelihood of conflict with SEOs compared to alternatives 2 and 3.											

Alternative	SEOS											Consideration
	PHH1	B1	B2	L1	L2	CH1	W1	MAI1	MAI2	TR1	CC1	
2) Continuation of Previous Plan- Grid 25 Implementation Programme	-/+	-/+	-/+	-/+	-/+	-/+	-/+	-/+	-/+	-/+	-/+	This alternative would involve development of the projects identified in the Grid IP by applying the policies and objectives from the previous plan. Applying the previous plan policies would not take account of 1) The strengthened policies developed through the SEA process and adopted in the Grid IP. 2) The progress and commitments made by EirGrid with regard to key areas such as social impact assessment, environmental assessment and public consultation for future development. 3) The recommendations and mitigation in the SEA Environmental Report for the Grid IP. The previous plan is recognized to include some policies and objectives for environmental protection and the planning/legal process would provide some basis for reducing environmental adverse effects. However, the development of proposed projects in the absence of updated policies and objectives would likely result in stronger negative effects or more protected project development timeframes.
Comparative assessment	Overall potential for greater conflict with SEOs compared to Alternative 2) Updated Grid 2017-2022											
3) New and updated Grid Implementation Plan incorporating Irelands Grid Strategy, updated and strengthened environmental policies and objectives and the TDP 2016 plus major projects from TDP 2017 i.e. 2017-2022 Plan	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	The Grid IP outlines the current understanding of the grid development over the next six years. This grid development has been guided by defined and relevant protective policies aimed at meeting EirGrid's legal, planning and licensing obligations. The fact that implementation of the Grid IP would have some adverse impacts is recognized as a negative. However, in general the implementation of the Grid IP in compliance with policies and objectives would likely result in stronger positive effects.

Alternative	SEOS											Consideration
	PHH1	B1	B2	L1	L2	CH1	W1	MAI1	MAI2	TR1	CC1	
(Preferred Alternative)												
Comparative assessment	Overall potential for conflict with SEO reduced and potential for meeting SEOs with strengthened commitment to consultation, scheme options assessment and evidence-based studies, mitigation guidelines and monitoring compared to Alternative 2)											

Given the nature of the Grid IP many of the differences between the previous and new updated plan relate to the strength of additional protection policies and objectives and also the emphasis on upgrading compared to new build and commitment for consultation and options assessment. A summary of the key differences between Alternative 2 and 3 is set out in **Table 11- 22** below explaining the preference for selecting the updated Grid IP.

Table 11-22: Reasons for selecting the Grid IP

Grid IP 2011 – 2016 (Old Version)	Grid IP 2017 – 2022 (New Version)	Preferred Option to Take Forward
Estimated cost of the delivery of Grid25 in 2011 was €3.2bn	The estimated cost of the delivery of Grid25 in the current strategy is between €2.6 – 2.9bn[17]. This reflects the emphasis that EirGrid are now placing on refurbishing and upgrading current grid assets.	Grid IP 2017- 2022 – due to increased reliance on upgrading and refurbishing existing assets and the reduced environmental effects associated generally with these compared to new build.
In the lifespan of this plan 18 projects were completed which were not carried forward to the Grid IP 2017 – 2022	A total of 34 new projects have been brought forward in Grid IP 2017 – 2022 including the Celtic Interconnector Project and the Regional Solution, both of which aim to strengthen the electricity grid in Ireland to meet future requirements	Grid IP 2017- 2022 The new projects provide potential for long term customer benefits.
A mitigation measure was identified in the previous Grid IP to include '*full integration of planning and environmental considerations in EirGrid's transmission system planning*'	**The Framework for Grid Development**: replaces EirGrid's three phase approach to grid development to allow for greater stakeholder participation in the development of grid infrastructure projects. This is a six-step process for all EirGrid grid development projects which integrates the technical development of a project with enhanced engagement (with stakeholders, communities and landowners), environmental assessment and social assessment. It also provides	Grid IP 2017- 2022 with a more robust, detailed and inclusive framework likely to lead to improved project outcomes in relation to the SEOs.

[17] This also includes the cost of the southern element of the North-South Interconnector, which had not been previously factored in the delivery of Grid25

Grid IP 2011 – 2016 (Old Version)	Grid IP 2017 – 2022 (New Version)	Preferred Option to Take Forward
	enhanced governance points throughout the process.	
Grid 25 – "A Strategy for the Development of Ireland's Electricity Grid for a Sustainable and Competitive Future", published by EirGrid in October 2008. This original strategy was developed to plan for the longer-term future strategic transmission development and reinforcement needs of the electricity transmission network. This Strategy was based on the likely demands for electricity in 2025. Grid 25aimed to develop a safe, secure, reliable and economic and efficient grid and placed an emphasis on building new lines at 400 kV and at 110 kV where appropriate. Building at 400 kV rather than 220 kV is more efficient and provides greater power carrying capability. Building one 400 kV circuit avoids the need for building a multiplicity of 220 kV and 110 kV lines and so has less long-term impact on the environment and on local communities.	**Revised Grid Strategy (2017): Irelands Grid Strategy** This was developed with stakeholders and through public consultation and is based on the three broad strategy statements which differ significantly from the original Grid25 approach. It allows for a more inclusive consultation process with local communities and stakeholders. A new approach to engagement when developing the grid was developed. Consideration has been afforded to all practical technology options. EirGrid are committed to engaging with the public before identifying a preferred technology. This consultation will explain the transmission technology options, and then seek feedback from stakeholders. This will help EirGrid to determine the best transmission technology for future projects and ensure commitment to looking for alternative options that may avoid or reduce the need for new overhead lines. Allows for the continued maximisation of the use of the existing electricity grid with an aim to avoid constructing new lines or cables, where possible. This will be achieved by increasing the capacity of existing infrastructure, or by using new technologies. This strategy lowers costs and ensures that there will be potentially less impact on the environment and on local communities and is reflected in the greater reliance on existing infrastructure upgrading.	Grid IP 2017- 2022 provides a framework which can limit environmental effects with the emphasis on use of upgrading and also provide a basis for optimising individual scheme routes and design and technology use to minimise effects taking account of stakeholder views.
The previous Grid IP is not set up as effectively as the new Grid IP to respond to different energy planning scenarios.	**Development of Energy Scenarios** The Grid IP 2017- 2022 has examined potential future needs of the grid through developing four energy scenarios. The new Grid IP can provide a better framework to respond as different scenarios may evolve in the future. This also allows for reviews to be carried out to assess which scenario is developing as the most appropriate for future adaptation.	Grid IP 2017- 2022 provides a framework for coping with a range of different scenarios

As outlined in **Section 3.2**, EirGrid have developed a series of possible future scenarios to allow them to better explain what may drive changes to the grid in the future and to facilitate planning for these scenarios. Some considerations in relation to likely effects of these future scenarios are outlined in **Table 11-23.**

Table 11-23: Considerations for future Scenarios

Scenario	Description	Considerations
Steady Evolution	Steady improvements in the economy and in technologies which generate electricity result in renewable electricity generation continuing to grow at a steady pace. New consumer technologies help to increase energy efficiency in homes and businesses.	More renewable energy use could contribute to a positive effect on SEO CC1. There is the potential for more grid development and this can have a negative effect on achieving the other SEOs. The use of new technologies could reduce the requirement for increased infrastructure or reduce significant effects associated with new infrastructure thus having a neutral or even positive effect on some SEOs.
		Grid IP 2017-2022 is the preferred alternative for responding to this scenario with the approach giving greater scope to consider new technologies and minimising environmental effects.
Slow Change	Slow economic growth and a slow response to renewable policies results in little change in the way electricity is generated. The adoption of new technologies at residential, commercial and electricity generation levels has been slow due to a risk adverse approach. Ireland's 2030 emission targets are missed under this scenario.	No or slow increase in renewable energy use could mean the 2030 emission targets are missed under this scenario so potential negative effect on SEO CC1. Anticipated that new grid development projects would be limited under this scenario therefore potential neutral effect on some SEOs.
		Grid IP 2017-2022 is the preferred alternative for responding to this scenario with the framework provided for all new build and upgrading although fewer projects are likely to come forward.
Low Carbon Living	High economic growth encourages the creation and rollout of new technologies for low carbon electricity generation. A strong public demand to reduce GHG emissions, in addition to high carbon prices and incentives for renewables, creates a high level of renewable generation on the grid.	Fast increase in renewable energy use the 2030 emission targets are meet under this scenario so potential positive effect on SEO CC1. New grid development projects could have a negative effect on other SEOs prior to mitigation.
		Grid IP 2017-2022 is the preferred alternative for responding to this scenario to limit other environmental impacts associated with additional infrastructure required and change in demand.
Customer Action	A strong economy leads to high levels of consumer spending ability. The public want to reduce greenhouse emissions therefore electricity consumers enthusiastically limit their energy use and generate their own energy. This results in a large number of community led energy projects and a rapid adoption of electric vehicles and heat pumps in the home.	Fast increase in renewable energy use the 2030 emission targets are meet under this scenario so potential positive effect on SEO CC1. Less need for large scale grid development with community led energy projects could have a positive or neutral effect on other SEOs.
		Grid IP 2017-2022 is the preferred alternative for responding to this scenario with the strengthened commitment to consultation and engagement.

Based on the assessment of the previous Grid IP 2011 – 2016 and the new Grid IP 2017 – 2022, it is considered that bringing the Grid IP 2017 – 2022 forward would be the best option. Grid IP 2017-2022 has been built on recommendations in the previous Grid IP. In addition, the new Grid IP does not place as much as an emphasis on new build. The new Grid IP includes stronger consultation and engagement strategies and also

reflects the updated Grid Strategy. Then new Grid IP is also more robust in terms of future demand, as it is better positioned to adapt to different scenarios in the future.

11.6 Inter-relationship and Cumulative Assessment

11.6.1 Inter-relationship between Individual Aspects

The potential inter-relationships between SEOs are indicated in

Table 11-24. Where potential inter-relationships have been identified these are further explained. Inter-relationships have been accounted for in the assessments above, for example effects on water quality resulting in effects to flora and fauna, and even more subtle inter-relationships such as an effect to landscape features effecting tourism.

Table 11-24: Inter-relationship between SEA Objectives

Inter-relationship Matrix	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	TR1	CC1
PHH1												

B1												
B2		✓										
L1	✓	✓	✓									
L2	✓	✓		✓								
CH1		✓	✓	✓	✓							
GSL1			✓			✓						
LU1	✓		✓	✓	✓	✓	✓					
W1		✓	✓			✓	✓					
MAI1	✓							✓				
TR1				✓		✓		✓		✓		
CC1	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	

SEO	Description of Inter-relationship
PHH1	• Minimising the proximity of development to concentrations of populations protects areas designated for residential developments and in turn minimises visual impacts on residential receptors. • Grid development in proximity to concentrations of populations can have an adverse effect on land use and visual receptors.
B1 & B2	• Preventing impacts to European Sites and other biodiversity elements can prevents indirect effects to landscape features i.e. wetlands, rivers etc. • Many designated European Sites are used for recreational activities; walking, fishing, cycling etc. • There is a strong interdependency between biodiversity and surface and groundwater receptors. • Species protection is important for sustainable recreational activities, e.g. fishing. • The reverse is true where protection of biodiversity is not achieved.
L1 & L2	• Protecting landscape character and designations could indirectly protect European sites habitats and species. • Cultural heritage designations often contribute to the landscape character or designations. • Protecting the character of the landscape ensures impacts to the land-use of the area are minimised. • Landscape character is important to tourism and recreation. The aim to avoid adverse visual impacts on residential receptors supports the aim to minimise the proximity of development to concentrations of population, and on tourist and recreational amenities. • The objective to avoid visual impacts on residential receptors could indirectly protect European sites, habitats and species, current land-uses.
CH1	• Minimising the impacts on archaeological heritage and architectural heritage will contribute to achievement of the objective to avoid adverse visual impacts on residential receptors, existing land-use and effects on cultural heritage sites which are tourist and recreational attractions. • There are potential inter-relationships between cultural heritage and biodiversity for example a protected structure may house protected bat species and water is the environment for riverine/lacustrine archaeological or underwater archaeology.
GSL1	• The nature of the geological substrate is a key factor in determining the distribution of habitats and species. • Landscape is determined by the nature of the rocks that lie beneath the surface; protecting geology and soils protects the landscape.

	• Geology and groundwater are closely linked; protecting geology and soils supports the protection of groundwater quality. • Protection of geology and soils will ensure no impacts to geotourism or cultural heritage.
LU1	• Protecting the existing land-use will have positive direct impact on people, landscape, cultural heritage, geology and soils, and tourism.
W1	• Changes in water quality can directly impact flora and fauna. • Changes in groundwater quality can directly impact geology and soils. • Water quality is vital to watercourses for recreational and tourist activities, including; fishing, kayaking, canoeing etc. • Species and flora and fauna impact the water environment and water quality.
MAI1 & MAI2	• Minimising impacts to infrastructure will benefit people in both rural and built up areas, as well as tourists and recreational visitors. • Minimising risk to existing infrastructure will allow Ireland to facilitate further renewables generation in turn helping them achieve the Kyoto targets and the Governments Low Carbon Future 2015-2030 targets.
TR1	• Minimising the effects on tourism and recreational amenities will involve protection of landscape, land-use, cultural heritage sites, watercourses utilised for recreational activities, and material assets including transport infrastructure.
CC1	• Facilitating the achievement of higher level targets for Climate Change will have a positive effect on people, biodiversity and the water environment. • To achieve higher targets, usage of low carbon technologies and renewable energy technologies will increase and in turn the grid infrastructure upgraded and improved. This may have some negative effects on land-use, landscape, cultural heritage. • In turn combatting Climate Change could have a positive benefit on biodiversity, water and cultural heritage.

11.6.2 Inter-relationship with other Plans and Strategies

There is potential for inter-relationship between the Grid IP components and external plans and policy documents. Where required the Grid IP has developed a series of objectives and policies to support these plans as outlined in **Table 11-25**.

Table 11-25: Inter-relationships between the Grid IP and the External Plans

Plan or Programme	SEA	Inter-relationship
National Level		
Ireland 2040 Our Plan - National Planning Framework (NFP) Regional, Spatial and Economic Strategies (RSES)	Yes	Each plan focuses on strategic level changes with limited information on specific developments required. Specific developments are typically detailed within county and local area development plans. There is a potential for in-combination effects, due to the pressure of multiple development proposals on electricity supply resources and/or other resources in the country. Upgrading and improving the electrical grid network will contribute toward the objectives of these national plans in terms of future development and growth. Many of the Grid IP policies and objective's support the requirement of sustainable planning.
National Spatial Plan (NSS) 2002-2020	No	
Capital Investment Plan 2016-2021	No	
A National Landscape Strategy (NLS) for Ireland 2015-2025 County Landscape Character Assessments (LCA)	No (screened out)	There is a potential for effects on landscape features from grid development however, the Grid IP has included for the following objective and policies to avoid significant effect as far as reasonably practical: • ENVP11 - To have regard to the objectives of the National Landscape Strategy in its transmission development projects.

Plan or Programme	SEA	Inter-relationship
		• ENVP12 - To continue to protect and enhance landscapes and visual amenity through the sustainable planning and design of transmission infrastructure development. • ENVP13 – To seek to avoid and reduce visual impact on residential receptors in the development of transmission projects. • ENVO7 – To have regard to any future National Landscape and/or Seascape Character Assessment in the development of its transmission projects.
National Renewable Energy Action Plan (2010) County Wind Energy Strategies County Renewable Energy Strategies	No	The Grid IP aims to contribute toward the promotion and integration of energy produced from renewable energy sources (RES) and climate change. The Grid IP has included for the following policies and objectives: • ENVP7 - To integrate measures to address climate change and climate change resilience into grid development, by way of both effective mitigation and adaptation responses, in accordance with available guidance and best practice. • ENVP8 - To support the Government's target of having 40% of electricity consumption generated from renewable energy sources by the year 2020. • 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. • 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.
National Energy Efficiency Action Plan 3 (NEEAP) (2014)	No	
Offshore Renewable Energy Development Plan (OREDP) (2104)	Yes	
Ireland and the Climate Change Challenge – Connecting How Much with How to (2012)	No	
Framework for Sustainable Development in Ireland (2012)	No	
National Biodiversity Action Plan 2017 - 2021 County Council Heritage & Biodiversity Plans (where available, various dates)	No	There is a potential for effects on biodiversity features from grid development however, to address this, the Grid IP has included the following objective and policies to avoid significant effects as far as reasonably practical: • ENVP3 - That any transmission development project, either individually or in combination with other projects, that has the potential to give rise to significant effect on the integrity of any European (Natura) site(s) shall be subject to Appropriate Assessment (AA) in accordance with Article 6 of the EU Habitats Directives. • 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. 84 of 1999), the European Communities (Birds and Natural Habitats) Regulations 2011 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. • 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. • ENVP6 - To and restore (where possible) habitats which function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive. • ENVO1 - To ensure that transmission development projects follow the standard approach to environmental assessment of transmission

Plan or Programme	SEA	Inter-relationship
		projects set out in the EirGrid topic specific guidelines: *EMF & You*, *Cultural Heritage Guidelines, Ecology Guidelines.*
National Heritage Plan (published 2002)	No	There is a potential for effects on cultural heritage features from grid development however, the Grid IP has included for the following objective and policies to avoid significant effects as far as reasonable practical: • 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. • ENVP15 - To protect known and unknown (potential) archaeological material in transmission infrastructure development, by avoidance or by best practice mitigation measures. • 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: *EMF & You*, *Cultural Heritage Guidelines, Ecology Guidelines.*
The Irish Geological Heritage Programme 1998- ongoing	No	There is a potential for effects on geological features from grid development and as there was no specific objectives and policies proposed in the Grid IP they have been suggested as part of the SEA mitigation.
River Basin Management Plan 2018-2021	Yes	There is a potential for effects on water features from grid development and as there was no specific objectives and policies proposed in the Grid IP they have been suggested as part of the SEA mitigation.
Other Regional, County and Local Plans (not included in the above)		
Flood Risk Management Plans (FRMP) (2017)	Yes	The following objective has been included in the Grid IP to support the FRMP: • 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. • 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.
County Development Plans (various dates) Local, City, Town and Electoral Area/ Development Plans (where available, various dates)	Yes (screening as a minimum)	These plans provide existing and future zoning of land at various scales i.e. county and local. There is a potential for in-combination effects, due to the pressure of multiple development proposals, including on electricity resources and/or other resources in the study area. All development will be subject to appropriate planning and AA requirements. Many of the r plans are subject to SEA, while SEA was screened out in others. Upgrading and improving the electrical grid network will aid potential future developments in local, city and town areas. Many of the Grid IP policies and objective's support the requirement of sustainable planning.

11.6.3 Cumulative Effects between Individual Components of the Grid IP

The cumulative assessment considers the potential construction and operational impacts from the projects taken forward for assessment in **Section 11.4.1** and other Grid IP projects.

The other Grid IP projects considered were those projects relevant such as in terms of geography or potential zones of influence, and also included a review of those that have been progressed through the planning processes. More detail on the Grid IP projects are contained within the plan (Section C).

There are a number of projects that require small scale works to existing assets, such as line refurbishments, hardware replacements and minor modifications at existing substations. Generally, given the scale of these works, it was considered that no in combination or cumulative impacts would occur with these projects. However, the more significant of these “smaller scale” projects have been specifically identified and considered within **Table 11-26** below.

The assessment assumes that during construction, best practise construction mitigation would be applied.

Table 11-26: Potential for In-combination and Cumulative Effects between Projects within the Grid IP

Grid IP Project Considered in Table 11-15 to Table 11-19	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
North Connacht 110kV Solution	**North West Project**	There is a potential for effects (likely significant) if the North Connacht 110kV Solution Project and North West Project were to progress as the north-east area of the North Connacht study area overlaps with the southern area of the North West project study area. There is potential to impact on birds and their migratory routes during the operational phase (if OHL were used). However, the objectives and policies, as outlined in the Grid IP and the recommendations and mitigation measures included in this report and the NIS will reduce or avoid in-combination/ cumulative effects.	*	-	-	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
North West Project	**Clogher and Mulreavy 110kV New Stations – New Wind Farm Connect** The substations were completed in 2016. The 7.5km underground cable connection was also completed in 2016.	Clogher and Mulreavy 110kV New Stations lie within the northern area of the North West project area. However, there are no anticipated cumulative effects between the Clogher and Mulreavy 110kV New Stations project and the North West Project as the construction phase is completed for the new stations and the associated connection is underground.	*	*	*	*	*	*	*	*	*	*	*	*	*
North West Project/ North Connacht 110kV Solution	**Carrick-on-Shannon-Arigina T-Corderry 110kV Line uprate**	The Carrick-on-Shannon-Arigna T-Corderry 110kV line is approximately 6.4km from the North West project study area and approximately 5.5km from the North	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	Uprate/Modify of an existing line over 35km. Project approved. Works are part complete and expected to continue through 2018.	Connacht 110kV Solution study area, at their closest points, respectively. There are no anticipated cumulative effects between the Carrick-on-Shannon-Arigina T-Corderry 110kVLine uprate project and the North West Project and the North Connacht 110kV Solution Projects given that construction works are unlikely to occur at the same time. In addition, given the works are associated with an uprate of an existing line, no potential for operational phase effects were identified.													
North Connacht 110kV Solution	**Bellacorick - Moy 110kV** **Line Uprate** Uprate/Modify of an existing line over 8.4km. Project	This existing line and permitted uprate Bellacorick - Moy project is within the north west area of the North Connacht 110kV Solution study area. There is a potential for effects (likely significant) if the North Connacht 110kV Solution Project and Bellacorick-Moy Line Uprate were to progress with the potential to	*	-	-	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	approved. Works expected to begin in 2018.	impact on European Sites (River Moy SAC and Bellacorick Bog Complex SAC). There is no potential for 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, it was considered that future upgrade works could be undertaken at the same time and therefore significant effects are possible on the European Sites. However, the objectives and policies, as outlined in the Grid IP and the recommendations and mitigation measures included in this report and the NIS will reduce or avoid in-combination/ cumulative effects.													
North Connacht 110kV Solution	**Bellacorick - Castlebar 110kV Line Uprate**	This existing line and permitted uprate project runs from north west to south west of the North Connacht 110kV Solution study area. There is a potential for	*	-	-	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	Uprate/Modify of an existing line over 38km. Project approved. Works completed in 2016.	effects (likely significant) if the North Connacht 110kV Solution and Bellacorick-Castlebar Line Uprate were to progress with the potential to impact on European Sites (River Moy SAC and Bellacorick Bog Complex SAC). There is no potential for effects during construction as the Bellacorick - Castlebar Line Uprate has commenced and will be completed in 2018. At the operational phase there will be no change in existing conditions for the Bellacorick – Castlebar line. However, it was considered that future upgrade works could be undertaken at the same time therefore significant effects are possible on European Sites. However, the objectives and policies, as outlined in the Grid IP and the recommendations and mitigation													

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
		measures included in this report and the NIS will reduce or avoid in-combination/ cumulative effects.													
Shannon Crossing (Regional Solution))	**Dunstown – Moneypoint Line Refurbishment** The project is in the approval process and work are planned to begin in 2018. The existing line to be uprated is 208.5km long.	The Dunstown – Moneypoint Line Refurbishment project is partially within the Shannon Crossing project study area as both lines connect into the Moneypoint Station. There will be no alterations of towers or foundation works required. Works will comprise of general refurbishment and replacement of outdated hardware. Therefore, potential for 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.	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
Shannon Crossing (Regional Solution)	**Moneypoint – Oldstreet 400kV line** Refurbishment 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.	The Moneypoint to Oldstreet Line Refurbishment project is partially within the Shannon Crossing project study area as both lines connect into the Moneypoint Station. Works will not be carried out at the same time as the Shannon Crossing Project and given that one cable is already existing and the second will be buried, it was considered that there is no potential for operational effects.	*	*	*	*	*	*	*	*	*	*	*	*	*
Shannon Crossing (Regional Solution)	**Ennis – Booltiagh – Tullabragh T – Moneypoint 110kV line uprate**	The Ennis – Booltiagh – Tullabrack T – Moneypoint 110kV uprate project is within the Shannon Crossing project study area. Given that the associated works have already been completed, there is no potential for	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	Works have been approved for this existing 50.2km line and have been completed in 2018.	construction phase effects. Operational effects have also been ruled out.													
Shannon Crossing (Regional Solution)	**Knockanure 220/110kV New Station** New substation. Work completed.	The Knockanure 220/110kV New Station is approximately 15km from the Shannon Crossing project study area. Given that the new station has already been constructed, no potential for construction phase effects were identified. Given the distance from the Shannon Crossing project area, potential for operational effects have also been ruled out.	*	*	*	*	*	*	*	*	*	*	*	*	*
Shannon Crossing (Regional Solution)	**Kilpaddoge 220kV New Cable** Works have been approved for this	The Kilpaddoge- Knockanure 220kV New Cable project is partially within the Shannon Crossing project study area as both lines connect to the Kilpaddoge Station. An underground cable will be laid within an	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	26km new underground cable and works are to start in 2018.	existing road. The cable will be directionally drilled under the River Galey (forms part of the Lower River Shannon SAC). As works will not be progressed at the same time there is no potential for effects during construction. Potential for effects during the operational phase have been ruled out given that both cables will be buried.													
Shannon Crossing (Regional Solution)	**Killpaddoge: Knockanure - Ballyvouskil 220kV line uprate – Clashavoon 220kV line uprate and Kilpaddoge – Tarbet 220kV line refurbishment**	The Killpaddoge: Knockanure - Ballyvouskil 220kV line uprate, Ballyvouskil - Clashavoon 220kV line uprate and Kilpaddoge - Tarbert 220kV projects are partially within the Shannon Crossing project study area, as both lines connect to the Kilpaddoge Station. The works are not likely to be undertaken in tandem and therefore, potential for construction phase effects have been ruled out. Operational phase effects have also been ruled out.	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	Existing line refurbishment/uprate 97.3km and works have been partially completed.														
Shannon Crossing (Regional Solution)	**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	A proportion of the Tarbert – Tralee 110kV line Refurbishment project is within the Shannon Crossing project study area. The proposed uprate works involves the replacement of polesets and associated excavation works will be localised. Given the distance and temporary nature of proposed works there is no potential for construction effects as the projects are not likely to be progressed in tandem. Operational phase effects have also been ruled out.	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	due to age and condition. Awaiting approval and works due to start in 2018.														
Celtic Interconnector Project	**Raffeen - Trabeg 110kV No. 1 Line Uprate** Uprate/ modification of existing 10.4km line. Programmed works for 2017.	The Raffeen - Trabeg 110kV No. 1 Line Uprate project line at the closest point is 6.1km from the Celtic Interconnector project area. The project is in close proximity to European Sites (Cork Harbour SPA and <10km from the Great Island Channel SAC). However, works will not be undertaken in tandem with the Celtic Interconnector and no connection will exist between the two projects. Therefore, construction and operational phase effects have been ruled out.	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
Celtic Interconnector Project	**Cow Cross 110kV Station - New 110kV Bay** Uprate/ modification project awaiting approval. Programmed works for 2019.	The Cow Cross 110kV station is approximately 4.7km from the Celtic Interconnector project area. Construction phase works will not be undertaken in tandem and all works will be within existing Cow Cross station site which is outwith any European site. Given the scale and nature of the works, that they are being undertaken within the footprint of the existing station and the distance of the station from the Celtic Interconnector project area, construction and operational phase effects have been ruled out.	*	*	*	*	*	*	*	*	*	*	*	*	*
Celtic Interconnector Project	**Trabeg 110kV Station - Uprate 2 110kV Transformer Bays**	The Trabeg 110kV station is approximately 4.7km from the Celtic Interconnector project area.	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	Uprate/ modification project awaiting approval. Programmed works for 2020.	Construction phase works will not be undertaken in tandem and all works will be within existing Trabeg station site which is outwith any European site. Given the scale and nature of the works, that they are being undertaken within the footprint of the existing station and the distance of the station from the Celtic Interconnector project area, construction and operational phase effects have been ruled out.													
Celtic Interconnector Project	**Midleton 110kV Station - New 110kV DSO Transformer Bay** Uprate/ modification project awaiting approval.	The Midleton 110kV station is 5.6km from the Celtic Interconnector project area. Construction phase works will not be undertaken in tandem and all works will be within existing Midleton station site which is outwith any European site. Given the scale and nature of the works, that they are being undertaken within the footprint of the existing	*	*	*	*	*	*	*	*	*	*	*	*	*

Grid IP Project Considered in **Table 11-15** to **Table 11-19**	Potential In-combination and cumulative effects with other Grid IP Projects	Discussion on the potential for in-combination/cumulative effects	PHH1	B1	B2	L1	L2	CH1	GSL1	LU1	W1	MAI1	MAI2	TR1	CC1
	Programmed works for 2019.	station and the distance of the station from the Celtic Interconnector project area, construction and operational phase effects have been ruled out.													

11.6.4 Cumulative Effects with other Projects

It is assumed that all projects have been or will be subject to any relevant planning processes (including the EIA and AA processes as required) and that project level cumulative impact assessment will be undertaken at the project stage.

Potential operational long term cumulative effects would include effects on biodiversity such as habitat loss, landscape and visual receptors and cultural heritage resources in the area. It is unlikely that a direct effect on a specific cultural heritage feature would occur, but the placement of new infrastructure would have the potential to affect the setting of a feature. In addition, there would be the potential to effect tourism related to specific landscapes due to the location of new infrastructure. The most significant potential for cumulative effects would be likely to occur between new wind farm developments and potential new OHLs. Potential negative effects would be likely to occur amongst bird species specifically in relation their flight paths. This finding is reflective of the findings within the NIS.

Table 11-27 lists other known linear infrastructural projects and wind development in the planning process in the vicinity of projects assessed as part of the SEA as outlined in the Grid IP (**Table 11-15** to **11-19**). The below list is not considered to be exhaustive and a project level cumulative assessment will be required at the project stage for all projects.

Table 11-27: Cumulative Assessment Other Projects

Project	Status and Location	Project Description	Potential for Cumulative Effect
Road			
N56 Mountcharles to Inver (Building on Recovery CIP 2016-2022)	In Planning. In close proximity to the North-West Project. The North-West study area is located to the east of this proposed road project.	The scheme which comprises an upgrade of the existing N56 from the Mountcharles Bypass to Inver Bridge will be 4.9km in length and will be approximately 50:50 online/offline improvements.	It is unlikely that the two projects will be constructed within the same timescales, and therefore there is no potential for effects during the construction phase. Dependent on the final locations, infrastructure and technology decisions for the North-West project, there may be some potential for operational effects but the likelihood of these is not considered to be significant. The North-West project will be subject to the mitigation detailed in within the Grid IP, SEA ER and NIS.
N5 Westport to Turlough (Building on Recovery CIP 2016-2022)	In Planning. Within the North Connacht study area.	The scheme comprises 20km of Type 2 dual carriageway from Westport to east of Castlebar (Turlough) and a 2.5km single carriageway link to the N59 north of Westport. Some significant visual and landscape residual impacts were identified in the EIA for the proposed road project.	Cumulative effects may occur between the two projects due to their relative close proximity. Dependent on the final locations, infrastructure and technology decisions for the North-Connacht project, there may be some potential for effects but the likelihood of these is not considered to be significant Mitigation has been detailed for the N5 project and within the Grid IP, SEA ER and NIS. With the implementation of these measures, cumulative effects would likely be avoided or reduced.
N4/N15 Sligo Urban Road Improvement	Permission granted. Within the North Connacht study area	This scheme is a continuation of the N4 Sligo Inner Relief Road north of Hughes Bridge. The scheme involves	Cumulative effects during the construction phase are not predicted as construction of the projects is not likely to take place at the same time.

Project	Status and Location	Project Description	Potential for Cumulative Effect
	and in the vicinity of the North West study area.	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. No significant residual impacts were identified in the Environmental Assessment Report for the proposed road scheme.	Dependent on the final locations, infrastructure and technology decisions for the North-Connacht and West projects, there may be some potential for operational effects but the likelihood of these is not considered to be significant. Mitigation has been detailed for the N4/N15 project and within the Grid IP, SEA ER and NIS. With the implementation of these measures, cumulative effects would be avoided or reduced.
N5 Ballaghaderreen Bypass to Longford	In Planning. Within the North Connacht study area.	This scheme runs through Roscommon and Longford and will consist of 35km of Type 1 single carriageway. Some significant visual and landscape residual impacts were identified in the EIA for the proposed road project.	Cumulative effects during the construction phase are not predicted as construction of the two projects is not likely to take place at the same time. Dependent on the final locations, infrastructure and technology decisions for the North-Connacht project, there may be some potential for operational effects but the likelihood of these is not considered to be significant. Mitigation has been detailed for the N5 project and within the Grid IP, SEA ER and NIS. With the implementation of these measures, cumulative effects would be avoided or reduced.
N4 Collooney / Castlebaldwin	In Planning. Approx. 5km away - the proposed road route lies between the North Connacht and North-West study areas.	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. Some significant visual and landscape residual impacts were identified in the EIA for the proposed road project.	Advanced works have commenced[18] on this scheme with the main construction works likely to be progressed in the near future. The projects are unlikely to be in construction at the same time and therefore cumulative effects during construction are not predicted. Due to the distance between the N4 project and the North Connacht project, cumulative effects during the operational phase are not likely to occur. Cumulative effects during the operational phase may occur between the N4 project and the North West project due to their relative close proximity. The likelihood of these is not considered significant.

[18] http://www.sligococo.ie/n4/ (Accessed May,2017).

Project	Status and Location	Project Description	Potential for Cumulative Effect
			Mitigation has been detailed for the N4 project and within the Grid IP, SEA ER and NIS. With the implementation of these measures, cumulative effects would be avoided or reduced.
N8 Dunkettle Interchange	In progress. In Cork near potential landfall area related to the Celtic Interconnector.	This scheme comprises the upgrade of the existing Dunkettle Interchange.	Cumulative effects are not likely to occur during the construction phase due to the distance (approx. 12km) between the two projects and the fact that the projects are not likely to be constructed at the same time. Due to the distance (approx. 12km) from the Celtic Interconnector project area, cumulative effects during the operational phase are not predicted.
M28 Ringaskiddy to Cork (Building on Recovery CIP 2016-2022)	In planning. In Cork near potential landfall area related to the Celtic Interconnector.	This scheme comprises the construction of 11km of new motorway and 2km of new single carriageway from the existing Bloomfield Interchange (junction 9) on the N40 to the eastern side of Ringaskiddy Village.	Cumulative effects during construction are not predicted as the two projects are not likely to be constructed at the same time. Due to the distance (approx. 3.2km) from the Celtic Interconnector project area, cumulative effects during the operational phase are not predicted.
Water			
Sligo & Environs Water Supply Scheme – Foxes Den/Cairns Hill Water Treatment Plant Upgrade	In progress. In vicinity of the North-West study area and within the North Connacht study area.	The project comprises the refurbishment of the Foxes Den Water Treatment Plant and Cairns Hill Water Treatment Plan decommissioning.	Cumulative impacts during the construction phase are not predicted as the project will be completed before the North. Connacht and North-West projects commence. Due to the likely scale of the water supply scheme once operational, cumulative effects during the operational phases are not predicted.
Lough Talt Regional Water Supply Scheme	In progress. In vicinity of the North-West study area.	This project will involve the rehabilitation and replacement of 17kms 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.	Cumulative effects during the construction phase are not predicted as this project will be completed before the North-West project is progressed. Due to the likely scale and nature of water supply scheme once operational, cumulative effects during the operational phases are not predicted.
Donegal Group B Sewerage Scheme	In progress (TBC Spring 2018). In vicinity of North-West study area.	The Donegal Group B project includes the development of new sewerage schemes in Killybegs, Bundoran,	Only works associated with Bundoran could potentially result in potential cumulative effects as the remaining scheme sites are more than 20km from the North-West project area.

Project	Status and Location	Project Description	Potential for Cumulative Effect
		Glencolumbkille and Convoy.	However, it is unlikely that the North-West project 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 currently 2018. Therefore, cumulative effects during the construction phase are not predicted. Due to the likely scale of the sewerage schemes once operational, cumulative effects during the operational phases are not predicted.
Donegal Countywide Watermains Rehabilitation Scheme	In progress. In vicinity of North-West study area.	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.	Cumulative effects during construction are not predicted, as this project will be completed before the North-West project commences. Due to the likely scale and nature of the watermains schemes once operational, cumulative effects during the operational phases are not predicted.
Collooney Wastewater Treatment System – site upgrade	In progress. In vicinity of the North-West study area.	The upgrade works comprises new inlet works, new tanks construction and new buildings, all within the existing footprint of the existing plant.	Cumulative effects during construction are unlikely due to the small scale of this project and due to the fact that all works will be carried out within an existing site. Due to the likely scale and nature of the wastewater scheme once operational, cumulative effects during the operational phases are not predicted.
Foxford Sewerage Scheme Network and Wastewater Treatment Plants	In Progress. Within the North Connacht study area.	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 expected to be complete in winter 2019.	Cumulative effects during the construction phase are not predicted as the project will be completed before the North Connacht project commences. Dependent on the final locations, infrastructure and technology decisions for the North-Connacht project, there may be some potential for operational effects but the likelihood of these is not considered to be significant. Mitigation has been detailed within the Grid IP, SEA ER and NIS for the North Connacht project.
Douglas Flood Relief Scheme	In Planning. In vicinity of the Celtic Interconnector study area.	The proposed project consists of flood relief works along and/or adjacent to and/or in the vicinity of the following	Due to the distance (approx. 13km) from the Celtic Interconnector project area, cumulative effects are not predicted to occur.

Project	Status and Location	Project Description	Potential for Cumulative Effect
		watercourses: Ballybrack Stream, Grange Stream, Tramore River.	
Wind			
Oweninny Wind Farm	Planning approved. In vicinity of North Connacht study area.	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 grated for Phase 1 and 2 only with 61 associated wind turbines.	The activities associated with this project are not likely to result in cumulative effects during construction as the timescale for both projects are unlikely to overlap. However, regardless of the technology taken forward for the North Connacht project (OHL or UGC) future upgrade works and maintenance/ decommissioning of the both projects could occur at the same time and therefore cumulative effects could occur. Mitigation has been detailed for the Oweninny project and within the Grid IP, SEA ER and NIS. With the implementation of these measures, cumulative effects would be avoided or reduced.
Magheramore/ Cregganbrack, Bekan, Claremorris	Permission granted. Within North Connacht study area.	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.	Given the 10-year period for development of the Magheramore/ Cregganbrack, Bekan, Claremorris wind farm there is potential for cumulative effects during the construction phase. 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 and therefore cumulative effects could occur. Mitigation has been detailed for the Magheramore/ Cregganbrack Bekan Claremorris Wind Farm Project and within the Grid IP, SEA ER and NIS. With the implementation of these measures, cumulative effects would be avoided/reduced.
Corvoderry Wind Farm Development	Permission granted. In close proximity to the North Connacht Project study area.	Wind farm development of ten turbines with 100m overall height.	Cumulative effects during the construction phase are not predicted as the projects are not likely to take place at the same time. 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

Project	Status and Location	Project Description	Potential for Cumulative Effect
			farm could occur at the same time therefore cumulative effects could occur. Following the implementation of mitigation measures outlined for the Corvoderry Wind Farm Development and within the Grid IP, SEA ER and NIS, cumulative effects during the operational phase would be avoided/reduced
Dooleeg, Bellacorick	Permission granted. In close proximity to the North Connacht Project study area.	Wind farm development of one 2MW turbine.	Cumulative effects during the construction phase are not predicted as the projects are not likely to take place at the same time. Given the small scale of the development, cumulative effects during the operational phase are also not predicted.
Other			
Ringaskiddy Port Redevelopment	Permission granted. In vicinity of the Celtic Interconnector project area.	Redevelopment of existing port facilities at Ringaskiddy, Co Cork.	Cumulative effects during the construction phase are not predicted as the projects are not likely to take place at the same time. However, there may be potential for cumulative effects to occur, where operational activities for the Port Redevelopment could interact with the construction of the Celtic Interconnector. Following the implementation of mitigation measures outlined for the Port Redevelopment and within the Grid IP, SEA ER and NIS, cumulative effects during the operational phase would be avoided/reduced.
Cork Lower Harbour Main Drainage Project	Permission granted. In vicinity of the Celtic Interconnector project area.	The Cork Lower Harbour Main Drainage Project provides enhanced wastewater treatment through the development of a new wastewater treatment plant at Shanbally County Cork.	Cumulative effects during the construction phase are not predicted as the projects are not likely to take place at the same time. Given the nature of the two projects and also the distance of the wastewater treatment plant site from the Celtic Interconnector project area, cumulative effects are not predicted during the operational phase.
Ballintra Quarry – planning application number SU0054	Permission granted. Within the North West Project study area.	Further development of an existing quarry.	Due to the likelihood that both projects will not take place at the same time and differing nature of the two projects, cumulative effects are not predicted.

Key Messages from Chapter 11:

- Overall the likely significant effect (LSE) of policies and objectives that will be applied to individual projects will be positive to neutral in nature.
- The application of inherent mitigation as developed by EirGrid will reduce the likelihood of significant negative effects on the environment.
- The overall magnitude of impacts cannot be quantified and remain unknown until project level assessments are undertaken.
- In the absence of information on bird flight lines and migratory routes, there may be potential for cumulative impacts if the North West and North Connacht projects progress as overhead lines.
- Detailed cumulative impact assessment will be required at the project level assessment stage based on project specific data and analysis.

12. SEA Recommendations

12.1 Introduction

12.1.1 Policies and Objectives

The recommendations in relation to the policies and objective of the Grid IP are outlined in **Table 12-1** and **Table 12-2.** These tables outline the proposed alterations to the Grid IP policies and objectives proposed by the SEA/AA team and whether this has been agreed by EirGrid.

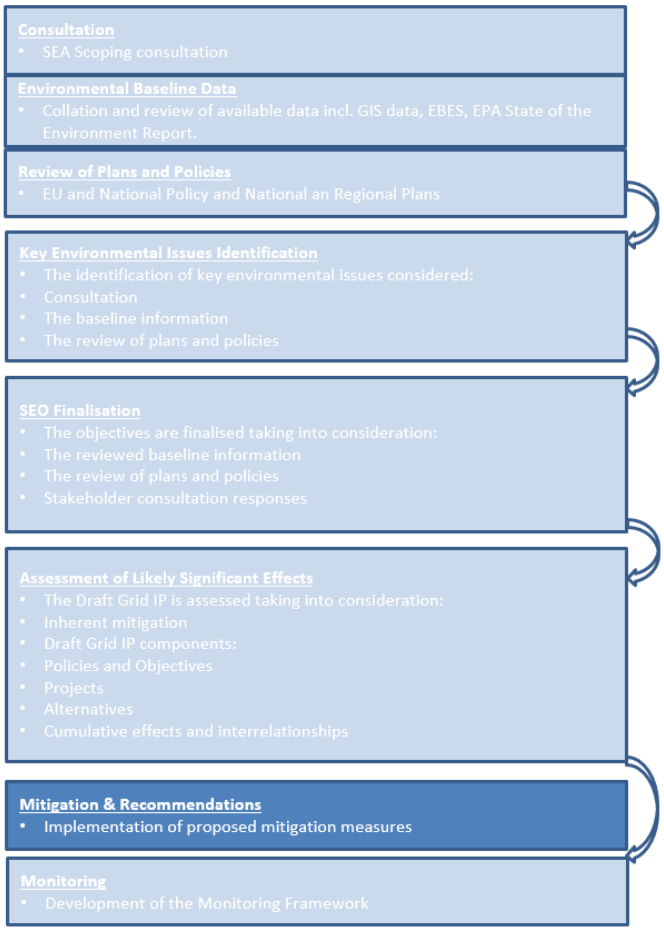


Table 12-1: EirGrid Policies – SEA Recommendations

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
General	ENVP1	To uphold best practice in the environmental design and appraisal of transmission development projects.	To apply best practice in the design and environmental appraisal of transmission development projects	Y
	ENVP2	To develop EirGrid's approach to the protection of the environment in transmission development, and to make this publicly available.	To continue to develop EirGrid's approach to the protection of the environment in transmission development, and fully integrate this approach throughout the procedures for transmission development and make this publicly available.	Y
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.	n/a	n/a
	ENVP4	To 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 2011.	Note: Legal requirement 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 2011. This protection will be afforded at the earliest opportunity in the project development process i.e. option selection.	Y
	ENVP5	To promote a pro-active good practice approach to tree and hedgerow management in grid development, with the aim of minimising the impact of transmission development on existing trees and hedgerows.	Recommendation - Consideration to be given to combining ENVP6 and ENVP6. 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 and mitigating the impact of transmission development on existing trees and hedgerows.	N Y
	ENVP6	To protect trees, hedgerows or groups of trees which function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive.	To protect and restore (where possible) habitats which function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive.	Y
Climate Change	ENVP7	To integrate measures to address climate change into grid development, by way of both effective mitigation and adaptation responses, in accordance with available guidance and best practice.	To integrate measures to address climate change and climate change resilience into grid development, by way of effective mitigation and adaptation responses, in accordance with available guidance and best practice.	Y

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
	ENVP8	To support the Government's target of having 40% of electricity consumption generated from renewable energy sources by the year 2020.	n/a	n/a
Noise	ENVP9	To facilitate new technologies on transmission infrastructure which minimise noise emissions.	To facilitate new technologies on transmission infrastructure which avoid in the first instance or minimise/mitigate noise emissions.	Y
	ENVP10	To seek to preserve and maintain noise quality in accordance with good practice and relevant legislation.	To preserve and maintain noise quality in accordance with relevant legislation and good practice.	Y
Landscape	ENVP11	To have regard to the objectives of the National Landscape Strategy in its transmission development projects.	To have regard to the objectives and actions of the National Landscape Strategy in its transmission development projects.	Y
	ENVP12	To continue to protect and enhance landscapes through the sustainable planning and design of transmission infrastructure development.	To seek to continue to protect and enhance landscapes and visual amenity through the sustainable planning and design of transmission infrastructure development.	Y
	ENVP13	n/a	NEW: To seek to avoid and reduce visual impact on residential receptors in the development of transmission projects.	Y
Cultural Heritage	ENVP14	To ensure that the special interest of protected structures, including their curtilages and settings, are protected to the greatest extent possible when considering site or route options for transmission infrastructure development.	To ensure that the special interest of protected structures, including their curtilages and settings, are avoided when considering site or route options for transmission infrastructure development.	Y
	ENVP15	To protect known and unknown (potential) archaeological material in transmission infrastructure development, by avoidance or by best practice mitigation measures.	n/a	n/a
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.	Recommendation: These policies could be refined and combined to one policy. 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.	Y

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
	ENVP17	n/a	NEW: 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.	Y
Air Quality	ENVP18	To seek to preserve and maintain air quality in accordance with good practice and relevant legislation in the construction of its transmission projects.	n/a	Y
Tourism	ENVP19	To consider the potential impact upon tourism in the development of transmission projects.	To consider the potential impact upon tourism in the development of transmission projects and to protect tourism resources through the sustainable planning and design of transmission infrastructure development.	Y
Marine Environment	ENVP20	n/a	NEW: 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.	
	ENVP21	n/a	NEW: To protect the marine environment, in accordance with any plans made under the EU Directive 2014/89/EU (Marine Spatial Planning).	
Geology and Soils	ENVP22	n/a	NEW: To ensure that geological heritage features are protected to the greatest extent possible when considering site or route options for transmission infrastructure development.	Y
Technical	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 EirGrid's Grid Development Strategy 2016.	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 EirGrid's Grid Development Strategy 2016, legislative requirements, relevant guidance and best practice.	Y
	TP2	To consider all practical technology alternatives in the development of its projects, including maximising use of the existing transmission grid.	To consider all practical technology alternatives and their associated environmental effects in the development of its projects, including maximising use of the existing transmission grid.	Y
	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.	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.	Y

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
Project Development	PDP1	To have regard to EirGrid's Framework for Grid Development, and any associated Guidelines, policies and processes, to ensure the structured development of all its transmission projects.	To have regard to EirGrid's approach to developing the grid and any associated guidelines, policies and processes, to ensure the structured development of all its transmission projects.	Y
	PDP2	To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making.	To promote sustainable grid development by balancing complex and/or competing technical, economic, environmental and social and deliverability goals and priorities in decision-making.	Y
Planning and Consent	PCP1	To have regard to relevant legislation and 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 current National Spatial Strategy and Regional Planning Guidelines, and the future National Planning Framework and Regional Spatial and Economic Strategies.	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 current National Spatial Strategy and Regional Planning Guidelines, and the future National Planning Framework and Regional Spatial and Economic Strategies.	Y
	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.	n/a	n/a
	PCP3	To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making.	n/a	n/a
Consultation	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.	n/a	n/a
	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.	n/a	n/a
	CEP3	To ensure consultation and engagement feedback is appropriately considered in decision making.	To ensure consultation and engagement feedback is appropriately considered in decision making and that this process is documented.	Y
	CEP4	To facilitate formal complaints and to resolve such complaints in a timely manner.	To facilitate a formal complaints system and to resolve such complaints in a timely manner.	Y

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
Human Beings and Society	HBSP1	To consider and address social impact and the impact on human beings in the development of transmission infrastructure projects as appropriate.	To consider and address social impact and the impact on human beings and health in the development of transmission infrastructure projects as appropriate.	Y

Table 12-2: EirGrid Objectives - SEA Recommendations

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
General	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: EMF & You, Cultural Heritage Guidelines, Ecology Guidelines.	n/a	Y
	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.	n/a	n/a
	ENVO3	To develop the environment space on the EirGrid website as a tool for sharing information on the environment in transmission development.	To develop the environment space on the EirGrid website as a tool for sharing environmental information in respect of transmission development.	Y
Climate Change	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 our grid development projects and strategies.	To assist towards meeting national and EU targets, in particular by means of having regard to EirGrid's Climate Change Adaptation Plan in undertaking our grid development projects.	Y
	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.	To mitigate the impacts of climate change through the implementation of policies and processes that reduce energy consumption, reducing energy loss/wastage, and facilitate the supply of energy from renewable sources.	Y
Noise	ENVO6	To give careful consideration to the siting of transmission infrastructure so as to ensure that noise-sensitive receptors are protected from potential noise emissions.	n/a	n/a
Landscape	ENVO7	To have regard to any future National Landscape and/or Seascape Character Assessment in the development of its transmission projects.	n/a	n/a
Water	ENVO8	That all grid development proposals, and in particular, transmission 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	n/a	n/a

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
		flood risks, site-specific mitigation measures, flood-resilient design and construction, and any necessary management measures.		
Tourism	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.	n/a	n/a
Technical	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.	n/a	n/a
Project Development	PDO1	To undertake a timely and appropriate managed transition of our transmission projects to the structure of the Framework for Grid Development.	n/a	n/a
	PDO2	To undertake annual reviews of the Framework, and associated Guidelines, policies and processes, to ensure that the Framework remains an appropriate and sustainable structured approach to the development of transmission projects.	To undertake periodic annual reviews, as appropriate, of the approach, and associated guidelines, policies and processes, to ensure that the remains an and sustainable structured approach to the development of transmission projects.	Y
Planning and Consent	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.	n/a	n/a
Consultation	CEO1	To engage with statutory and non-statutory stakeholders in a meaningful manner as set out in the EirGrid Consultation Handbook and Toolkit and via EirGrid's Agricultural Liaison Officers and Community Liaison Officers.	n/a	n/a
	CEO2	To maintain and update as required EirGrid's Complaints procedure.	n/a	n/a
Human Beings and Society	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.	n/a	n/a
	HBSO2	To ensure that all grid development projects are screened for the requirement for a Social Impact Assessment, and where so required, that such Assessment will accompany an application for statutory consent.	n/a	n/a

Aspect	Number	Original	Proposed Amendment, Recommendation or Addition (indicated by underlined text)	Agreed Y/N
	HBSO3	To promote and deliver Community Funds and Proximity Payments for certain categories of transmission infrastructure projects, in accordance with established terms of reference.	n/a	n/a

12.1.2 SEA Recommendations

All grid development projects will be subject to inherent mitigation including EirGrid's six step Development Framework, appropriate planning processes, and construction best practice as set out in **Section 11.2.** On a precautionary basis some unknown effects have been identified.

This section outlines the recommendations proposed in relation to grid development as part of the Grid IP. These SEA recommendations will contribute to EirGrid Strategy Statements and will complement the existing inherent mitigation as set out in **Section 11.2**. These recommendations will also facilitate effective monitoring of the SEA Objectives throughout the Grid IP plan cycle.

12.1.2.1 Review and update of the EirGrid Evidence Based Environmental Studies (ER1) and the EirGrid Environmental Guidelines (ER2)

As outlined in objective ENVO2 of the Grid IP, EirGrid intend "*To continue to prepare and/or update EirGrid evidence-based environmental guidelines, particularly in the context of new or updated evidence-based environmental information*" EirGrid are committed to the continuous review and update of their environmental studies and associated guidelines, where required. The EirGrid environmental studies will be reviewed against the current knowledge base during this cycle of the Grid IP. The studies will be updated where necessary to take account new developments and new research in the field.

12.1.2.2 SEA Compliance Check (ER3) integrated into the Transmission Development Process

EirGrid will develop an SEA compliance check within the six-step framework for grid development to facilitate the SEA monitoring as outlined in **Section 12** of this SEA Environmental Report. The SEA compliance check will be adapted for each stage of the six-step framework and will be proportionate to the project scale i.e. from project that are exempted development to SID projects. This SEA compliance check will extend to Step 6 of the six-step framework for Grid development i.e. the construction phase. At this step ESB Networks (who are responsible for constructing the transmission assets) will facilitate the SEA compliance check and will report back to EirGrid. This process will be document through a standardised compliance check template and the finding will be reported in the yearly EirGrid EAR reports.

12.1.2.3 Environmental Advisory Group (ER4)

The Environmental Advisory Group (EAG) will continue to function during the second cycle of the Grid IP and will meet over the cycle of the plan to discuss SEA monitoring, the EARs, and the progress of the recommendations as may be required. The annual EARs will be sent to all EAG members for information as part of the ongoing rolling Transmission Development Plans.

In addition, it is recommended that an agreement is to be made between EirGrid and the EPA (a member of the EAG) with regard to setting threshold levels for specific monitoring indicators, both in general and for specific projects as appropriate.

12.1.2.4 Environmental Enhancements (ER5)

In the development of new infrastructure and upgrading of existing infrastructure EirGrid will consider, where practicable, measures that could be taken to enhance the natural environment and to improve the biodiversity of the areas in which their facilities are located.

It is recommended that EirGrid consider developing a guide/ tool kit for natural environment enhancement/ mitigation which could be informed by the relevant Evidence Based Environmental Studies (EBES) and related guidelines. This tool could then assist in the identification of potential enhancement opportunities and management measures. There are also the potential merits associated with piloting agreed measures across a range of habitat types, where appropriate, in consultation with key stakeholders.

This could involve ecological management of overhead lines that are adapted to local site conditions and take into consideration the local ecological and social objectives, functions and interests.

12.1.3 Grid Development Specific Mitigation

12.1.3.1 Bird Study in the Northwest Area (EM1)

Prior to the selection of the route and technology to be used for the two major infrastructure projects in the north-west, namely the North-West Project and North-Connaught projects - a study of migratory birds and their routes, will be undertaken to inform the selection of the route and/or technology to be used having regard for other constraints. 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. This will inform the most appropriate route option and technology options to avoid significant impacts. This study will build upon any work undertaken to date for the North-West Project and will also have regard to potential cumulative effects from other projects in the region.

12.1.4 Alternatives Assessment and Cumulative Assessment (EM2) Mitigation

Alternative assessment is a fundamental part of the EirGrid six step Framework including an assessment of the environmental impact of each technology option in order to understand the environmental implications of a proposed project. No further or specific mitigation measures or recommendations are proposed in this report.

This SEA Environmental Report has presented a non-exhaustive list of projects in the vicinity of some of the larger projects outlined in the Grid IP, such as the Celtic Interconnector. A number of these projects or future projects could result in cumulative impacts with Grid development projects at the project level scale. EirGrid undertake cumulative impact assessment as part of their project assessment process such as EIA and AA. EirGrid will use best practice documents including the UK Planning Inspectorate Advice Note 17: Cumulative effects assessment relevant to nationally significant infrastructure projects (Planning Inspectorate, 2015) when undertaking EIA.

As part of this process, EirGrid will consult will local authorities in the form of county planning departments and with key infrastructure developers (such as TII, Irish Rail and Irish Water, and private wind farm developers), to gain an understanding of the projects proposed in an area that could result in cumulative effects with grid development.

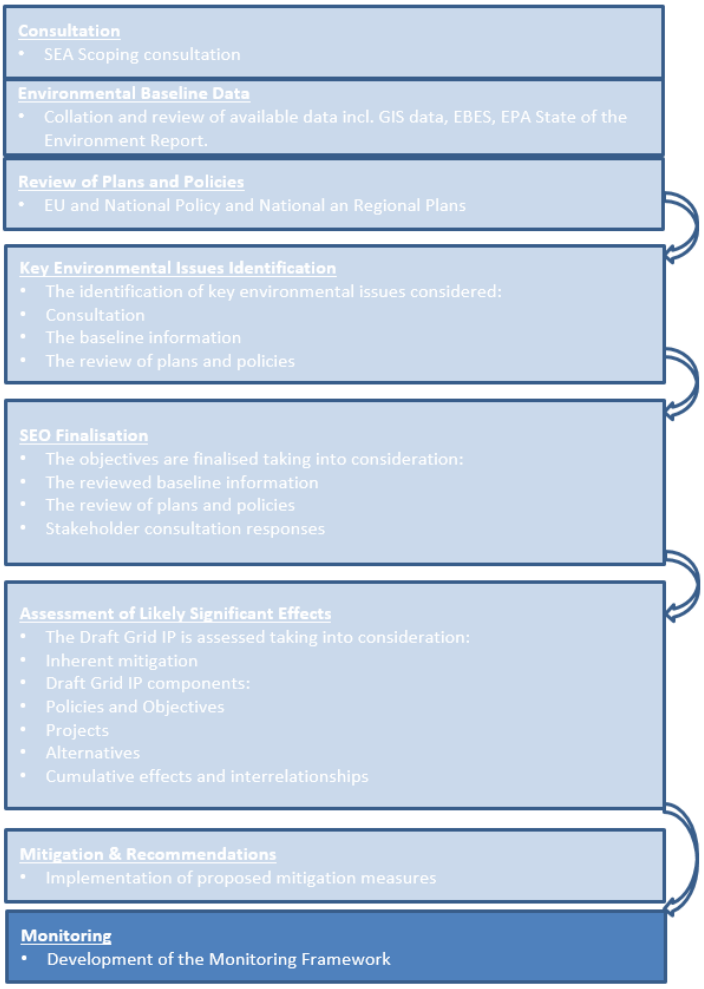
Key Messages from Chapter 12:

- Recommendations have been provided to strengthen the Grid IP policies and objectives. All recommendations have been accepted by EirGrid.
- A series of mitigation measures, in the form of recommendations, have been proposed in order to alleviate potential unknown and negative likely significant effects (LSEs), and to further strengthen the existing in-house EirGrid processes and procedures.

13. Monitoring Framework

The monitoring framework provided in **Table 13-1** has been developed for the Grid IP using the SEA objectives and indicators. The purpose of this monitoring is to:

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



Given the passage of time 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 Grid IP.

The monitoring frequency for each indicator will vary depending on availability of data however, where available, these will be recorded annually. Monitoring using the indicators set out in **Table 13-1** will commence as soon as the Grid IP is implemented. It is noted that (EMM3) Environmental SEA Compliance Check will facilitate the SEA monitoring and will be adapted for each stage of the project development and project scale.

Any effects or issues identified during the SEA monitoring will be used to inform the development of the next Grid IP. It is also important to note that the monitoring framework will also apply for any potential transboundary effects.

Table 13-1: SEA Objectives, Target and Indicators : Monitoring Framework

Theme	Objective	Target	Indicator	Source
Population, Human Health & the Economy	**PHH1:** To minimise the proximity of development to concentrations of population and to mitigate potential effect of development in order to reduce actual and perceived environmental effects.	**PHH1_T1:** Noise levels emanating from the proposed development following commissioning, when measured externally at a noise sensitive location shall not exceed recommended guideline values.	**PHH1_I1**: Maximum noise level emanating from the installation at the façade of any near sited residential properties shall not exceed levels specified in the EPA's Guidance Note for Noise (NG4).	**a)** Monitoring of the effects of development required under separate processes (such as planning conditions). **b)** As applicable review of: • Route/Option Selection Reports as appropriate. • Environmental Reports. • EISs. • Final project documents. • Complaints procedure.
		PHH1_T2: Ensure compliance with all authoritative international and national guidelines for Extremely Low Frequency (ELF) EMF exposure.	**PHH1_I2:** Compliance with all authoritative international and national guidelines for ELF EMF exposure.	
		PHH1_T3: Avoid where possible routing of overhead transmission line infrastructure within 50m of existing dwellings.	**PHH1_I3:** Number of existing dwellings within 50m of overhead transmission line development.	
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.	**BI_I1:** Number of EirGrid projects subject to Imperative Reasons of Overriding Public Interest (IROPI). **BI_I2:** Number of Adaptive Management requirements post project completion.	Review of: • 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	**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.	

Theme	Objective	Target	Indicator	Source
	Wildlife Sites (including but not limited to NHAs and pNHAs).		**B2_I2:** Number of Adaptive Management requirements post project completion.	
Landscape & Visual Amenity	**L1:** Avoid significant adverse impacts on landscape character and designations.	**L1_T1:** No avoidable impacts on the landscape resulting from development provided for by the Grid IP.	**L1_I1:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	**a)** Monitoring of the effects of development required under separate processes (such as planning conditions). **b)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs. • Final project documents. • Complaints procedure.
	L2: Avoid or minimise adverse visual effects on residential receptors.	**L2_T1:** No avoidable impacts on the landscape resulting from development provided for by the Grid IP.	**L1_I1:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	
Cultural Heritage - Archaeology & Architectural	**CH1:** Avoid impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPS and NIAHs).	**CH1_T1:** No developments occurring which result in full or partial loss to entries to the RMP and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	**CH1_I1:** Number of developments occurring which result in full or partial loss to entries to the RMP and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	**a)** Monitoring of the effects of development required under separate processes (such as planning conditions). **b)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs. • Final project documents. • Ministerial consent for works.
		CH1_T2: No developments occurring which result in full or partial loss to entries to the RPSs/NIAHs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	**CH1_I2:** Number of developments occurring which result in full or partial loss to entries to the RPSs/NIAHs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	
Geology and Soils	**GSL1:** To avoid or minimise effects on mineral resources or soils.	**GSL_T1:** No avoidable impacts on mineral resources or soils resulting from development provided for by the Grid IP.	**GSL1_I1:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	**a)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs. • Final project documents. • Complaints procedure.

Theme	Objective	Target	Indicator	Source
Land use	**LU1**: To avoid or minimise effects on existing land use.	**LU1_T1:** No avoidable impacts on the landuse resulting from development provided for by the Grid IP.	**LU1_I1:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	**a)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs. • Final project documents. • Complaints procedure.
Water	**W1:** Prevent impact upon the status of surface and groundwater in line with the objectives of the WFD as outlined in the River Basin Management Plans.	**W1_T1:** Not to cause deterioration in the status of any surface ground water or affect the ability of any surface ground to maintain or achieve '*good*' status.	**W1_I1:** Classification of Overall Status as indicated by the EPA. **W1_I2:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	**a)** Data issued under the Water Framework Directive monitoring for Ireland (every 2 years). **b)** Monitoring of the effects of development required under separate processes (such as planning conditions). **b)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs. • Final project documents.
Material Assets & Infrastructure	**MAI1:** Minimise effects upon the sustainable use of the land, mineral resources or soils.	**MAI1_T1:** To minimise impacts on farming practices and the extent of soil compaction in greenfield sites.	**MAI1_I1:** The impact on farming practices and extent of soil compaction in greenfield sites. **MAI1_I2:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP**.**	**a)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs. • Final project documents. • Complaints procedure.
		MAI1_T2: To consider the use of existing transmission infrastructure before new build.	**MAI1_I2:** The use of existing transmission infrastructure before new build.	
	MAI2: Minimise effects upon the existing and planned infrastructure.	**MAI2_T1:** No significant impacts on existing and planned infrastructure.	**MAI2_I1:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	**a)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs.

Theme	Objective	Target	Indicator	Source
Tourism & Recreation	**TR1:** Minimise effects upon the tourism and recreation amenities.	**TR1_T1:** No significant impacts on tourism and recreation amenities.	**TR1_I1:** Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	**a)** Review of: • Route/Option Selection Reports. • Environmental Reports. • EISs. • Final project documents.
Climate Change	**CC1:** Help to facilitate the achievement of higher level targets contained in the Government's Energy White Paper, '*Ireland's Transition to a Low Carbon Energy Future 2015-2030'* and targets relating to the Kyoto Protocol.	**CC_T1:** Contribute towards an increase in electricity generation from renewable energy (ultimately 40% by 2020).	**CC_I1:** Percentage electricity generation from renewable energy.	Consultations with EirGrid Operations Sustainable Power Systems/ Single Electricity Market Operator (SEMO) in EirGrid.

Key Messages from Chapter 13:

- The SEA monitoring Framework has been proposed in order to monitor and manage the potential significant negative effects and unforeseen effects of the Grid IP.

14. Conclusion

This SEA Environmental Report presents an assessment of the likely significant effects of the Grid IP on the environment. It has been prepared in compliance with the SEA Directive and associated transposing Irish regulations. The SEA and the NIS have been developed in tandem with the Grid IP. This stage (Stage 3) of the SEA process (the assessment stage) was undertaken as outlined in **Section 4.2** and **Figure 4.2** of this report.

Since the previous Grid IP and its associated SEA, significant progress has been made in terms of internal processes and procedures within EirGrid to ensure environmental aspects are given consideration throughout grid development process. This has included the development of the EBES, the guideline documents, the new approach to consultation and the more recent six step Framework for grid development. As part of this draft of the Grid IP EirGrid have continued to build on the work to date and have included a series of policies and objectives to ensure that the environment is appropriately protected in the process of grid development. A total of 52 policies and objectives are proposed under the Grid IP. Each one has been assessed against the SEOs, and overall the policies and objectives within the Grid IP have been found to be positive in nature, helping to:

- serve the electricity needs of the county in a sustainable manner;
- make provisions to avoid and mitigate against potential environmental effects;
- promote the use of existing grid infrastructure when feasible;
- implement and improve existing internal guidance, processes and procedure when it comes to grid development;
- incorporate social impact assessment into the grid development process;
- promote new (and potentially less impactful) technologies in transmission infrastructure development;
- increase transparency and public participation in the grid development process;
- contribute to Irelands achievement of its renewable energy targets;
- contribute to combating climate change; and
- support the key actions outlined in the EPAs sixth State of the Environment Report (EPA,2016).

Where needed, amendments, recommendations or additions were proposed within this SEA Environmental Report in order to strengthen these draft policies and objectives.

The Grid IP provides the best current understanding of those parts of the transmission system that are likely to be developed over the next six years. All projects within the Grid IP will be subject to the inherent mitigation as set out in **Section 11.2**. Consideration of the potential environmental effects will be undertaken during the selection of the preferred solution through the Framework for Grid Development, and each project will be subject to the policies and objective set out in the Grid IP.

Under the Grid IP, and in line with EirGrid Strategy, there is a strong focus on the utilisation of the existing network as far as reasonably practical. This focus will avoid potential negative effects on the environment and will contribute toward sustainable development. As part of the SEA a total of 45 transmission development projects contained within the Grid IP were assessed against the SEOs. Of these 45 projects, 90% of the projects under consideration are an uprate, modification or refurbishment to an existing asset.

Of the 45 developments, five (all new build projects) were subject to detailed assessment:

- The North Connacht 110kV Solution;
- North-West Project;
- Celtic Interconnector;
- Regional Solution; and

- Coolnabacky – Portlaoise 110kV Line Uprate project.

These projects will include the inherent mitigation set out in **Section 11.2**. The progression of these projects with the inherent mitigation identified and guided by the policies and procedures for project development in place, will enable the avoidance significant effects such as construction impacts, habitat loss, effects on SPAs/SACs, effects on residential receptors, and cultural heritage and landscape features.

The likely significant effects for other project types (modify, redevelop, uprate or new build within an existing station) were deemed to be neutral as these project types require minimal construction works and are typically carried out within the footprint of the existing stations. likely significant effects for projects involving refurbishment were deemed to be neutral for all objectives with the exception of those relating to population biodiversity (B2 only) and water due to the requirement for small-scale construction works. However, these refurbishment projects will be subject to the inherent mitigation, and in particular the construction best practice. The adherence to this construction best practice will facilitate the avoidance and reduction of significant effects. Considering this inherent mitigation, the potential for significant effects associated with the construction phase are unlikely but remain unknown.

In addition to the policies and objectives set out in the Grid IP all future projects will be subject to the recommendations and the SEA monitoring framework proposed within this SEA Environmental Report.

Consideration of potential effects from alternatives to the plan has also been provided and an assessment of potential cumulative effects has been undertaken, with a potential significant effect being identified in relation to the North-West area in relation to potential effects on birds. Mitigation has been proposed in relation to this potential effect.

It is considered that the Grid IP, the objectives and policies within the plan, and the mitigation/ recommendations proposed as part of the SEA which build on the inherent mitigation, will contribute to the sustainable development of the transmission system in Ireland over the next six years and beyond.

14.1 Response to Consultation

The draft Grid IP and accompanying SEA Environmental Report and NIS were made available for comment and review during the consultation period.

The comments received during the consultation have been considered and where appropriate they have been addressed through amendments to this SEA Environmental Report and the Final Grid IP. These amendments have further strengthened Grid IP's integration with SEA and NIS recommendations. An SEA Statement has been provided summarising the consultation process and documenting how consultation and the SEA process have influenced the Final Grid IP.

14.2 Next Steps

Once the Grid IP has been published, the monitoring framework set out within the SEA Statement will be used to assess the impacts of the implementation. This will also be used to inform the future revision of the Grid IP on a six-yearly basis.

List of Abbreviations

Abbreviation	Explanation
AA	Appropriate Assessment
AC	Alternating Current
ACAs	Architectural Conservation Areas
AFF	Alternative Fuels Infrastructure for Transport
BAU	Business Area Units
BNM	Bord na Móna
CAFE	Cleaner Air for Europe
CER	Commission of Energy Regulation
CFRAM	Catchment Flood Risk Assessment and Management
CIP	Capital Investment Plan
CLC	CORINE Land Cover
CO_2	Carbon Dioxide
CSO	Central Statistics Office
DAA	Dublin Airport Authority
DAFM	Department of Agriculture, Food and the Marine
DAHRRG	Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
DC	Direct Current
DECLG	Department of the Environment, Community and Local Government
DECNR	Department of Energy, Communications and Natural Resources
DEHLG	Department of Environment, Heritage and Local Government
DSO	Distribution System Operator
EAG	Environmental Advisory Group
EAR	Environmental Appraisal Report
EBES	Evidence Based Environmental Studies
EC	European Commission
EEA	European Economic Area
EEC	European Economic Communities
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
ELF	Extremely Low Frequency
ELIG	Environmental Law Implementation Group
EMF	Electromagnetic Fields
EMM	Environmental Mitigation Measure
EPA	Environmental Protection Agency

Abbreviation	Explanation
ESB	Electricity Supply Board
ETS	Emissions Trading Scheme
EU	European Union
FEPS	Forestry Environmental Protection Scheme
FIPS	Forest Inventory Planning System
FRMP	Flood Risk Management Plan
FWPM	Freshwater Pearl Mussel
GDP	Gross Domestic Product
GES	Good Environmental Status
GHG	Greenhouse Gas
GIS	Geographic Information Systems
GSI	Geological Survey Ireland
GSNI	Geological Survey of Northern Ireland
HI	Healthy Ireland
HTLS	High-Temperature Low-Sag
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IAE	Ireland's Ancient East
IDA	Industrial Development Authority
IEP	Independent Expert Panel
IFI	Inland Fisheries Ireland
IGH	Irish Geological Heritage
IGHS	Irish Geological Heritage Sites
IP	Implementation Plan
IRBD	International River Basin District
IROPI	Imperative Reasons of Overriding Public Interest
ITS	Irish Transmission System
IWAI	Inland Waterways Association Ireland
IWEA	Irish Wind Energy Association
JNCC	Joint Nature Conservation Committee
kV	kilovolt
LCAs	Landscape Character Areas
M	Modify
MW	Megawatt
MW	Mid-West
NB	New Build

Abbreviation	Explanation
NBP	National Biodiversity Plan
NDP	National Development Plan
NEEAP	National Energy Efficiency Action Plan
NHA	National Heritage Area
NIAH	National Inventory of Architectural Heritage
NIEA	Northern Ireland Environment Agency
NIS	Natura Impact Statement
NLS	National Landscape Strategy
NMP	National Mitigation Plan
NPF	National Planning Framework
NPWS	National Park and Wildlife Service
NRA	National Roads Authority
NSDB	National Soil Database
NSS	National Spatial Strategy
OHL	Overhead Line
OPW	Office of Public Works
OREDP	Offshore Renewable Energy Development Plan
OSI	Ordinance Survey Ireland
PAH	Polycyclic Aromatic Hydrocarbons
pNHA	Proposed National Heritage Area
PM	Particulate Matter
PPP	Plans, Policies and Programmes
RBD	River Basin District
RBMP	River Basin Management Plan
RD	Redevelopment
RES	Renewable Energy Sources
RMPs	Record of Monuments and Places
ROI	Republic of Ireland
RPII	Radiological Protection Institute of Ireland
RPSs	Record of Protected Structures
RR	Refurbish/ Replace
RSES	Regional Spatial and Economic Strategies
RSPB	Royal Society for the Protection of Birds
RTE	Réseau de transport d'électricité
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment

Abbreviation	Explanation
SEAI	Sustainable Energy Authority in Ireland
SEF	Strategic Environmental Framework
SEMO	Single Electricity Market Operator
SEOs	Strategic Environmental Objectives
SFM	Sustainable Forest Management
SHARP	Sustainable Healthy Agri-Food Research Plan
SONI	System Operator in Northern Ireland
SPAs	Special Protection Areas
TAO	Transmission Asset Owner
TDP	Transmission Development Programme
TII	Transport Infrastructure Ireland
TSO	Transmission System Operator
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WAW	Wild Atlantic Way
WEEE	Waste Electrical and Electronic Equipment
WFD	Water Framework Directive
WHO	World Health Organisation
WSSP	Water Services Strategic Plan

Glossary

Term	Description
Administrative Area	A portion of a country or other region delineated for the purpose of administration.
Afforestation	The planting or seeding of trees in an area previously devoid of trees.
Alluvium	A deposit of clay, silt, and sand left by flowing floodwater in a river valley or delta, typically producing fertile soil.
Annex I	List of designated habitats which have been afforded protection under the Habitats Directive.
Annex II	List of protected species which have been afforded protection under the Habitats Directive.
Appropriate Assessment	Comprehensive ecological impact assessment of a plan or project. AA examines the direct and indirect effects of the Grid IP or project, either individually or in-combination with other plans and projects on Natura 2000 sites.
Architectural Conservation Areas	An Architectural Conservation Area is a place, area, group of structures or townscape of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or that contributes to the appreciation of a Protected Structure, and whose character should be preserved.
Baseline Condition	The prevailing environmental condition in the absence of a programme or plan.
Birds Directive	Outlines measures necessary to protect all of the 500 wild bird species naturally occurring in the European Union.
Bord Bia	Irish state agency with the aim of promoting sales of Irish food and horticulture both abroad and in Ireland itself. It acts as a link between Irish producers and their customers worldwide.
Bord na Móna	Utility company service provider encompassing electricity, heating solutions, resource recovery, water, horticulture and related services.
Catchment	The total area of land that drains into a watercourse.
Coillte	Commercial company operating in forestry, land-based businesses, renewable energy and panel products.
County Development Plan	The principal instrument that is used to manage change in land use in a County. These plans outline the objectives and policies to deliver an overall strategy for planning and sustainable development of the area of the Development Plan.
Desilting	The removal of suspended silt from (the water of a stream).
Electromagnetic Fields	Combination of invisible electric and magnetic fields of force. They are generated by natural phenomena like the Earth's magnetic field but also by human activities, mainly through the use of electricity.
Emissions Trading System	International system for trading greenhouse gas emission allowances.
Environmental Impact Assessment Directive	Sets the statutory requirement for member states of the EU to carry out assessments of the environmental impact of certain public and private projects before they are allowed to go ahead.
Erosion	The process of eroding or being eroded by wind, water, or other natural agents.
Fens	An area of low land that is covered wholly or partly with water unless artificially drained and that usually has peaty alkaline soil and characteristic flora (as of sedges and reeds).
Finite Resource	A resource that cannot renew itself at a sufficient rate for sustainable economic extraction in meaningful human time-frames.
Flood Risk Management Plan	These plans set out a range of proposed measures and actions to manage and reduce flood risk within the catchments and coastal reaches covered by each Plan.
Food Harvest 2020	Strategic vision for the agriculture, food and fishing sector up to 2020.

Term	Description
Forest Environmental Scheme	Encourages farmers to combine the establishment of high nature-value woodland with their participation in the Rural Environment Protection Scheme.
Geochemistry	The study of the distribution and amounts of the chemical elements in minerals, rocks, soils, water, and the atmosphere, and the study of the circulation of the elements in nature, on the basis of the properties of their atoms and ions.
Geo-demographic	Data of a specific geographical area which profiles the economic and demographic characteristics of the population living there.
Geological Heritage Site	Areas of geologic features with significant scientific, educational, cultural, or aesthetic value.
Glacial	Relating to, caused by, or deposited by a glacier.
Greenhouse Gas	A gas that contributes to the greenhouse effect by absorbing infrared radiation.
Habitat	The place where an organism or species normally lives and is characterised by its physical characteristics and/or dominant type of vegetation.
Horticulture	Cultivation and management of plants.
Hydro Generation	Electricity generated from the gravitational force of falling or flowing water.
Invasive Species	Non-native plant and animal species which can negatively impact on native species, transforming habitats and threatening whole ecosystems causing serious problems to the environment and the economy.
Kyoto Protocol	International treaty which extends the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits State Parties to reduce greenhouse gases emissions, based on the premises that global warming exists, and man-made carbon dioxide emissions have caused it.
Landscape Character Assessment	The process of identifying and describing variation in character of the landscape.
Milk Quota	Quota introduced in the European Union which helped to cap the expansion of milk production. Applied to milk from cows only. The quota has now been removed.
Mitigation	The implementation of measures designed to reduce the undesirable effects of a proposed action on the environment.
National Biodiversity Plan	Plan outlining a range of measures to secure the conservation, including where possible the enhancement and sustainability of biological diversity in Ireland and worldwide.
National Development Plan	Roadmap to Ireland's future. The Grid IP integrated strategic development frameworks for regional development, for rural communities, for All-Island co-operation, and for protection of the environment with common economic and social goals.
National Framework Policy	Policy serving as the foundation upon which the range of State policies, programmes and interventions for local and community development will be developed and implemented.
Natural Heritage Areas	An area of national nature conservation importance, designated under the Wildlife Act 1976 (as amended), for the protection of features of high biological or earth heritage value or for its diversity of natural attributes.
National Landscape Strategy	Strategy outlining Ireland's responsibility to comply with the European Landscape Convention. It is a high-level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions.
National Spatial Strategy	National planning framework for Ireland for the next 20 years. The NSS aims to achieve a better balance of social, economic and physical development across Ireland, supported by more effective planning.
Natura 2000 Sites	The EU-wide network of SPA and SAC nature conservation sites.
Nutrient Pollution	Excessive input of nutrients, mainly nitrogen and phosphorus in water bodies leading to excessive growth of algae and oxygen depletion.

Term	Description
Organic Matter	Carbon-based compounds found within natural or engineered terrestrial and aquatic environments.
Overgrazing	Excessive level of grazing which damages vegetation and increases the liability of surrounding ground to erosion.
Ozone	A colourless unstable toxic gas with a pungent odour and powerful oxidizing properties, formed from oxygen by electrical discharges or ultraviolet light. It differs from normal oxygen (O_2) in having three atoms in its molecule (O_3).
Particulate Matter	A mixture of solid particles and liquid droplets found in the air. Some particles can be seen by the naked eye and others are microscopic.
Physico-chemical	The physical and chemical properties of a substance.
Polycyclic Aromatic Hydrocarbon	A group of chemicals that are formed during the incomplete burning of organic substances.
Raised Bog	Discreet, raised, dome-shaped masses of peat occupying former lakes or shallow depressions in the landscape. Raised bogs in Ireland are mainly found in the midlands.
RAMSAR Site	Wetland site of international importance designated under the RAMSAR Convention on Wetlands of International Importance 1971, primarily because of its importance for waterfowl.
River Basin District	RBDs are natural geographical and hydrological units for water management, as defined by the WFD. River basins are used instead of administrative or political boundaries.
Special Area of Conservation	An area designated in accordance with the EU Directive on the conservation of habitats and wild flora and fauna (92/43/EEC) for the protection of species and habitats of conservation concern within the EU.
Special Protection Area	An area designated in accordance with the EU Directive on the Conservation of Wild Birds (79/409/EEC) for the specific protection of wild birds.
Strategic Environmental Objectives	Methodological measures against which the environmental effects of the Implementation Programme (IP) can be tested.
Sustainable Forest Management	The environmentally appropriate, socially beneficial, and economically viable management of forests for present and future generations.
Thermal Generation	Electricity generated from heat sources including coal, gas, wood waste and geo-thermal.
Trace Elements	A chemical element present in minute quantities.
Transitional Water	Surface water bodies in the vicinity of a river mouth which are partly saline in character as a result of their close proximity to coastal waters, but which are substantially influenced by freshwater flows.
Transmission Grid	An electrical supply distribution network that carries electricity from a power plant to the user.
Transmission System Operator	Entity entrusted with transporting energy in the form of natural gas or electrical power on a national or regional level, using fixed infrastructure.
Transposing Legislation	Primary or secondary legislation adopted by a European country which gives force to a European Union Directive.
UNESCO Biosphere Site	Areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use.
UNESCO World Heritage Site	Sites of outstanding universal value: cultural, natural or mixed.
Urbanisation	The process by which towns and cities are formed and become larger as more and more people begin living and working in central areas.
Water Framework Directive	EU Water Framework Directive 2000/60/EC sets out a system for the integrated and sustainable management of river basins so that the ecological quality of waters is maintained in at least a good state or is restored. The Directive lays down a six-yearly cycle of river basin planning.

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APPENDICES

Appendix A. Ireland's Grid Development Strategy 2017

Appendix B. Relevant Legislation, Plans and Programmes

Relevant EU and National Legislation

Legislation[19]	Context
European & National regulations that are relevant to planning the transmission network: • Directive 2009/72/EC concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC; • Directive 2009/ 72/ EC; • Directive 2009/ 28/ EC; • Directive 2012/ 27/ EC; • Statutory Instrument (SI) No. 445 of 2000 as amended; and • Statutory Instrument (SI) No. 147 of 2011.	European regulations, relevant to planning the transmission network.
SEA Directive 2001/42/EC: • European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004) as amended; and • European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (S.I. No. 200 of 2011) as amended.	EU Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive) established the requirement for SEA as part of high level decision-making process and the development of plans and programmes.
EU Energy Efficiency Directive 2012/27/EU	EU Directive 2012/27/EU establishes a set of binding measures to help the EU reach its 20% energy efficiency target by 2020. Under the Directive, all EU countries are required to use energy more efficiently at all stages of the energy chain from its production to its final consumption.
EU Renewable Energy Directive 2009/28/EC	Establishes an overall policy for the production and promotion of energy from renewable sources in the EU. It requires the EU to fulfil at least 20% of its total energy needs with renewables by 2020 – to be achieved through the attainment of individual national targets.
Water Framework Directive (2000/60/EC): • Env. Quality Standards Directive 2008/105/EC; • The Water Policy Regulations (S.I. No. 722 of 2003); • The Surface Waters Regulations (S.I. No. 272 of 2009); and • The Groundwater Regulations (S.I. No. 9 of 2010).	The EU Water Framework Directive requires all Member States to protect and improve water quality in all waters so that we achieve good ecological status by 2015 or, at the latest, by 2027. It applies to rivers, lakes, groundwater, and transitional coastal waters. The Directive requires that management plans be prepared on a river basin basis and specifies a structured method for developing these plans.
Birds Directive (2009/147/EC) and Habitats Directive (92/43/EEC): • European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011); and • European Communities (Birds and Natural Habitats) (Amendment) Regulations 2015 (S.I. No. 355 of 2015).	The EU Birds Directive requires all EU Member States to take measures to protect all wild birds and their habitats. The Birds Directive aims to protect all of the 500 wild bird species naturally occurring in the European Union. The EU Habitats Directive requires all EU Member States to ensure the conservation of a wide range of rare, threatened or endemic animal and plant species. Within this Directive, some 200 rare and characteristic habitats types are also targeted for conservation in their own right.

[19] EU Directive and transposing Irish legislation

Legislation[19]	Context
Marine Strategy Framework Directive (2008/56/EC): • European Communities (Marine Strategy Framework) Regulations (S.I. No. 249 of 2011).	The EU Marine Strategy Framework Directive (Marine Directive) requires all EU Member States to take measures to protect more effectively the marine environment across Europe. The Marine Directive aims to achieve 'Good Environmental Status, (GES)' of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend.
Maritime Spatial Planning Directive (2014/89/EU)	The EU Spatial Planning Directive requires member states to work across borders and sectors to ensure that any human activities at sea are carried out in an efficient, safe and sustainable manner. In Ireland, a roadmap to the development of Ireland's first marine spatial plan, Towards a Marine Spatial Plan for Ireland' was published in December 2017. It Is expected that the final plan will be prepared for submission to the Government.
Environmental Impact Assessment Directive (2014/52/EU): • Not yet transposed as Irish National Legislation, expected before 2017.	The EU EIA Directive (2014/52/EU) amends the previous EIA Directive (2011/92/EU) on the assessment of the effects of certain public and private projects on the environment. It introduced changes in EIA requirements across the EU such as the introduction of mandatory 'Competent Experts', changes to screening procedures, and mandatory post-EIA monitoring. This Directive was expected to be enforced in Ireland by May 2017 but came into effect in September 2018.
2020 Climate and Energy Package and associated legislation	This package is comprised of a set of binding legislation to ensure the EU meets its climate and energy targets for the year 2020.The package sets three key targets as follows: • 20% cut in greenhouse gas emissions (from 1990 levels); • 20% of EU energy from renewables; and • 20% improvement in energy efficiency.
The Climate Action and Low Carbon Development Act 2015	The Climate Action and Low Carbon Development Act 2015, provides for the making of five-yearly National Mitigation Plans to specify the policy measures to reduce greenhouse gas emissions and a National Adaptation Framework to specify the national strategy for the application of adaptation measures in different sectors and by Local Authorities to reduce the vulnerability of the State to the negative effects of climate change.
Flood Directive (2007/60/EC): • European Communities (Assessment and Management of Flood Risks) Regulations 2010. (S.I. No. 122 of 2010).	The EU 'Floods Directive' requires all EU Member States to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk.
Non-exhaustive list of Planning related legislation: • Planning and Development Act 2000; • Planning and Development (Strategic Infrastructure) Act 2006; and • Planning & Development Regulations 2001-2015.	Irish Planning related legislation that is relevant to planning the transmission network.

Legislation[19]	Context
Non-exhaustive list of Cultural Heritage related legislation: • National Monuments Act 1930 as amended; • Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999; and • The Heritage Act 1995.	Irish Cultural Heritage regulations that are relevant to the planning the transmission network.
Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC): • Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011).	Set down air quality standards in Ireland for a wide variety of pollutants.
Integrated Pollution Prevention Control Directive (96/61/EC replaced by 2008/1/EC): • Environmental Protection Agency Act 1992, amended by the Protection of the Environment Act 2003; and • Environmental Protection Agency (Integrated Pollution Control) (Licensing) Regulations 2013.	Regulates the licencing of industrial sites, including energy production.
Noise Directive (2002/49/EC): • Environmental Noise Regulations 2006 (S.I. No. 140 of 2006).	EU and Irish environmental noise related legislation.

Relevant Plans and Programmes

Scale	Plan or Programme	Context
International / EU	The Kyoto Protocol	• First international agreement in which many of the world's industrial nations concluded a verifiable agreement to reduce their emissions of six greenhouse gases in order to prevent global warming.
	EU Biodiversity Strategy	• The EU Strategy aims to halt the loss of biodiversity and ecosystem services in the EU and help stop global biodiversity loss by 2020. It reflects the commitments taken by the EU in 2010, within the international Convention on Biological Diversity.
	UK Marine Policy Statement	• This Statement is the framework for preparing marine plans and taking decisions affecting the marine environment and was jointly adopted across the UK Administrations including the Department of the Environment in Northern Ireland.
National	National Planning Framework (NPF): Ireland 2040: Our Plan	• 20-year strategy identifying strategic development requirements, infrastructure requirements and promoting sustainable strategies for the future.
	National Development Plan 2018 – 2027	• Sets out the investment priorities that will underpin the successful implementation of the National Planning Framework.
	National Development Plan (NDP) 2007-2013	• Promotes security of energy supply, competitive prices and long-term energy diversification.
	National Spatial Strategy (NSS) 2002-2020	• 20-year planning framework for Ireland. Contains energy-related provisions for the significant development of the transmission network and new energy generation in regions across the country.

Scale	Plan or Programme	Context
	Capital Investment Plan 2016 – 2021	• Framework for investment in infrastructure in Ireland 2016-2021.
	Energy White Paper: Delivering a Sustainable Energy Future for Ireland-the Energy Policy Framework 2007-2020	• Actions to achieve electricity supply which consistently meets demand and sets a target to meet 33% of consumption from renewable energy by 2020.
	Framework for Sustainable Development in Ireland (2012)	• Outlines Ireland's Framework for Sustainable Development. Its timeframe is to 2020 to tie in with other national and international frameworks, but a longer-term horizon to 2050 is also considered where appropriate, to provide a framework for guiding and reporting on long-term broad development trends such as on climate change.
	National Renewable Energy Action Plan	• Outlines Ireland's national trajectories for the share of energies from renewable sources consumed in transport, electricity, heating and cooling between now and 2020.
	National Climate Change Adaptation Framework (2012)	• Provides the policy context for a strategic national adaptation response to climate change in Ireland and is designed to evolve over time as planning and implementation progresses, and as further evidence becomes available.
	National Mitigation Plan (2017)	• Outlines measures for transitioning Ireland to a low carbon, climate resilient and environmentally sustainable economy by 2050. • Includes over 100 individual actions for various Ministers and public bodies to take forward as we move to implementation of what will be a living document.
	National Energy Efficiency Action Plan 3 (NEEAP) (2014)	• Each NEEAP outlines the energy efficiency measures that will be implemented to reach the national energy saving targets as well as the progress towards this target.
	Renewable Electricity Policy and Development Framework (DCCAE, ongoing).	• The aim of this framework is to guide the development of renewable electricity projects.
	Wind Farm Development Guidelines 2006 (currently under review)	• Outline the guidelines to planning authorities on planning for wind energy through the development plan process and in determining planning permission.
	Offshore Renewable Energy Development Plan (OREDP) including interim review	• Describes the policy context for the development of offshore wind, wave and tidal energy in Irish waters.
	Water Service Strategic Plan (WSSP)	• Provides strategic objectives for the delivery of water services up until 2040.
	A National Landscape Strategy (NLS) for Ireland	• Mapping out paths toward sustainable development and management of national-human and natural-resources. This includes the Future National Landscape Character Assessment.
	National Biodiversity Plan (NBP)	• Actions to raise awareness about the link between plans/programmes and biodiversity impacts.
	National Heritage Plan (published in 2002)	• Outlines stipulations for proper planning, conservation and management of national heritage for all plans/programmes.
	The Irish Geological Heritage Programme 1998-ongoing	• Promotes awareness and protection of significant geological heritage sites.

Scale	Plan or Programme	Context
	Government Policy Statement on Strategic Importance of Transmission and Other Energy Infrastructure 2012	• Endorses the major investment underway in the high voltage electricity transmission system under EirGrid's Grid25 Programme.
	National Policy Framework on Alternative Fuels Infrastructure for Transport (AFF)	• Sets an ambitious target that by 2030 all new cars and vans sold in Ireland will be zero emissions (or zero emissions capable) with the use of fossil fuels vehicles rapidly receding.
	Ireland and the Climate Change Challenge - Connecting How Much with How to (2012)	• Outlines the National Economic and Social Council Secretariat's vision for Ireland in 2050 as a carbon-neutral society. The report also outlines proposals for a pragmatic approach toward climate change.
Regional, County and Local	River Basin Management Plans & draft River Basin Management Plan	• Plan setting out the status of waters in the River Basin Districts (RBDs); the proposed environmental objectives and the draft programme of measures to achieve those objectives by 2021.
	Flood Risk Management Plans (FRMP) 2017	• Plans which set out a range of proposed measures and actions to manage and reduce flood risk within the catchments and costal reaches covered by each Plan, focussing on the 300 areas of potentially significant flood risk around Ireland that were previously identified under the Preliminary Flood Risk Assessment (PFRA). These areas are referred to under the programme as Areas for Further Assessment (AFA).
	Catchment Flood Risk Assessment and Management Programme	• Delivers on core components of the National Flood Policy, adopted in 2004, and on the requirements of the EU 'Floods' Directive; central to the medium to long-term strategy for the reduction and management of flood risk in Ireland.
	Regional Spatial and Economic Strategies (RSEs)	• Act as building-blocks for sub-regional spatial and economic planning and statutory committees.
	County Development Plans (various dates)	• Provides detailed county-level strategies to allow for the proper planning and sustainable development of an area.
	County Wind Energy Strategies	• Provides recommendations for wind energy development policy and practice.
	County Renewable Energy Strategies	• Provides for the preparation of County-level renewable energy strategies.
	Regional Spatial and Economic Strategies (RSEs)	• Act as building-blocks for sub-regional spatial and economic planning and statutory committees.
	County Biodiversity and or Heritage Plans (were available, various dates)	• Outlines stipulations for proper planning, conservation and management of biodiversity and heritage for all plans/ programmes at a county level.
	County Landscape Character Assessments (LCA)	• The LCA classifies and describes the landscape in a county.
	County based waste management strategies and mineral plans	• Establishes a framework for the sustainable management of wastes generated in the county.
	County-based recreation strategies	• Develops a framework to coordinate the objectives and targets of key stakeholders in a cohesive and integrated plan for the county, ensuring the provision, management and use of quality facilities and services for everyone, including future generations.

Scale	Plan or Programme	Context
	Local, City, Town and Electoral Area/Development Plans (where available, various dates)	• Statutory requirements for proper planning and sustainable development of a local area.
EirGrid Plans	Your Grid, Your Tomorrow: Ireland's Grid Development Strategy 2016.	• Explain the need for, and drivers of, grid development.
	Transmission Development Plan (TDP)	• Annual rolling operational document outlining the Grid IP for the development of the ITS and interconnection.

Appendix C. SEA Scoping Submission Summary

Comment/Issue Raised
The EPA
This submission includes both general and specific issues to be considered in the draft Grid IP 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 - "*Environmental Challenges and Emerging Issues for Ireland*" are provided separately in Attachments I and II respectively.
There are a number of significant key influential plans/programmes/strategies currently underway at national and regional level which should be considered in preparing and implementing the draft Grid IP 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 (OREDP), 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.
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.
EPA State of the Environment Report for 2016 The EPA has recently published the State of the Environment Report for 2016 'Ireland's Environment – An Assessment (EPA, 2016). The "*Environmental Challenges and Emerging Issues for Ireland*" 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/
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/
Guidance on Developing and Assessing Alternatives in SEA (EPA, 2015) is also available at: http://www.epa.ie/pubs/advice/ea/developingandassessingalternativesinsea.html
The EPA's GIS based SEA Search and Reporting Tool application can be accessed via: www.edenireland.ie
Environmental Authorities 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: • 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. • 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 Minister for Arts, Heritage and the Gaeltacht (now the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs).

Comment/Issue Raised
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 principal 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; and • 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 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 draft Grid IP.

Comment/Issue Raised
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 draft Grid IP 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, 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 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

Comment/Issue Raised
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 draft Grid IP, 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 • 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 • 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 ingredient of the draft Grid IP. 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 inter-relationships in between different environmental topics. Table 6.3 illustrates the relationships that are

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considered. Archaeology and Cultural Heritage has more inter-relationships with other areas of environmental concern than those that have been identified in this section of the report: • There is a relationship 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 Omey 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, 20111 (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 inter-relationships 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 draft Grid IP 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 draft Grid IP, 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 draft Grid IP. 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 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).

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• 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/habitatspeciesdata/ http://www.npws.ie/article-17-reports-0 http://www.npws.ie/news/birds-directive-article-12-reporting 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 Grid IP.
Appropriate Assessment

Comment/Issue Raised
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 draft GridIP, 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 draft Grid 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 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

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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 D. Policies and Objective and the EPA Key Actions

No.	Theme	EirGrid Policies and Objectives supporting EPA key actions
1	**Environment and Health & Wellbeing**	The following policies and objectives, which have been developed by EirGrid, recognise the link between good quality environment and health benefits: • ENVP1 - To apply best environmental practice in the design and appraisal of transmission development projects; • 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; • ENVP3 - That any transmission development project, either individually or in combination with other projects, that has the potential to give rise to significant effect on the integrity of any European (Natura) site(s) shall be subject to Appropriate Assessment (AA) in accordance with Article 6 of the EU Habitats Directives; • 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. 84 of 1999), the European Communities (Birds and Natural Habitats) Regulations 2011 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; • 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; • ENVP6 - To protect and restore (where possible) habitats which function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive; • ENVP9 - To facilitate new technologies on transmission infrastructure which minimise/mitigate significant noise emissions.; • ENVP10 - To seek to preserve and maintain noise quality in accordance with good practice and relevant legislation; • ENVP18 - To seek to preserve and maintain air quality in accordance with good practice and relevant legislation in the construction of its transmission projects; • 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: EMF & You, Cultural Heritage Guidelines, Ecology Guidelines; • 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; • ENVO3 - To develop the environment space on the EirGrid website as a tool for sharing environmental information in respect of transmission development; and • 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.
2	**Climate Change**	The following policies and objectives, which have been developed by EirGrid, recognise the need to accelerate the implementation of mitigation measures/ adaptation to reduce GHG emissions/ increase resilience to adverse climate impacts: • ENVP7 - To integrate measures to address climate change and climate change resilience into grid development, by way of both effective mitigation and adaptation responses, in accordance with available guidance and best practice; • ENVP8 - To support the Government's target of having 40% of electricity consumption generated from renewable energy sources by the year 2020; • ENVP18 - To seek to preserve and maintain air quality in accordance with good practice and relevant legislation in the construction of its transmission projects;

No.	Theme	EirGrid Policies and Objectives supporting EPA key actions
		• 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 our grid development projects; and • 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.
3	**Implementation of Legislation**	The following policies and objectives, which have been developed by EirGrid, recognise the need to improve how plans/policies are tracked and the overall enforcement of environmental legislation: • ENVP3 - That any transmission development project, either individually or in combination with other projects, that has the potential to give rise to significant effect on the integrity of any European (Natura) site(s) shall be subject to Appropriate Assessment (AA) in accordance with Article 6 of the EU Habitats Directives; • 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. 84 of 1999), the European Communities (Birds and Natural Habitats) Regulations 2011 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; • ENVP6 - To protect trees, hedgerows or groups of trees which function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive; • ENVP10 - To seek to preserve and maintain noise quality in accordance with good practice and relevant legislation; • ENVP11 - To have regard to the objectives of the National Landscape Strategy in its transmission development projects; • 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; • 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; • ENVP18 - To seek to preserve and maintain air quality in accordance with good practice and relevant legislation in the construction of its transmission projects; • 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; • 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 our grid development projects; and • ENVO8 - That all grid development proposals, and in particular, transmission 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.
4	**Restore and Protect Water Quality**	The following policies and objectives, which have been developed by EirGrid, recognise the need to continuously implement measures to achieve ongoing improvements to the environmental status of water bodies:

No.	Theme	EirGrid Policies and Objectives supporting EPA key actions
		• 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; • 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; • 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; • ENVP21 - To protect the marine environment, in accordance with any plans made under the EU Directive 2014/89/EU (Marine Spatial Planning); and • ENVO8 - That all grid development proposals, and in particular, transmission 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.
5	**Sustainable Economic Activities**	The following policies and objectives, which have been developed by EirGrid, recognise the need to integrate resource efficiency and sustainability ideas across all economic sectors: • 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 *Ireland's Grid Development Strategy*, legislative requirements, relevant guidance and best practice; • PDP2 - To promote sustainable grid development by balancing complex and/or competing technical, economic, environmental, social and deliverability goals and priorities in decision-making; • PCP3 - To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making; and • 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.
6	**Nature and Wild Places**	The following policies and objectives, which have been developed by EirGrid, recognise the need to continuously protect pristine and wild places which are key to biodiversity and provide sustainable tourism opportunities: • ENVP3 - That any transmission development project, either individually or in combination with other projects, that has the potential to give rise to significant effect on the integrity of any European (Natura) site(s) shall be subject to Appropriate Assessment (AA) in accordance with Article 6 of the EU Habitats Directives; • ENVP4 - To 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 2011 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; • ENVP5 - To promote a pro-active good practice approach to tree and hedgerow management in grid development, with the aim of minimising the impact of transmission development on existing trees and hedgerows; • ENVP6 - To protect trees, hedgerows or groups of trees which function as wildlife corridors, in accordance with Article 10 of the EU Habitats Directive;

No.	Theme	EirGrid Policies and Objectives supporting EPA key actions
		• ENVP11 - To have regard to the objectives of the National Landscape Strategy in its transmission development projects; • ENVP12 - To continue to protect and enhance landscapes and visual amenity through the sustainable planning and design of transmission infrastructure development; • 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; • ENVO7 - To have regard to any future National Landscape and/or Seascape Character Assessment in the development of its transmission projects; and • 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.
7	**Community Engagement**	The following policies and objectives, which have been developed by EirGrid, recognise the need to keep communities informed, engaged and provide support in terms of the protection and improvement of the environment: • 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; • 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; • CEP3 - To ensure consultation and engagement feedback is appropriately considered in decision making and that this process is documented; • CEP4 - To facilitate formal complaints system and to resolve such complaints in a timely manner; • HBSP1 - To consider and address social impact and the impact on human beings and health in the development of transmission infrastructure projects as appropriate; • 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; • CEO2 - To maintain and update as required EirGrid's Complaints procedure. • 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; • HBSO2 - To ensure that all grid development projects are screened for the requirement for a Social Impact Assessment, and where so required, that such Assessment will accompany an application for statutory consent; • HBSO3 - To promote and deliver Community Funds and Proximity Payments for certain categories of transmission infrastructure projects, in accordance with established terms of reference; and • 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.

Appendix E. Baseline Data Sources

Aspect	Data	Source	Format
Population, Human Health and the Economy	Population Data, Distribution, Trends	Central Statistics Office (CSO)	Digital
		Evidence Based Environmental Studies. Study 9: Settlement and Land Use	Digital
		Northern Ireland Statistics and Research Agency (NISRA)	Digital
	Health	CSO	Digital
		WHO	Digital
	Medical Cover	CSO	Digital
	Life Expectancy	Department of Health	Digital
	Major Settlements	Ordnance Survey of Ireland (OSI)	Digital (GIS)
	Electromagnetic Fields (EMF)	Evidence Based Environmental Studies. Study 1: EMF	Digital
	Employment Rates	CSO	Digital
	Capital Investment	Capital Investment Plan (CIP) 2016 – 2021	Digital
Biodiversity, Flora and Fauna	SAC's and SPA's	NPWS	Digital (GIS)
	NHA's and pNHA's	NPWS	Digital
	RAMSAR	RAMSAR Ireland website	Digital
	UNESCO	UNESCO website	Digital
	Other nature conservation sites e.g. Salmonid Waters, Freshwater Pearl Mussel Catchments and Nature Reserves	NPWS	Digital
		County Development Plans	Digital
	Bird species including breeding, passage and wintering birds	BirdWatch Ireland	Digital
		Royal Society for the Protection of Birds (RSPB)	Digital
		Evidence Based Environmental Studies. Study 5: Birds	Digital
	Invasive species	Invasive Species Ireland	Digital
		Biological Data Centre National Invasive Species Database	Digital
	Overview of: - Bats; - Habitats; and - Water Quality and Aquatic Ecology	Evidence Based Environmental Studies. Study 3: Bats; Evidence Based Environmental Studies. Study 4: Habitats; and Evidence Based Environmental Studies. Study 6: Water Quality & Aquatic Ecology	Digital
	Transmission Lines within SAC's and SPA's (110kV, 220kV and 400kV)	EirGrid	Digital Digital (GIS)
	Landscape Character Areas (LCA's)	County Landscape Assessments	Digital

Aspect	Data	Source	Format
Landscape and Visual Amenity		County Development Plans	Digital
	National Sensitivity Mapping	EirGrid Environmental Sensitivity Mapping	Digital (GIS)
	Overview of: - Landscape & Visual Amenity	Evidence Based Environmental Studies. Study 10: Landscape and Visual	Digital
	Landscape Strategy	National Landscape Strategy (NLS) 2015 - 2025	Digital
Cultural Heritage – Archaeological and Architectural	Record of Monuments and Places (RMP)	Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRG)	Digital (GIS)
		National Monuments Service	Digital
	Record of Protected Structures (RPS's)	Heritage Council	Digital
		County Development Plans	Digital
	Architectural Conservation Areas (ACA's)	County Development Plans	Digital
		Local Area Plans	Digital
	National Inventory of Architectural Heritage (NIAH)	Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRG)	Digital
	UNESCO sites	UNESCO website	Digital
	Overview of: - Cultural Heritage Guidelines for Electricity Transmission Projects	Evidence Based Environmental Studies. Study 2: Cultural Heritage	Digital
Geology and Soils	Soils and subsoils	Teagasc	Digital
		EPA National Soil Database	Digital
	Geology of Ireland	GSI	Digital (GIS)
	Overview of: - Soils and Geology	Evidence Based Environmental Studies. Study 7: Soils and Geology	Digital
Land Use	Land Cover and Land Use	CORINE Land Cover Inventory	Digital (GIS)
		EPA	Digital (GIS)
	Agricultural Land	CSO	Digital
		Department of Agriculture, Food and the Marine (DAFM)	Digital
	Forestry	EPA	Digital
		Forest Inventory Planning System (FIPS)	Digital (GIS)
	Peatland	Bord na Móna website	Digital
	Overview of: - Settlement and Land Use	Evidence Based Environmental Studies. Study 9: Settlement & Land Use	Digital
Air Quality and Noise	Air Quality	EPA	Digital
	Air Quality Zones	EPA	Digital
	Noise	WHO	Digital

Aspect	Data	Source	Format
		Evidence Based Environmental Studies. Study 8: Noise	Digital
Water	Overview of: - Water Quality and Aquatic Ecology	Evidence Based Environmental Studies. Study 6: Water Quality and Aquatic Ecology	Digital
	WFD Waterbody Status	EPA – WFD Data	Digital
	Water Monitoring Sites	EPA – WFD Data	Digital
	River Basin Management Plans	WFD – RBMP and Map Data	Digital Digital (GIS)
	Flood Risk Management Plans (FRMPs)	OPW	Digital/ Hard-copy
	Preliminary Flood Risk Assessment Mapping	OPW	Digital (GIS)
Material Assets and Infrastructure	Road Network	Transport Infrastructure Ireland (TII)	Digital
	Rail Network	Iarnród Éireann	Digital
	Canal Network	Waterways Ireland	Digital
	Port Traffic	CSO	Digital
	Energy Requirements	SEAI	Digital
	Power Generation Stations	ESB – Map Data	Digital
	Transmission Network	ESB	Digital
		EirGrid	Digital (GIS)
	Water-infrastructure management	Irish Water	Digital
	Wind Energy	County Wind Energy Strategies	Digital
		Irish Wind Energy Association (IWEA)	Digital
	Renewable Energy	County Renewable Energy Strategies	Digital
		Department of Energy, Communications and Natural Resources (DECNR) Offshore Renewable Energy Development Plan	Digital
		SEAI Strategic Plans	Digital
Tourism and Recreation	Dublin Airport Passenger Statistics	CSO	Digital
	Port Traffic Statistics	CSO	Digital
	Irish Touring Routes/ Areas	Fáilte Ireland	Digital
		Department of Transport, Tourism and Sport	Digital
	National Trails	National Trails Register	Digital
	Future Development	County Development Plans	Digital
		DAA	Digital

Aspect	Data	Source	Format
		Dublin Port Masterplan	Digital
Climate Change	GHG emissions	EPA - Data	Digital
	Flood Risk	OPW - Flood Risk Management studies	Digital/Hard-copy
	Renewable/ Sustainable Energy	SEAI	Digital
		Department of Communications, Climate Action and Environment	Digital
Transboundary Effects	Electricity Transmission	SONI (NI)	Digital
		RTE (France)	Digital
		National Grid (UK)	Digital
	Environment	Northern Ireland Environment Agency	Digital
		Ministry of the Environment, France (ministère de l'Environnement, de l'Energie et de la Mer)	Digital
		Joint Nature Conservation Committee (JNCC)	Digital
		Department for Natural Resources (Wales)	Digital
	Geology	Geological Survey of Northern Ireland (GSNI)	Digital (GIS)

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