



NON-TECHNICAL SUMMARY ENVIRONMENTAL REPORT
for the Grid25 Implementation Programme 2011-2016
Strategic Environmental Assessment







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Section 1 - Introduction & SEA Process

1.1 Introduction

This is the Non-Technical Summary of the Environmental Report of the Grid25 Implementation Programme 2011-2016 Strategic Environmental Assessment (SEA). The purpose of this SEA Environmental Report – which should be read in conjunction with the IP – is to provide a clear understanding of the likely environmental consequences of decisions arising from the Grid25 IP.

What is an SEA?

SEA is a systematic process of predicting and evaluating the likely significant environmental effects of implementing a proposed plan or programme in order to ensure that these effects are adequately addressed at the earliest appropriate stages of decision-making in tandem with economic, social and other considerations.

Why is it needed?

The SEA was carried out in order to comply with the provisions of the SEA Directive (Directive 2001/42/EC) and the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (SI No. 435 of 2004) as amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (SI No. 200 of 2011) and to anticipate and avoid adverse impacts arising from the IP. This will facilitate the development of the Strategy outlined in Grid25 in a sustainable way that will ensure that such development will be conceived and delivered having regard to the carrying capacity of the receiving environment. The output of the process is an Environmental Report which should be read in conjunction with the IP.

How does it work?

The main related environmental issues were assembled and presented to the team who were preparing the IP. This helped them to devise an IP that integrated environmental considerations into future decision making.

Different scenarios were considered for the development of the national transmission network through a succinct and focused evaluation which identifies the interactions between each of the scenarios and the receiving environment as well as compliance with national energy, planning and economic development policy.

What is included in the Environmental Report which accompanies the Programme?

The Environmental Report contains the following information:

- A description of the environment and the key environmental issues;
- A description and assessment of alternative scenarios for the IP;
- An assessment of the IP provisions; and,
- Mitigation measures which will aid compliance with important environmental protection legislation – e.g. the Habitats Directive – and which will avoid/reduce the environmental effects of implementing the programme.

What happens at the end of the process?

On adoption of the IP, an SEA Statement was prepared and published. This Statement includes information on how environmental considerations have been integrated into the IP and why the preferred alternative was chosen for the IP in light of the other alternatives – this introduces accountability, credibility and transparency into the IP-making process.

1.2 The Iterative SEA Process

The SEA for the Implementation Programme (IP) for Grid25 has been undertaken alongside the preparation of the IP. The SEA process started in August 2009. Figure 1.1 lays out the main stages in the IP /SEA process.

The IP (prepared by EirGrid), the SEA Environmental Report (prepared by EIServices) and the Appropriate Assessment¹ (also prepared by EIServices) were prepared in an iterative manner whereby multiple revisions of each document were prepared, each

informing subsequent iterations of the others. To facilitate this iterative approach numerous meetings were held between EirGrid and EIServices and a number of meetings were held between EirGrid and EIServices and representatives from the Environmental Protection Agency (EPA) and the (then) Department of the Environment, Heritage and Local Government (DEHLG).

The main changes to the IP arising from both the SEA and Appropriate Assessment processes are summarised in Section 6 of this document.

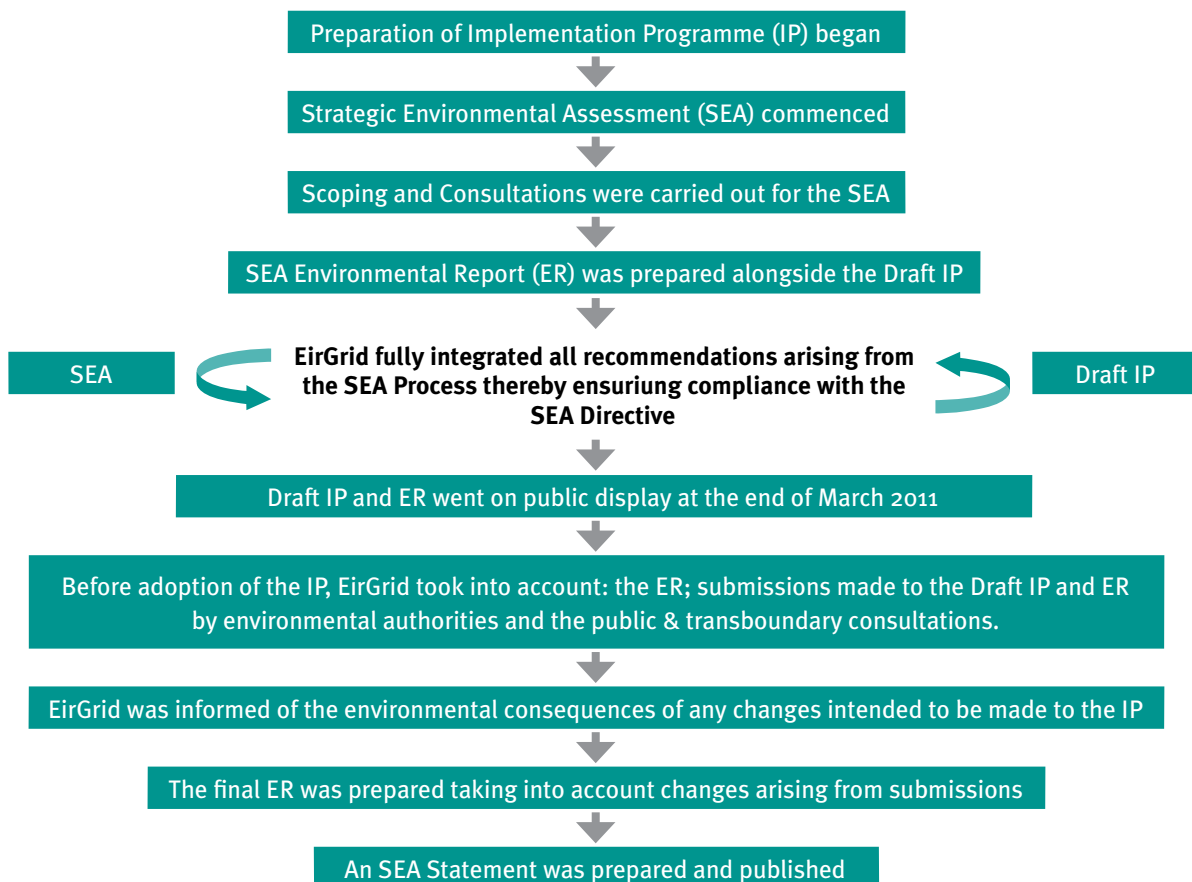


Figure 1.1 IP and SEA Stages

¹ An Appropriate Assessment (AA) under Article 6 of the Habitats Directive has been undertaken on the draft IP. The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC). The preparation of the draft IP, SEA and AA have taken place concurrently and the findings of the AA have informed both the draft IP and the SEA. Measures which have been integrated into the IP which provide for the protection of ecological sensitivities - including Natura 2000 Sites - have been developed by and alongside the AA process.

1.3 Difficulties Encountered

Annex I (h) of the SEA Directive requires the identification of any difficulties encountered in compiling the information required by the assessment. The following difficulties were encountered during the process which had to be overcome:

- There is currently no published national landscape mapping for Ireland. Landscape Constraints Rating mapping (see Figure 3.2) was prepared as part of the Strategic Environmental Constraints Mapping which is part of the Strategic Environmental Framework² (SEF) and this provides a basis for the evaluation provided in this SEA Environmental Report;
- There is currently no comprehensive mapping of cultural heritage at a national scale; however an SEO and related indicators and targets for architectural and archaeological heritage are used by the SEA in order to assess and provide monitoring measures for the likely significant environmental effects of implementing the IP;
- There was no mapping available of areas which provide opportunities for the development of the transmission grid. In order to identify such areas, the Strategic Environmental Constraints Mapping mapped areas that: have existing infrastructure in place (e.g. roads, transmission etc.); are predominantly non-natural in their land use (with the exception of urban areas); or, are where natural topography may represent opportunities for future transmission system development;
- There was no composite mapping of potential for transmission development available. An Overall Development Potential Rating map (see Figure 3.3) was prepared as part of the Strategic Environmental Constraints Mapping which combines the ecological mapping, the UNESCO Sites and National Parks mapping and the landscape mapping to provide a high level assessment of the main constraints associated with the development of the transmission system. In addition to the constraints, the Opportunity Areas are included in order to identify locations which represent potential opportunities to develop transmission infrastructure with a reduced environmental impact.

² Strategic Environmental Constraints Mapping has been separately prepared by RPS on behalf of EirGrid in order to provide relevant information so that the environment can be taken into consideration from the earliest possible stages of strategic transmission reinforcement. The mapping and accompanying report has been used to inform the environmental baseline description summarised in Section 3 of this document and certain mitigation measures summarised in Section 6 of this document.



Section 2 - The Implementation Programme

2.1 The Grid25 Implementation Programme

Grid25³ is a high-level strategy outlining how EirGrid intends to undertake the development of the electricity transmission grid in the short-, medium- and longer-terms, to support a long-term sustainable and reliable electricity supply. The Grid25 strategy thereby seeks to implement the provisions of the 2007 Government White Paper on Energy – “Delivering a Sustainable Energy Future for Ireland” in terms of development of electricity transmission infrastructure.

The IP identifies the best current understanding of those parts of the transmission system that are envisaged as likely to be developed over the next five years – this is separately set out in EirGrid’s annual Transmission Development Plan* (the identified projects of which are reproduced in Chapter 4 and Appendix A of the IP) to give effect to current Government Policy. The IP identifies the issues, objectives and associated processes that will need to be adopted when making decisions about how and where developments will occur. In this way it establishes the parameters and criteria for the processes by which subsequent decisions will be made.

Due to the very high-level and strategic nature of this SEA most of the recommendations have been about how to change decision-making processes within the IP itself. So the recommended mitigation measures, in many instances, have already been incorporated into the drafting of the IP document or by bringing about changes in the organisational and working practices within EirGrid.

2.2 The Grid25 Strategy

The Grid25 Strategy – *A Strategy for the Development of Ireland’s Electricity Grid for a Sustainable and Competitive Future*, published in

October 2008 – was prepared by EirGrid whose role is to take sole responsibility for the operation and development of the transmission system within the Republic of Ireland. The Strategy is a response to Government policy set out in the Government’s Energy White Paper ‘*Delivering a Sustainable Energy Future for Ireland*’ - the Energy Policy Framework 2007–2020, including “the publishing of a Grid Development Strategy by EirGrid (Grid25) which is required to be aligned to and facilitate greater certainty in relation to – among other things – spatial strategy and regional development objectives”.

The White Paper includes the meeting of 33% of electricity consumption from renewable energy – (this target was subsequently increased to 40%) – and a number of Actions which are set to achieve the Strategic Goal of Ensuring that Electricity Supply Consistently Meets Demand. These actions include:

- the delivery of a second North-South electricity interconnector;
- the delivery of an East-West interconnector;
- the undertaking of cost-benefit analysis and feasibility planning in relation to further interconnection with Britain or potentially with Europe and,

Grid25 provides an outline of how EirGrid plans on undertaking the development of the transmission network in order to support a long-term sustainable and reliable electricity supply. In particular, it has been developed so that it will conform with national planning and economic development policy in particular the National Development Plan (NDP) and the National Spatial Strategy (NSS). The NDP and NSS contain energy-related provisions for the significant development of the transmission network and new energy generation in regions across the country. This development will facilitate other provisions in the NDP and NSS relating to the balanced development of regions across the country.

³ Grid25 – “*A Strategy for the Development of Ireland’s Electricity Grid for a Sustainable and Competitive Future*”, published by EirGrid in October 2008.

* The TDP is a five year plan which is subject to annual review.

2.3 Network Reinforcement Developments contained in the IP

EirGrid’s Transmission Development Plan (TDP) 2010, available on www.eirgrid.com, presents the planned network development projects that EirGrid has progressed to the point where they are the preferred scheme to meet the changing system requirements in the context of the long-term development of the network. The TDP covers a total of 111 projects that are in progress.

It is important to note that there are a significant number of transmission development projects

which are at different phases of their lifetime. EirGrid has identified 26 network development projects for inclusion in the IP to meet the changing system requirements in the short to medium term development of the network.

A number of transmission projects in the TDP 2010 are currently in the statutory planning consents process, and thus have not been included within the scope of the IP (although they are included in a list of all TDP projects in Appendix A of the IP); rather they are all separately subject to specific environmental and other assessment, in accordance with Statutory procedure and best practice.

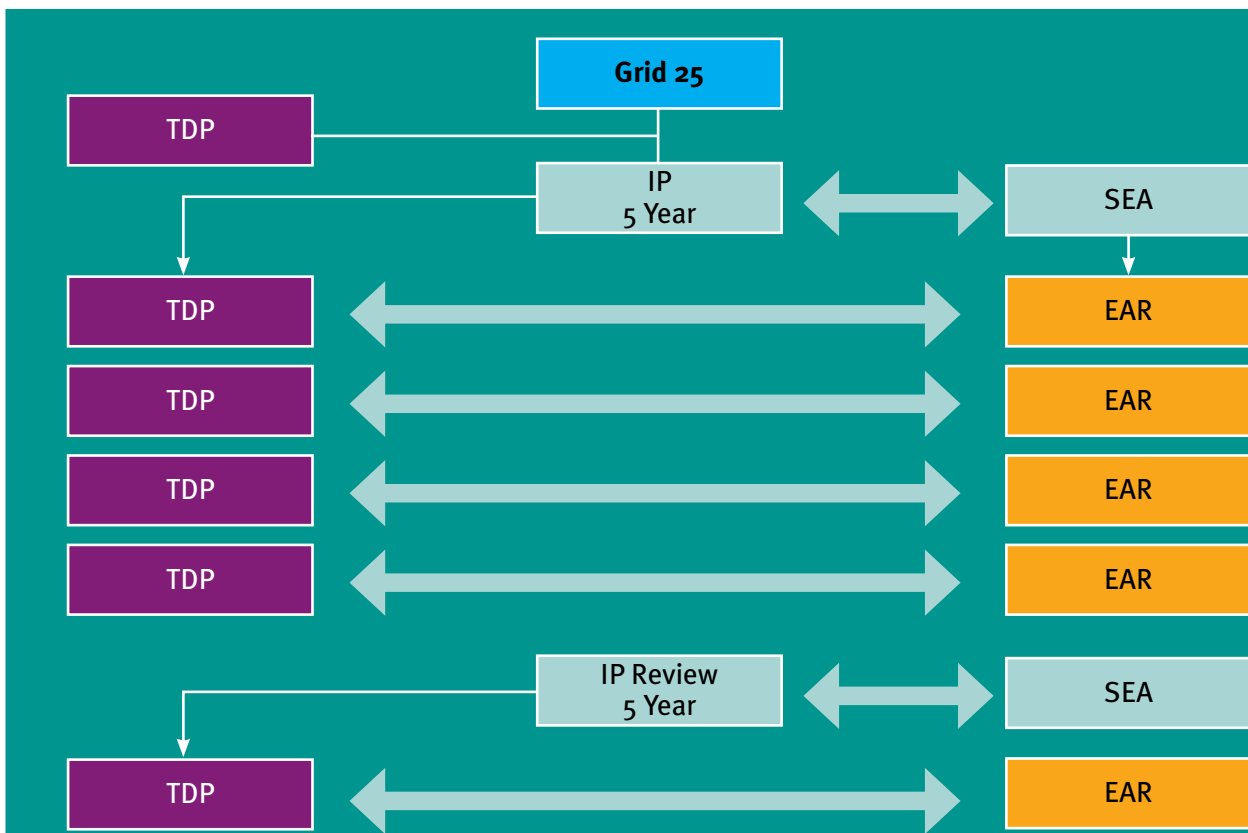


Figure 2.1 Structure for Grid25 strategy and associated IP, SEA and TDP

All references to ‘Transmission Development Plan (TDP) 2010’ in the IP, and associated SEA documents, refer to the ‘Draft TDP 2010’ which is currently with the Commission for Energy Regulation (CER) for formal review and approval.

2.4 Relationship with other relevant Plans and Programmes

2.4.1 EirGrid Policy and Plans

Grid25 is a high level vision statement providing an outline of how EirGrid plans on undertaking the development of the transmission network in order to support a long-term sustainable and reliable electricity supply. The Grid25 IP is informed by an annual rolling operational document – the TDP, as required by regulation 8(6) of SI 445/2000 and submitted for approval to the CER (Commission for Energy Regulation).

Each of the documents provides further level of scale and detail; from the long term visionary statements contained in Grid25 to the short and medium term objectives and policy set out in the IP, to the specific project objectives outlined in the TDP. It is intended that the IP, and associated SEA, will be subject to ongoing review and update over the period of Grid25, and in reference to the annual EirGrid TDPs; this is set out graphically on Figure 2.1.

2.4.2 National Development Plan

The National Development Plan 2007–2013 (NDP) is designed to underpin the development of a dynamic competitive economy over the period 2007–2013. A key objective of the Economic Infrastructure Priority in the NDP is: to promote security of energy supply, which is competitively priced, in the long term and implement a significant programme of energy diversification with beneficial environmental effects.

The NDP identifies that the projects envisaged by the Plan will support priority energy investment needs, to deliver over the period of the Plan:

- Interconnection;
- Market integration;
- Network extension; and
- Storage for greater security of supply.

Key strategic projects listed include:

- East/West Electricity Interconnector, including the associated reinforcement costs of existing networks;
- Strengthening the Ireland/Scotland gas link;
- Second North/South Electricity Interconnector, to underpin the all-island electricity market;
- Strategic Oil Storage project, to maximise stocks held in Ireland having regard to storage availability on the island and value for money; and
- Construction of a strategic gas storage reserve on an all-island basis.

2.4.3 National Spatial Strategy & Regional Planning Guidelines

The National Spatial Strategy 2000–2020 (NSS) is a 20-year planning framework for the entire country to guide policies, programmes and investment. It seeks to promote a better balance of social, economic and physical development between the Regions. As with the NDP, the NSS contains energy-related provisions for the significant development of the transmission network and new energy generation in regions across the country. This development will facilitate other provisions in the NSS relating to the balanced development of regions across the country.

Ireland is divided into eight regional forward planning regions, Dublin, Midlands, Mid East, Mid West, South East, South West, West and Border, each with its own Regional Planning Authority composed of Elected Members selected by the constituent local government councils. Regional planning authorities are required, under the Planning and Development Regulations 2001 to 2011, to draw up regional planning guidelines (RPGs), long term strategic planning frameworks, for their relevant region. The RPGs aim to give regional

effect to the National Spatial Strategy and to guide the development plans for each county.

Regional Planning Authorities have the primary roles of preparing and implementing RPGs and promoting co-ordination in the provision of public services in their relevant region, which includes promoting co-operation and joint action between local authorities, public authorities and other bodies.

Regional Authorities have responsibility to review the provision of public services and the overall development needs of their relevant region.

2.4.4 National Renewable Energy Action Plan

The National Renewable Energy Action Plan (submitted under Article 4 of Directive 2009/28/EC) sets out Ireland's national trajectories for the share of energy from renewable sources consumed in transport, electricity and heating and cooling between now and 2020. This Plan does not provide a spatial component for renewable energy generation.

2.4.5 Offshore Renewable Energy Development Plan

The Department of Communications, Energy and Natural Resources, with input from the Sustainable Energy Authority of Ireland (SEAI) have prepared a Draft Offshore Renewable Energy Development Plan (OREDP) which describes the policy context for development of offshore wind, wave and tidal current energy in Irish waters for the period to 2030. SEA is being undertaken alongside the Plan. The final version of the OREDP will be adopted and published in the first half of 2011.

2.4.6 County Wind Energy & Renewable Energy Strategies

Wind Energy Strategies have been prepared and included in the Development Plans of a number of County Councils across the country.

These Strategies generally make recommendations for Wind Energy Development policy. A number of County Development Plans provide for the preparation of County-level Renewable Energy Strategies. Preparation of these strategies – and corresponding environmental assessments as appropriate – could help to direct renewable energy development at a county level towards the least sensitive receiving environments while also having regard to economic and social considerations.

2.4.7 Taking into account Local Authority Plans

Information contained in the plans and other relevant documents of local authorities including County Development Plans, Landscape Character Assessments, Heritage Plans and Biodiversity Plans was considered in the assessment of environmental effects as appropriate – including cumulative and in-combination effects. Information is not included on this data in the environmental baseline description due to, *inter alia*, the extent of variability between the provisions of and data contained within these documents across the country. However it is acknowledged that these documents will be taken into account as appropriate by lower tier decision making through, *inter alia*, route selection and lower tier assessments.

2.5 Planning, Environmental and Community Considerations

EirGrid is committed to ensuring that all planning and development of the transmission network is conducted according to all relevant legislation. EirGrid applies a best practice approach to the planning and development of all Transmission Projects. A rigorous selection strategy is followed prior to selecting a route or site, including a series of environmental studies, which are undertaken prior to and during transmission project planning including:



- Regional Environmental Constraints Studies;
- Project Specific Constraint Studies;
- Project Specific Route and/or Site Selection;
- Environmental Impact Statements/Environmental Reports; and,
- Appropriate Assessments.

Changes in legislation (especially the Habitats Directive), means that energy planning must now demonstrate consideration, from the outset, of how to avoid or reduce environmental and community impacts.

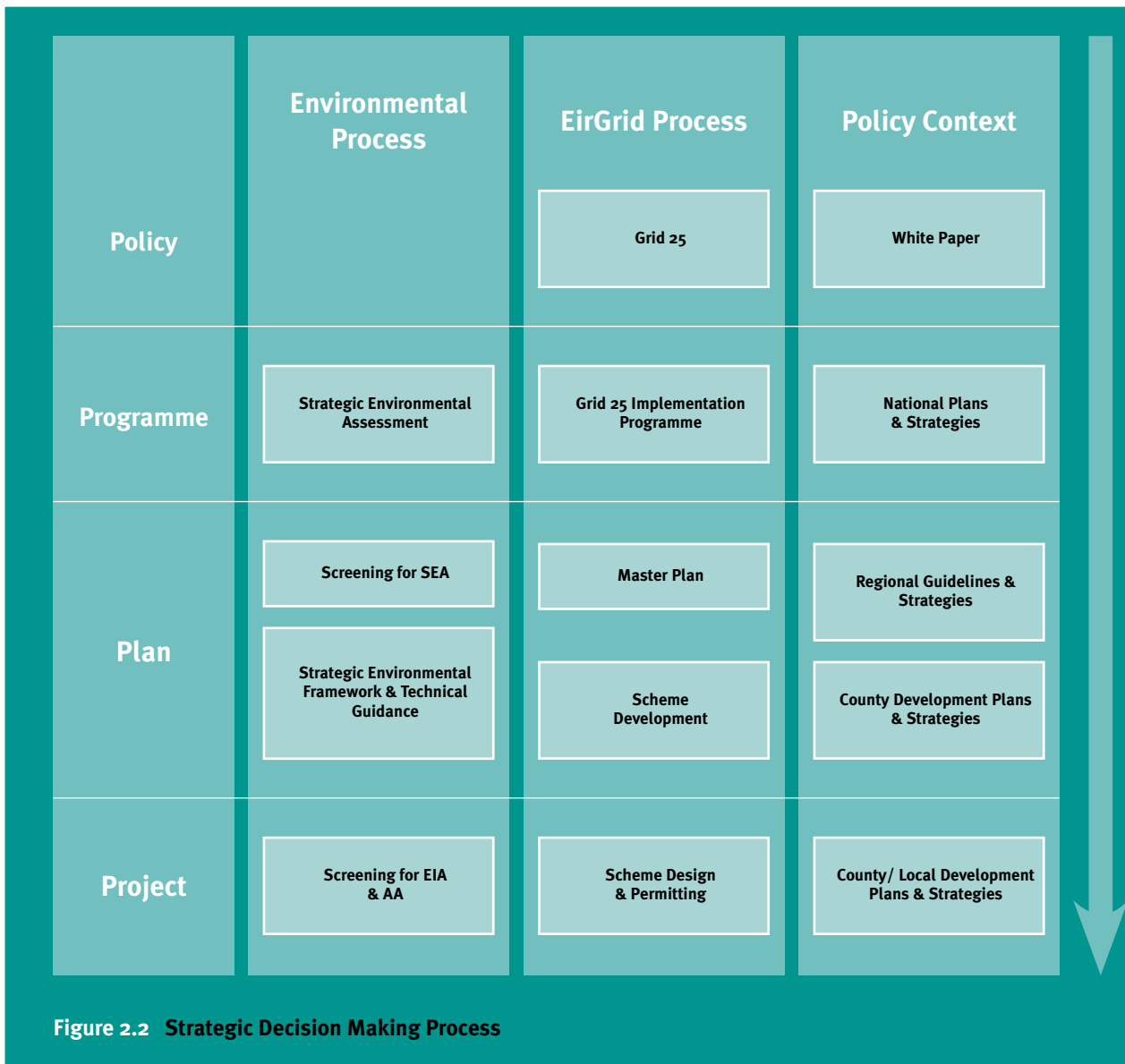
It is the case, acknowledged by EirGrid, that it will not be possible to develop the transmission network

– nor to realise the associated natural resources of renewable energy – without putting planning, environmental and community considerations at the heart of EirGrid’s Transmission System Planning. Ignoring these issues will delay or prevent the future development of the transmission network – resulting in increased costs and reduced efficiencies.

EirGrid has introduced procedures and resources to effectively address these issues – as fundamental determinants – rather than as means of defending projects. New positions have been created, including the creation of an in-house dedicated Grid25 Programme Management Office (PMO), and the direct employment of public planners and an ecologist; new structures and new data sets

are in place, including the preparation of Strategic Environmental Constraints Mapping, as well as this Strategic Environmental Assessment and the Appropriate Assessment screening, both of which have informed the IP; and new procedures are used to ensure environmental input at all stages of the pre-application decision-making process.

Together these new components comprise a Strategic Environmental Framework (SEF) by which EirGrid approaches all projects for transmission infrastructure development. Figure 2.2 and Figure 2.3 indicate the new procedures for taking into account planning and environmental considerations in the Transmission System Planning and strategic decision making process at EirGrid.





New procedure for Transmission System Planning to take account of Planning and Environmental Considerations at each stage of the process:

Stage 1

At a strategic Level, procedures [the Implementation Programme] and resources (staff and data) are put in place.

Stage 2

At a Technical Planning Level, a range of alternative approaches are considered – these include grid configuration and management, re-use of existing assets, technical and routing options. EirGrid is currently considering the merits of capturing this in the form of regional Masterplans for grid development. The ongoing preparation of

these Masterplans will be subject to continual environmental scrutiny and assessment as appropriate, to ensure compliance with the SEA.

Stage 3

At Project Level, once the need and technical configuration has been determined, more detailed alternatives for the realisation of that project are considered, with a formal consideration of all alternatives – using SEA and EIA techniques.

Stage 4

At a Permitting Level, the application for consent is subject to formal EIA or environmental studies, as appropriate, and there is formal public agency consultation.

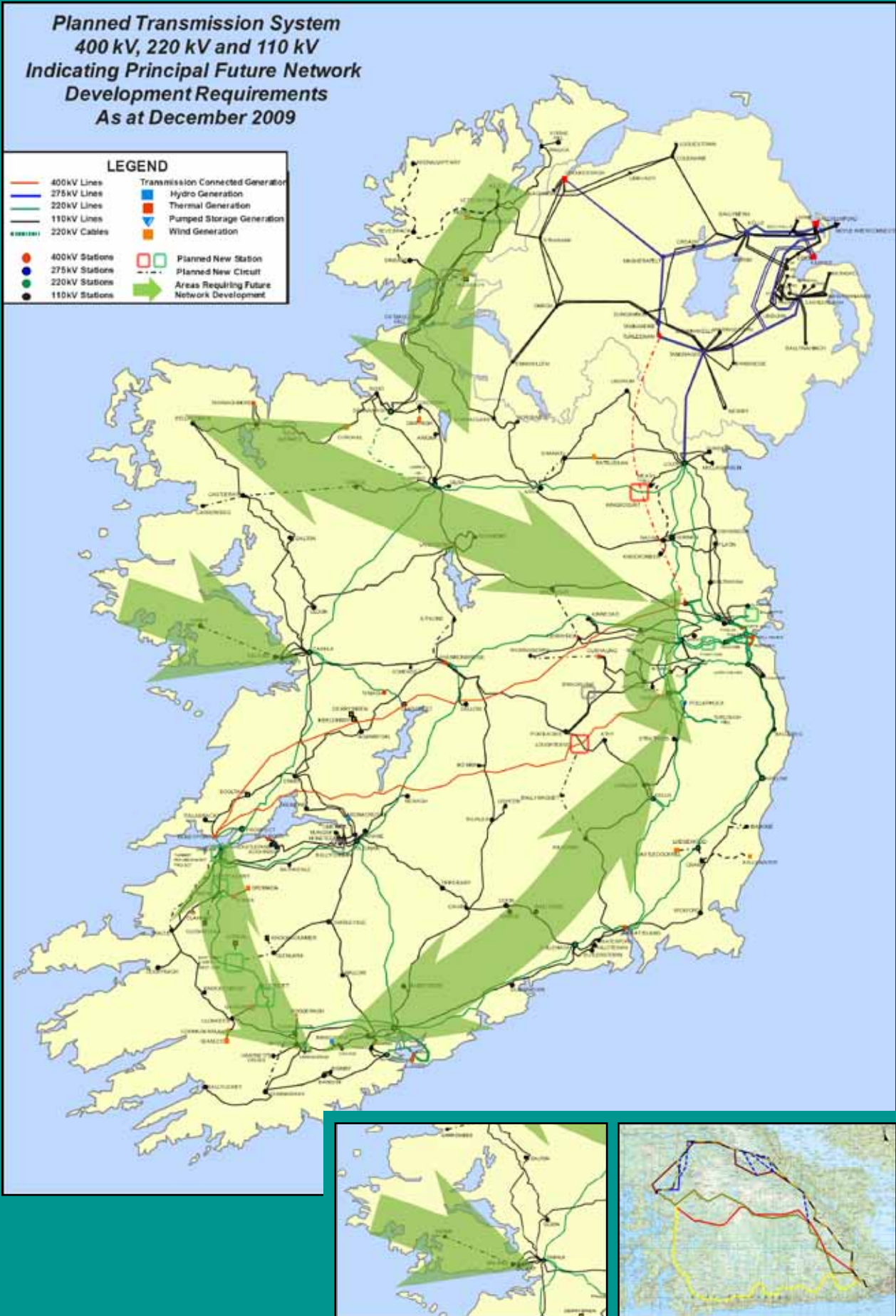


Figure 2.3 New Procedures for Transmission System Planning to take account of Planning and Environmental Considerations

Section 3 - Baseline Environment

3.1 Introduction

Being consistent with the high level, strategic provisions of the IP, this section provides a high level, strategic description of environmental components which have the greatest potential to be affected by implementation of the IP.

3.2 Evolution of the Environment

The principal forces that are currently changing the environment of the island of Ireland are urbanisation, agricultural reform and environmental regulation. These are causing different changes in different areas.

Urbanisation is rapidly increasing in all parts of Ireland as more and more people reside within the environs of established settlements and their environs. Furthermore there is a marked concentration of population along the eastern and mid-eastern counties that make up the Greater Dublin Area.

Reform of the Common Agricultural Policy is accelerating the trend of marginal land being abandoned especially in peripheral areas. This is causing an increase in the extent of naturalised lands in, in particular, uplands, wetlands and areas of low soil capability. These are concentrated in the western and northern part of Ireland. The same changes are likely to increase the viability, profitability and intensity of agriculture in the more productive soils of the southern and eastern counties of Ireland.

Environmental regulations that seek to protect the status of vulnerable and significant habitats and waters are beginning to shape policies, plans and large-scale projects – especially where these are influenced by Environmental Assessments. The extent of these vulnerable areas is likely to increase as natural processes and vegetation become re-established in areas of agricultural contraction. This pattern will create more and more restrictions on development in vulnerable areas.

The Strategic Environmental Constraints Mapping illustrates that there is a marked concentration of these vulnerabilities in the western and northern parts of Ireland.

3.3 Existing and Emerging Problems

The evolving forces of change, which have been described above, are creating two sets of emerging problems for the development of electricity infrastructure. In the environmentally sensitive northern and western areas there are increasing restrictions due to environmental designations and associated processes. In the increasingly urbanised areas of the east and south attempts to find routes for electricity projects are becoming difficult through an increasingly settled countryside.

3.4 Likely Evolution of Problems in the Absence of the IP

In the absence of a planned and environmentally sensitive Implementation Programme it appears that there will be increasing conflicts with environmental designations in the west and northern counties and conflicts with rural settlement in the east and south.

This means that the electricity transmission network would be less likely to be developed and renewable energy generation would be less likely to be facilitated. This would result in continued use of non-renewable energy sources and would give rise to increases in greenhouse gas emissions. There would be fewer new projects with potential environmental effects such as those identified throughout the IP.

3.5 Likely Evolution with proposed IP and SEA

The SEA has been undertaken in order to anticipate and avoid adverse impacts arising from the IP. This will facilitate the development of the strategy outlined in Grid25 in a sustainable way that will ensure that such development will be conceived and delivered having regard to the carrying capacity of the receiving environment.

3.6 Biodiversity and Flora and Fauna

Ecological Constraints Rating mapping has been prepared as part of the Strategic Environmental Constraints Mapping and provides an indication of the areas that are most ecologically sensitive to the construction of electricity transmission infrastructure whether this is by overhead lines or underground cable. A large part of this rating has been based on the biodiversity designations listed above, with each of the identified ecological constraints given a value and overlaid upon each other ⁴.

Figure 3.1 shows the Ecological Constraints Rating at a national level. Ecological constraints are indicated by colours which range from most likely sensitivity (red) to likely sensitivity (yellow). Where the mapping shows a concentration of ecological sensitivities there is an increased likelihood that development would potentially impact upon these sensitivities. In general, and on a national level, ecological constraints occur in greatest concentrations in the western half of the country and in particular along the western seaboard (including north-western and south-western coasts).

3.7 Landscape

There is currently no published national landscape mapping for Ireland. Landscape Constraints and Opportunities Rating mapping (see Figure 3.2) has been prepared as part of the Strategic Environmental Constraints Mapping and provides an indication of the areas that are most sensitive from a landscape perspective to the construction of electricity transmission infrastructure. This mapping combines Visual Sensitivity Mapping and Topographical Mapping. Each of the landscape factors were given a value and overlaid upon each other ⁵.

Landscape Constraints are indicated by colours which range from most likely sensitivity (red) to likely sensitivity (lighter red) while Landscape Opportunities are shown in green. Where the mapping shows a concentration of landscape sensitivities there is an increased likelihood that development would potentially conflict with these sensitivities. In general, and on a national level, the least landscape constraints occur in the area roughly located between Monaghan Town, Dundalk in County Louth, Dún Laoghaire in South Dublin, Galway City and Castlebar in County Mayo.

⁴ A weighting system applied through Geographical Information System (GIS) software was used in order to calculate the sensitivities of each area. A higher score for the international designations (SAC, SPA and Ramsar) reflects the greater significance of these designations when considering infrastructure development.

- 3 factors [Ramsar Sites; candidate Special Areas of Conservation (SACs); and, Special Protection Areas (SPAs)] were attributed a rating of 10 points
- 3 factors [Natural Heritage Areas (NHAs); Proposed NHAs; and, Areas likely to contain a habitat listed in annex 1 of the Habitats Directive that have been deduced from the CORINE land cover dataset] were attributed a weighting of 5 points

⁵ A weighting system applied through GIS software was used in order to calculate the sensitivities of each area.

- 3 factors [Elevation >200m; Forestry Landcover Areas; and, Slope >30 Degrees] were attributed a rating of 10 points:
- 2 factors [Lakes and Estuaries; and, Other Natural Landcover Types] were attributed a weighting of 5 points:
- 1 factor [Areas of land within 3km of the 200m contour and under 200 metres and with a slope between 5 degrees and 30 degrees] was attributed a weighting of minus 5 points

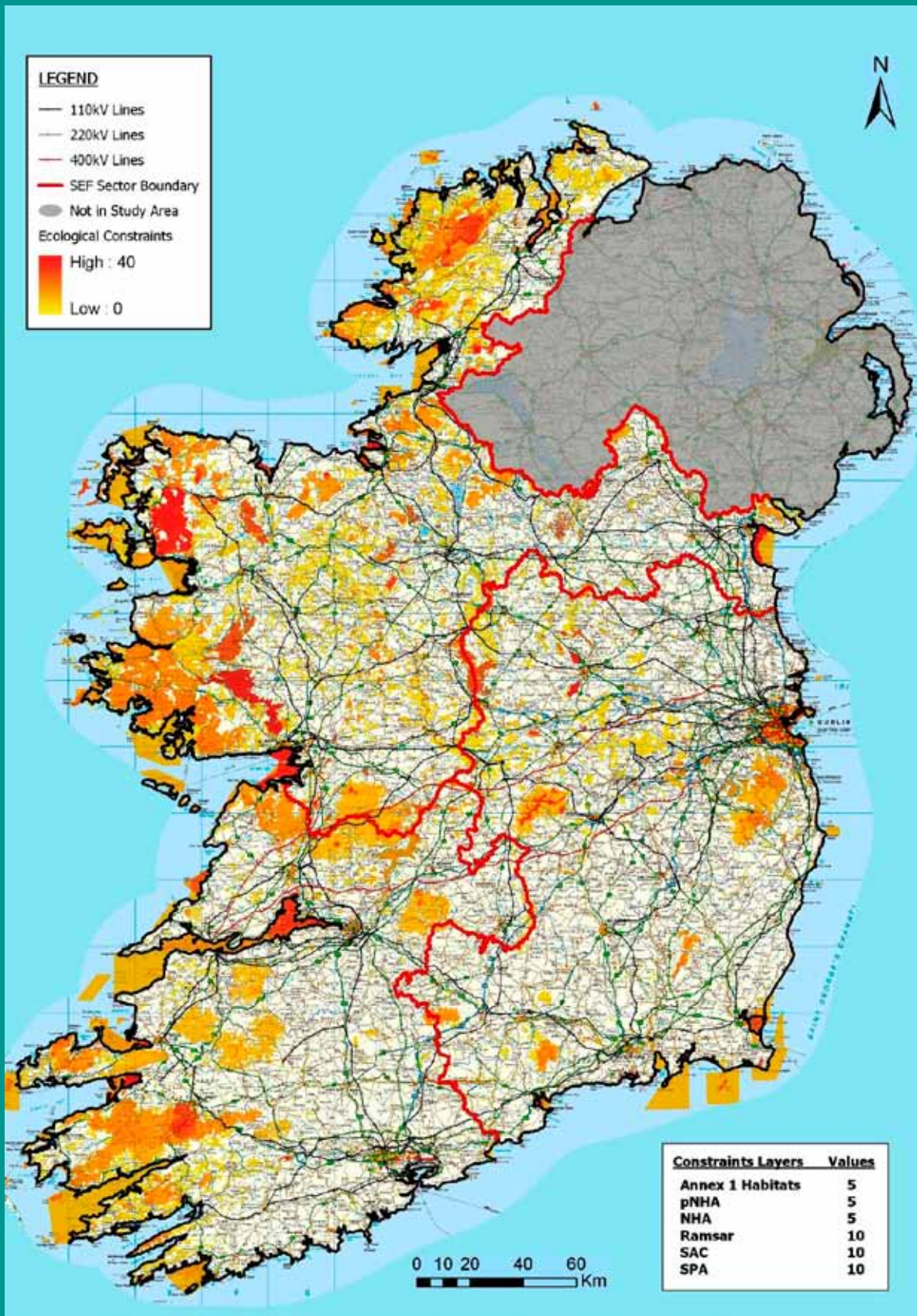


Figure 3.1
National Ecological Constraints Rating⁶

⁶ Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

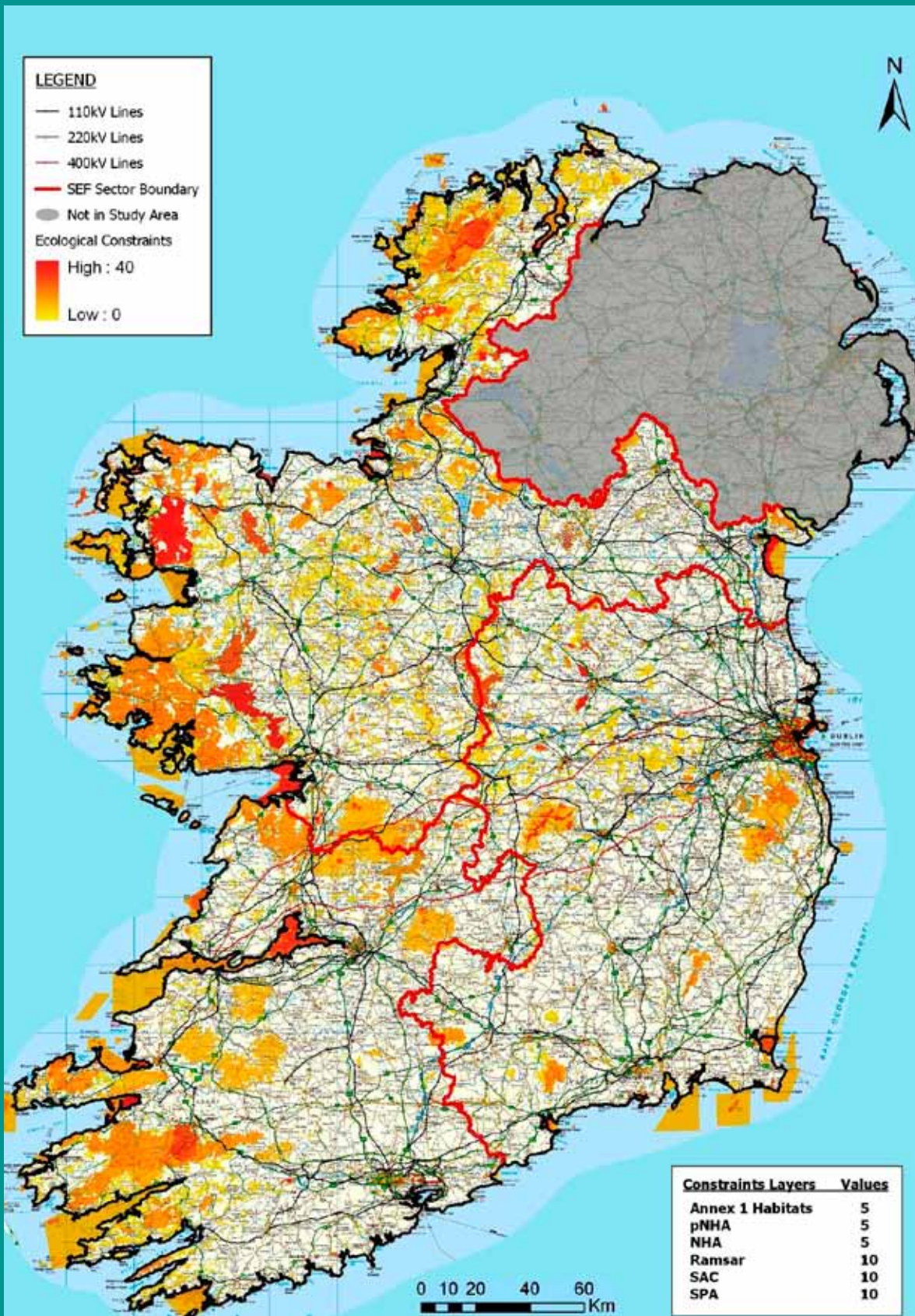


Figure 3.2
National Landscape Constraints and Opportunities Rating ⁷

⁷ Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

3.8 Cultural Heritage

3.8.1 Published Cultural Heritage Mapping

Although there is currently no comprehensive mapping of cultural heritage at a national scale, reference to the Record of Monuments and Places (RMP), Records of Protected Structures (RPSs) and National Inventory of Architectural Heritage (NIAH) identifies widespread siting of cultural heritage throughout the country, of varying significance and consequence.

Archaeological heritage is protected under the National Monuments Acts (1930–2004) establishing the RMP, the Natural Cultural Institutions Act 1997, and the Planning Acts.

A primary source of information for known architectural heritage is the RPS of every Local Authority which is legislated for under Section 51 of the Planning and Development Act 2000. The NIAH is a State initiative under the administration of the DEHLG which identifies, records, and evaluates the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage.

3.9 Climatic Factors

3.9.1 Greenhouse Gas Emissions

In order to reduce greenhouse gas emissions the internationally agreed Kyoto Protocol established emissions reduction targets for developing countries. Ireland's emission target for greenhouse gases (GHGs) is to limit the increase in their combined emissions during the five-year period 2008–2012 to 13 per cent above 1990 levels. Compliance with the Kyoto Protocol limit is achieved by ensuring that Ireland's total GHG emissions in the period 2008–2012, adjusted for any offsets from approved forest sinks as well as any surrender of purchased Kyoto Protocol credits, are below this level at the end of the five year period. Based on

the inventory figures for 2008⁸, it is estimated that Ireland's emissions in 2008 were 23 per cent higher than the baseline estimate set on the 1990 figure.

3.9.2 Energy White Paper

The Government's Energy White Paper '*Delivering a Sustainable Energy Future for Ireland*' – the Energy Policy Framework 2007–2020 (see Section 2.2).

3.10 Population and Human Health

3.10.1 Introduction

With regard to human health, impacts relevant to the SEA are those which arise as a result of interactions with environmental vectors (i.e. environmental components such as air, water or soil through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings). Impacts upon human beings arising as a result of social and economic conditions are not considered by SEA.

The Overall Development Potential Rating mapping (see Section 3.15) has integrated the main population areas and areas of high building density. Settlement areas provide an opportunity for routing power circuits, in that the periphery of these areas may be more suitable for power circuit integration as they will be urban in nature and power circuits would be more easily integrated into the area, provided they do not impinge on residential or particular land use types, e.g. hospitals and schools.

3.10.2 Noise

Impacts occurring on noise levels are localised. Increases in noise levels at construction stage are generally temporary, during daylight hours and for a short duration. Noise emitted by substation equipment is typically of short duration and individually they would be unlikely to cause annoyance. Noise emitted from the operation of transmission lines likely to be audible is referred to as aeolian noise which occurs under well defined

⁸ EPA (2010) Ireland's Greenhouse Gas Emissions for 2008 Wexford: EPA

wind conditions and is caused by the wind impinging on the different components of a line. Since the conditions under which the noise occurs are very specific, this type of noise is uncommon.

3.10.3 Electromagnetic Fields

Electromagnetic fields (EMF) are found across the country, arising from all common electric sources; they are needed to see, to listen to radio and watch television, to communicate using mobile phones, and they are generated every time a light switch is turned on or an electric appliance is used. Power lines and electrical appliances are sources of Extremely Low Frequency (ELF) fields.

The conclusion of international and national authoritative review bodies on the effects of ELF/EMF is that the extensive body of evidence on this subject does not show any effect on health associated with the operation of electricity lines. Significant EMF research has been carried out internationally particularly since the 1970s. It has been estimated that the worldwide research spend to date is approximately €440 million. No conclusive evidence has been found to prove that EMFs are harmful. Independent international medical and scientific bodies are continuing to review and monitor the impact on health from exposure to ELF/EMF associated with power systems.

The standard route planning criteria adopted for the development of the All-Island transmission network complies with all authoritative international and national guidelines for ELF/EMF.

3.11 Water

Potential impacts on the status of water bodies could include water resources and quality (ground/surface water quality impairment, interference with watercourses and associated wildlife). There are also issues with controlling site drainage to ensure sedimentation of watercourses does not occur, in particular, with regard to underground construction.

Since 2000, Water Management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). The WFD requires that all Member States implement the necessary measures to prevent deterioration of the status of all waters – surface, ground, estuarine and coastal – and to protect, enhance and restore all waters with the aim of achieving “good status” by 2015. All public bodies are required to coordinate their policies and operations so as to maintain the good status of water bodies which are currently unpolluted, and to improve polluted water bodies to good status by 2015.

3.12 Material Assets

3.12.1 Existing Infrastructure

The Strategic Environmental Constraints Mapping uses baseline data on existing infrastructure, in addition to other factors, in order to identify Opportunity Areas (see Section 3.14) which would be likely to be more robust with regard to the accommodation of development under the IP. Such infrastructure includes:

- Existing transmission lines; and;
- Motorways and national primary roads which have been dualled.

3.12.2 Development and Land Use Planning

The Strategic Environmental Constraints Mapping has integrated the development limits of existing settlements into the Overall Development Potential Mapping (see Section 3.15). The settlement areas have been seen as a potential opportunity for routing power circuits, in that the periphery of these areas may be more suitable for power circuit integration as they will be urban in nature and power circuits would be more easily integrated into the area, provided they do not impinge on residential or particular land use types, e.g. hospitals and schools. In terms of the sterilisation of development, it is unlikely that the transmission lines, whether

installed as overhead lines or underground cable, will result in excessive sterilisation, given the building proximity distance generally sought for such infrastructure.

3.13 Soil

Peat soils generally provide the least amount of physical support for the routing of and construction of, transmission structures. Throughout Ireland there are extensive areas of peat particularly in the midlands, west and north-west. The landscape mapping included as part of the Strategic Environmental Constraints Mapping identifies the location of extensive peat as one of the 'other natural landcover types', and this landscape mapping has been integrated into the Overall Development Potential Rating mapping provided under Section 3.15.

The development of transmission networks and associated development can result in the sealing off or sterilisation of soil and mineral resources. In terms of the potential to develop natural resources such as mines and quarries, the scope of this high level SEA does not consider individual quarries; this should be addressed during detailed routing studies.

Compaction and sterilisation of topsoil could alter the infiltration and drainage characteristics of the soils. Inappropriate storage of topsoil during cable installation and the use of heavy machinery may result in compaction of the soil or damage to its physical characteristics.

3.14 Opportunity Areas

The Strategic Environmental Constraints Mapping sought to identify areas which may provide opportunities for the development of the transmission grid. Such areas were established as being areas:

- That have existing infrastructure in place (e.g. roads, transmission etc.);
- That are predominantly non-natural in their land use (with the exception of urban areas) – these include areas of agricultural land such as arable, pasture and heterogeneous agricultural areas; or,
- Where natural topography may represent opportunities for future transmission system development – natural screening on the low-lying slopes adjacent to the upland areas can provide opportunities for natural screening.

Existing infrastructure includes:

- Existing transmission lines – these may provide opportunities for reinforcement without developing new transmission routes; and;
- Motorways and national primary roads which have been dualled – these represent significant infrastructure where the construction of transmission infrastructure would be more easily integrated into the existing environment.

For the purposes of the Strategic Environmental Constraints Mapping exercise which is being used by this SEA, for each of the aforementioned infrastructure categories, a 500 metre indicative buffer⁹ either side of the feature was integrated into the Overall Development Potential Mapping (see Section 3.15) to represent possible opportunities for transmission system development. This is not a proposed alignment buffer. It is noted that a 500 metre buffer that could integrate new development may not consistently exist along infrastructure alignments due to the existence of, for example, other development. The application of a buffer enables a rating to be established for the areas within close proximity to these features with the rating score reducing with distance from the transmission circuit or road.

⁹ 500 metres is a conservative empirically based set-back distance that is based on the observation that visual prominence – and associated concerns – diminish after a distance of 20 times the tower height (therefore a 50 metre tower will have an 'influence zone' of 20 times 50 metres which is equal to 1,000 metres; 50% (i.e. 500 metres) of this distance is used as a precautionary distance).

3.15 Overall Development Potential Rating

Overall Development Potential Rating¹⁰ mapping was prepared as part of the overall Strategic Environmental Constraints Mapping which combines ecological mapping, UNESCO Sites and National Parks mapping and landscape mapping to provide a high level assessment of the main constraints associated with the development of the transmission system. In addition to the constraints, the Opportunity Areas have been included to identify locations which represent potential opportunities to develop transmission infrastructure with a reduced environmental impact.

Using Geographical Information System (GIS) software, each of the constraints and opportunities were given a value – as detailed below – and overlaid upon each other.

8 constraint factors were attributed a rating of 10 points:

- SACs¹¹;
- SPAs;
- Ramsar Sites;
- National Parks;
- UNESCO Sites;
- Elevation >200m;
- Slope >30 Degrees; and,
- Settlements¹².

3 constraint factors were attributed a rating of 5 points:

- NHAs/Proposed NHAs;
- Natural Land Use Types; and,
- Lands and Estuaries.

2 opportunity factors were attributed a weighting of -10 to -1 points:

- Existing Transmission Lines (Proximity range 0-1km); and,
- National primary roads which have been dualled (Proximity range 0-1km).

2 opportunity factors were attributed a weighting of -5 points:

- Areas of land within 3km of the 200km contour and under 200 metres and with a slope between 5 degrees and 30 degrees; and,
- Non Natural Land Uses excluding settlements and urban fabric.

Figure 3.3 shows the Overall Development Potential Rating at a national level. Areas of constraints are indicated by red colours while areas of opportunities are indicated by green colours. In general, and on a national level, constraints occur in greatest concentrations in the western half of the country while opportunities occur in greatest extents in the eastern half of the Country.

¹⁰ also referred to as Overall Constraints Rating

¹¹ SACs are designated under the Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora). In circumstances where Ireland has not yet proceeded to make the definitive classification of “special areas of conservation” at national level, these particular nature conservation designations remain “candidates”. The designation process is finalised by putting in place a Statutory Instrument for each site. However, the level of protection for the “candidate” and definitive “special areas of conservation” is precisely the same. For convenience, all references in this Environmental Report are to “SACs”, notwithstanding the position that Ireland has not yet proceeded to the definitive classification of “special areas of conservation” at national level. See the definition of “candidate special area of conservation” in article 2 of S.I. 477 of 2011.

¹² Settlements are the urban areas as indicated on the most recent OSI 1:50,000 Discovery Series of maps.

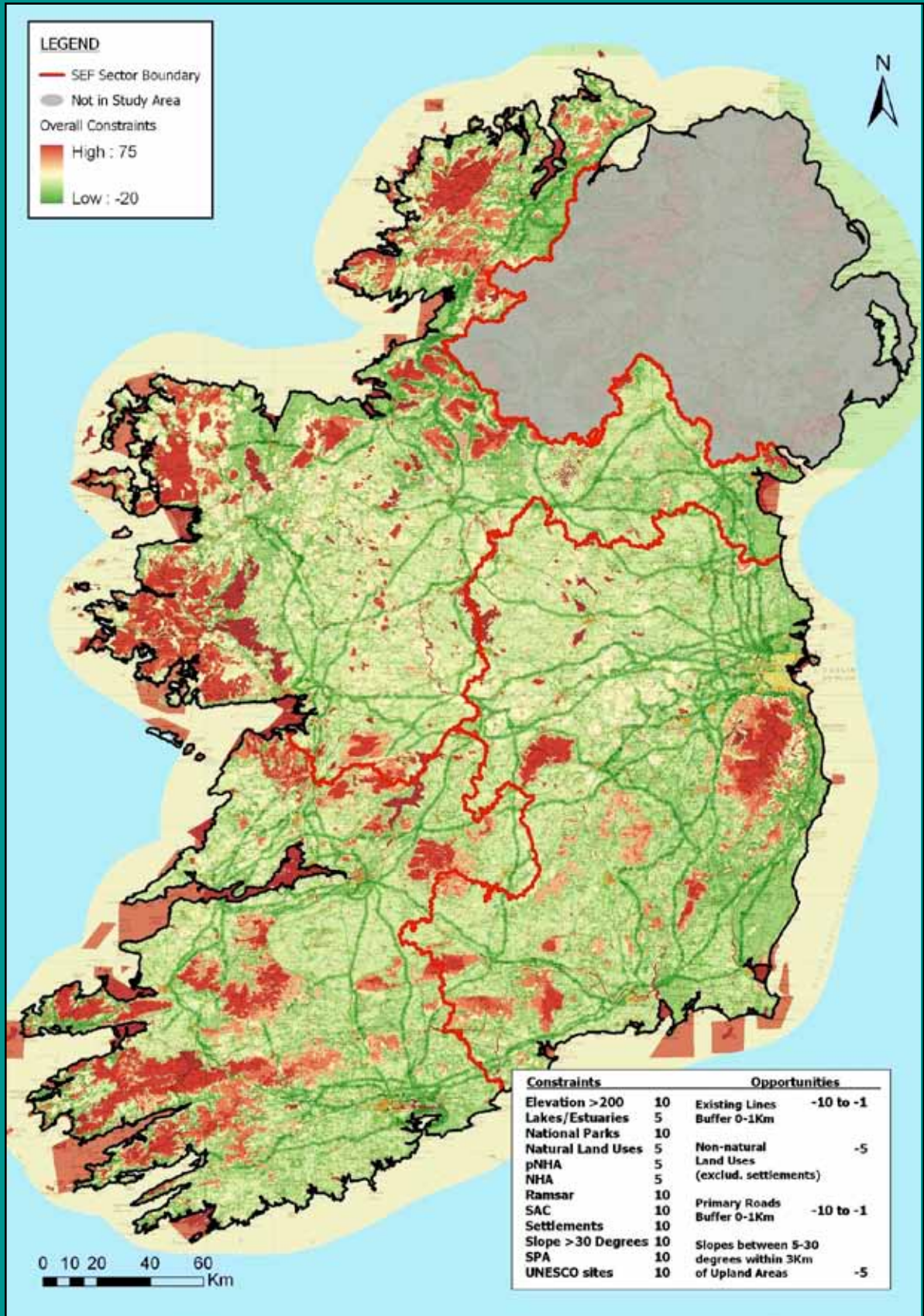
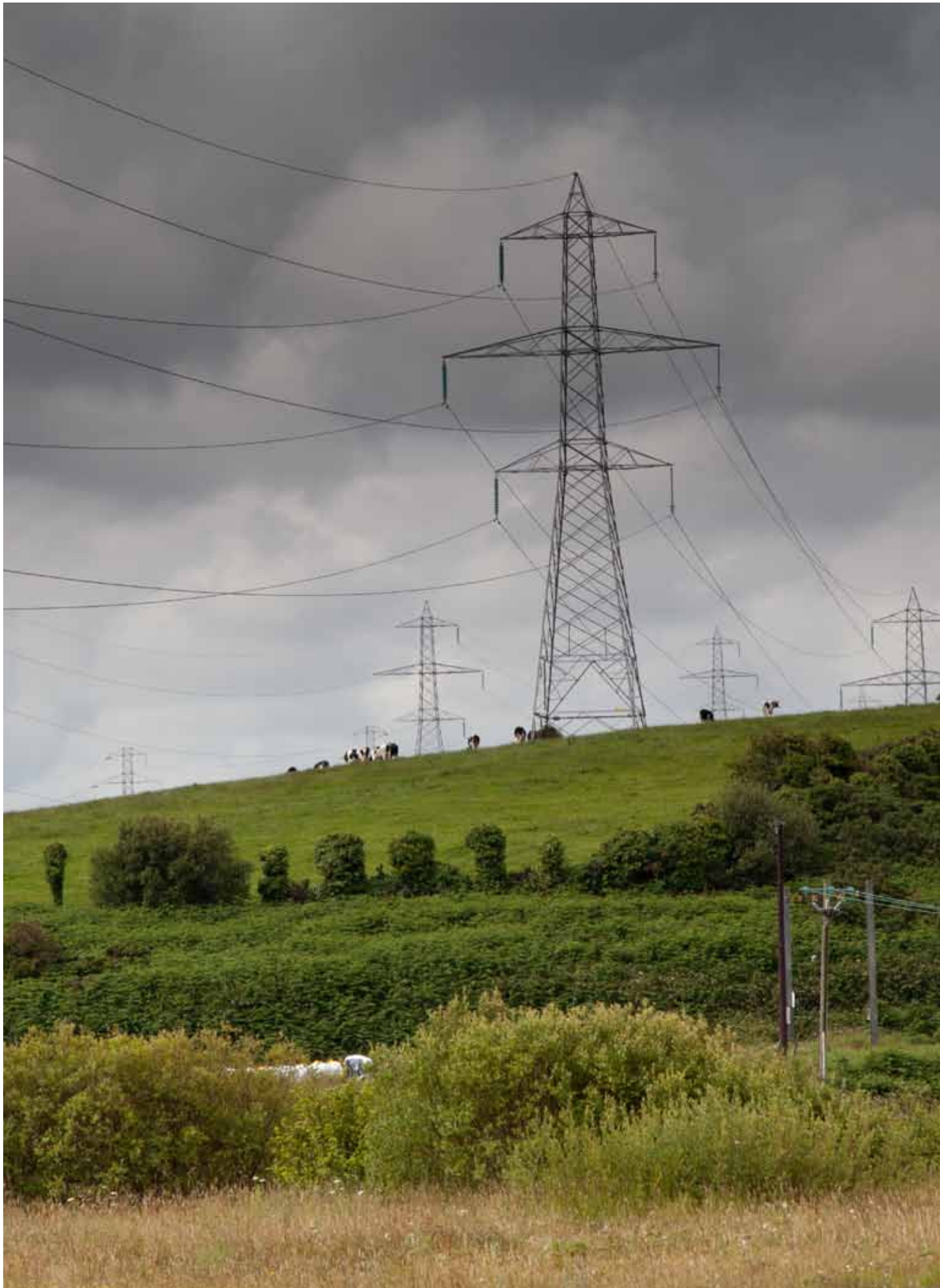


Figure 3.3
National Overall Development Potential Rating ¹³

¹³ Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping



Section 4 - SEOs & Alternative Scenarios

4.1 Introduction to Strategic Environmental Objectives (SEOs)

Strategic Environmental Objectives (SEOs) are methodological measures against which the environmental effects of the Implementation Programme (IP) for Grid25 – and the alternatives – can be tested. If complied with in full, SEOs would

result in an environmentally neutral impact from realisation of the IP. The SEOs are set out under a range of topics and are used as standards against which the provisions of the IP can be evaluated in order to help identify areas in which potential significant adverse impacts may occur. SEOs used by the SEA are summarised on Table 4.1.

Table 4.1

SEO Code	SEO
B1	To ensure compliance with the Habitats Directive with regard to the protection of Natura 2000 Sites and Annexed habitats and species
B2	To ensure compliance with Article 10 of the Habitats Directive with regard to the management of other environmental features – which by virtue of their linear and continuous structure or their function act as stepping stones - which are of major importance for wild fauna and flora and essential for the migration, dispersal and genetic exchange of wild species
B3	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites ¹⁴
L1	To avoid significant adverse impacts on the landscape, especially with regard to those arising from impacts on the factors which comprise the Landscape Constraints Rating Map
CH1	To avoid unauthorised impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPSs)
C1	To help to facilitate the achievement of higher level government targets contained in the Government's Energy White Paper Delivering a Sustainable Energy Future for Ireland - the Energy Policy Framework 2007-2020 and relating to the Kyoto Protocol
HH1	Minimise proximity of development to concentrations of population in order to reduce actual and perceived environmental effects
W1	To prevent impacts upon the status of surface waters in line with the recommendations outlined in the River Basin Management Plans
W2	To prevent pollution and contamination of ground water in line with the recommendations outlined in the River Basin Management Plans
MS1	To minimise effects upon the sustainable use of land, mineral resources or soils

Table 4.1
Strategic Environmental Objectives (SEOs)

¹⁴ See definition of 'Wildlife Sites' under Section 5.2.1.10 of the main Environmental Report or under Section 177R(1) of the Planning and Development Act 2000, as amended.

4.2 Introduction to Alternative Scenarios

The SEA Directive requires that reasonable alternatives (taking into account the objectives and the geographical scope of the IP) are identified described and evaluated for their likely significant effects on the environment. The following summarises 3 ‘Scenarios’¹⁵ for the future development of the National Transmission Network, taking into account higher level objectives as well as the geographical scope of the IP. These are neither predictions nor preferences – they simply offer a range of plausible narratives of the outcome of different planning and economic development policies. These provide the basis for a comparative evaluation of the likely environmental effects of each scenario, which in turn allows the identification of features of the scenarios which are likely to be sensitive or robust over the widest range of circumstances.

4.3 Description of Alternative Scenarios

4.3.1 Scenario 1: Business as Usual

This scenario involves the dilution or withdrawal of the overarching Government target to meet 40% of electricity consumption from renewable energy, thereby resulting in a reduced need to further significantly develop the transmission network (and new energy generation).

4.3.2 Scenario 2: Grid 25 (continuation of existing planning and economic development policy)

This scenario consists of the retention of the overarching Government target to meet 40% of electricity consumption from renewable energy, and the continuation of existing national planning and economic policy, thereby resulting in a need

to significantly develop the transmission network (and new energy generation) in regions across the country.

4.3.3 Scenario 3: Grid 25 (alteration of existing planning and economic policy)

This scenario consists of the retention of the overarching Government target to meet 40% of electricity consumption from renewable energy and the alteration of existing national planning and economic policy which would favour more concentrated investment and growth in the centres of population and growth along the eastern and southern coast, coupled with a greater concentration of offshore renewable energy generation in the east to take advantage of marine grid developments in the area and export to UK markets. This scenario results in a need to significantly develop the transmission network (and new energy generation) within or adjacent to this area (including in the offshore environment).

4.4 Evaluation of Alternative Scenarios

4.4.1 Introduction & Methodology

This section summarises the relative merits of three alternative scenarios described under Section 4.3 for the development of the national transmission network through a succinct and focused evaluation. This determination identifies the interactions between each of the scenarios and the receiving environment as well as compliance with national energy, planning and economic development policy.

The written description and supporting maps of the environmental baseline of Section 4 of the Environmental Report (which are summarised in Section 3 of this document) were used in the evaluation. In particular, the National Overall

¹⁵ Note that: Scenario 2 is the selected alternative; and, Scenario 1 and Scenario 3 are both viewed to be reasonable considering existing and emerging economic and political conditions.

Development Potential Rating Mapping of environmental sensitivities and opportunities (see Section 3.15 and Figure 3.3) is used in order to indicate the spatial distribution of ecological and landscape sensitivities (coloured red) as well as opportunity areas (coloured green) across the country and to broadly identify locations where conflicts would be likely to occur in the future and where future development would be likely to be more easily absorbed. The Strategic Environmental Objectives (SEOs) are also used in the evaluation.

4.4.2 Scenario 1: Business as Usual

A reduced need to further significantly develop the transmission network (and new energy generation) would result in continued use of non-renewable energy sources. This would give rise to increases in greenhouse gas emissions but would involve fewer new projects with less potential environmental effects. This scenario would not be in compliance with international energy objectives, greenhouse gas emission objectives, the National Development Plan or the National Spatial Strategy.

4.4.3 Scenario 2: Grid 25 (continuation of existing planning and economic development policy)

The development of the transmission network (and new energy generation) in regions across the country would present potential conflicts with environmental sensitivities which occur in greatest concentrations in the western half of the country (see Figure 3.3). Conflicts with sensitivities could be avoided, reduced or offset through investment in mitigation measures. This scenario would be in compliance with international energy and greenhouse gas emission objectives as well as with the National Development Plan and the National Spatial Strategy.

4.4.4 Scenario 3: Grid 25 (alteration of existing planning and economic policy)

The development of the transmission network (and new energy generation) within or adjacent to centres of population and growth along the eastern and southern coast would avoid the greatest concentrations of environmental sensitivities (see Figure 3.3). Conflicts with sensitivities located in this more robust part of the country could be avoided, reduced or offset through investment in mitigation measures (this investment would be likely to be less than that which would be required under Scenario 2). This scenario would be in compliance with international energy and greenhouse gas emission objectives and parts of the National Development Plan however it would conflict with the National Spatial Strategy.

4.4.5 Evaluation against SEOs

Table 4.2 provides an evaluation of each of the alternative development scenarios for the IP against the Strategic Environmental Objectives (SEOs).

4.4.6 The Selected Alternative Development Scenario

Scenario 2: Grid 25 (continuation of existing planning and economic development policy) was selected in order to contribute towards the achievement of Government Policy, namely:

- the achievement of the 40% renewable energy target and the actions outlined in the Government White Paper, and;
- the achievement of the objectives of national planning and economic policy to develop the transmission network (and new energy generation) in regions across the country.



4.4.7 Evaluation of Provisions prepared to realise the Selected Alternative Development Scenario

Section 8 of the Environmental Report (summarised in Section 5 of this non-technical summary) evaluates the provisions of the IP for Grid25 which have been prepared to realise Scenario 2 (the selected Alternative Scenario). Potential adverse effects will be mitigated by a range of measures which have emerged through both the AA and SEA processes and which have been integrated into the IP.

4.4.8 Note on Alternatives for Projects contained in the Implementation Strategy

The consideration of alternatives is limited to the consideration of scenarios as outlined above.

Scenario 2: Grid 25 (continuation of existing planning and economic development policy) was selected as it conforms with, and will contribute towards, the achievement of Government Policy.

Appendix A of Grid25 sets out the range of Technical Options for Grid Development which includes a consideration of the environmental considerations of each option. Alternative routes and regional grid development strategies will consider spatial and environmental alternatives at the next level of environmental assessment – i.e. that of lower tier plans, multiple or individual projects. All projects will be subject to detailed constraints and routes study.

Table 4.1

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs - would be mitigated		
			Least Potential Conflict	Potential Conflict	Most Potential Conflict
Scenario 1: Business as Usual		<p>C1 (would not be in compliance with energy or greenhouse gas objectives or with the National Development Plan or National Spatial Strategy)</p> <p>L1 (unavoidable impacts upon the landscape, some of which would be mitigated)</p>	<p>B1 B2 B3 CH1 HH1 W1 W2 MS1 (a reduced significant need to further develop the transmission network and new generation would involve less new projects with less potential effects)</p>		
Scenario 2: Grid 25 (continuation of existing planning and economic development policy)	<p>C1 (would be in compliance with energy and greenhouse gas objectives and with the National Development Plan and National Spatial Strategy)</p>	<p>L1 (unavoidable impacts upon the landscape, some of which would be mitigated; more probable conflict than Scenario 3 as development would not avoid the greatest concentration of landscape sensitivities)</p>		<p>HH1 (Need to avoid excessive proximity of development to concentrations of population – in particular, western energy generation has to be linked eastwards to areas of higher demand and UK markets – the additional new cross country routes)</p>	<p>B1 B2 B3 (more potential conflict than with Scenario 3 as development would not avoid the greatest concentration of ecological sensitivities)</p> <p>MS1 W1 W2 CH1 (more potential conflict than with Scenario 3 as western energy generation has to be linked eastwards to areas of higher demand and UK markets – additional new routes and increased conflict with water courses and archaeological sites)</p>
Scenario 3: Grid 25 (alteration of existing planning and economic policy)	<p>C1 (would be in compliance with energy and greenhouse gas objectives and parts of the National Development Plan but not with National Spatial Strategy)</p>	<p>C1 (would not be in compliance with the National Spatial Strategy but would be in compliance with energy and greenhouse gas objectives and parts of the National Development Plan)</p> <p>L1 (unavoidable impacts upon the landscape, some of which would be mitigated; less probable conflict than Scenario 2)</p>		<p>B1 B2 B3 (less potential conflict than with Scenario 2 as development would avoid the greatest concentration of ecological sensitivities)</p> <p>MS1 W1 W2 CH1 (less potential conflict than with Scenario 2 as eastern and southern energy generation does not have to be linked westwards across the country – less potential conflicts between cultural heritage and water resources)</p> <p>HH1 (Need to avoid excessive proximity of development to concentrations of population – in particular, around the Dublin area)</p>	

Table 4.2
Evaluation of Alternative Development Scenarios against SEOs



Section 5 - Environmental Assessment of IP Provisions

This section provides a summary of the detailed environmental assessment of IP provisions contained in Section 8 of the Environmental Report.

5.1 Building/Upgrading Transmission Lines

The building of new transmission lines and the upgrading/rebuilding of existing lines would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies.

The building of transmission lines potentially conflicts with the protection of various environmental components (including ecology, the landscape, cultural heritage, human health, water resources and land resources) however such conflicts would be mitigated by measures which have been integrated into the IP through the SEA. Building at 400 kV rather than 220 kV avoids the need for building a multiplicity of 220 kV lines and affects the environment less frequently, at fewer locations. The development of 400 kV lines gives rise to marginal increases over 220kV in visual effects and effects on flight paths.

Upgrading/rebuilding lines could involve the replacing of existing towers with taller, wider towers and this could potentially result in the disturbance of habitats and waters and in a greater extent of: visual effects; effects on flight paths; and, perceived effects on health. However, such conflicts would be minor and would be mitigated by measures which have been integrated into the IP through the SEA. Upgrading/rebuilding lines would help prevent the unnecessary development of new lines and would contribute towards the protection of the environment by preventing associated impacts.

5.2 Undergrounding Cables

Undergrounding cables would be more likely to adversely affect landscape and land use (in the short term), ecology (with the exception of flight paths), cultural heritage – especially archaeology – and water resources than over-grounding. Some of these conflicts would be mitigated by measures which have been integrated into the IP through the SEA. Undergrounding cables would minimise effects upon flight paths, would be likely to contribute towards the protection of the landscape and land use (in the long term) and could reduce actual and perceived effects on health.

5.3 Interconnection between Ireland and the UK and France

EirGrid's Interconnection Economic Feasibility Report¹⁶ identifies that:

- a) There is a very strong economic case for the East-West Interconnector, currently under development.
- b) A further (third) 500MW interconnector between the All-island system and Great Britain is economically attractive by 2020, and more so in 2025.
- c) A fourth 500MW interconnector between the All-island system and Great Britain is economically feasible by 2025 in some scenarios, such as High Renewables.
- d) A 500MW and 2 x 500MW interconnection between the All-island system and France was modelled in 2015, 2020, and 2025. These studies indicated high capacity factor for the Ireland-France interconnector, and corresponding reductions in production cost. However, these results need to be corroborated by more detailed modelling before any recommendations could be made on Ireland-France interconnection.

¹⁶ Interconnection Economic Feasibility Report, EirGrid, November 2009, available at www.eirgrid.com

- e) In general, interconnection becomes more economically attractive further out in time. A High Renewables scenario improves the case for interconnection.
- f) The incremental benefits of interconnection decrease with each subsequent interconnector.
- g) The production cost savings that are evaluated in this report are the total benefits to both sides; savings are not apportioned between the parties. EirGrid recommends that there is engagement with responsible agencies on the island of Ireland and abroad to create a framework for funding of new interconnectors.

Interconnection – as referenced in the IP and provided for by EirGrid’s Grid25 Strategy/EirGrid’s Transmission Development Plan – would:

- Improve competition – by linking to other European markets;
- Support the development of renewable power generation – by enhancing the flexible exchange of power flows over a large area of the island of Ireland. This would enable the connection and operation of larger volumes of renewable power generation (especially wind powered generation) throughout the island; and,
- Improve security of supply – by providing a dependable high capacity link between the transmission systems of Ireland and other countries.

By doing this, interconnection would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies including decreasing Ireland’s dependence on fossil fuels, improving energy and security and reducing greenhouse gas emissions.

Although interconnectors from Ireland would be likely to result in potential transboundary

environmental effects, it is not possible to identify the spatial location of these effects in this assessment due to the strategic nature of the IP and other policy documents.

The development of interconnectors potentially conflicts with the protection of various environmental components; however such conflicts would be mitigated by measures which have been integrated into the IP through the SEA.

5.4 General Strategy

The General Strategy for the future development of the grid – as per the provisions of Grid25 – (see Figure 5.1) shows the transmission of energy from western areas which have greatest wind energy potential but which also have the greatest concentrations of environmental sensitivities and where relatively little development has traditionally taken place. Transmission is directed from these areas to eastern and southern areas of market demand which are generally more robust.

The Strategy would help to facilitate the achievement of government targets contained in higher level national and international energy and greenhouse gas emission policies including decreasing Ireland’s dependence on fossil fuels, improving energy and security and reducing greenhouse gas emissions.

The Strategy potentially conflicts with the protection of various environmental components (ecology, cultural heritage, human health, water resources and land resources); however such conflicts would be mitigated by measures which have been integrated into the IP through the SEA. There would be unavoidable impacts upon the landscape – some of which would be mitigated.

The General Strategy would facilitate the development of new electricity generation primarily in the western half of the country, where the greatest

concentrations of environmental sensitivities occur. This could, in turn, facilitate inward investment which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans; new electricity generation and inward investment would both present additional, indirect conflicts with the various environmental components.

5.5 Determination of Potential Impacts

Environmental impacts which occur, if any, will be determined by: the nature and extent of lower

tier plans, multiple or individual projects and site specific environmental factors. These impacts will be assessed at the next level of environmental assessment – i.e. that of lower tier plans, multiple or individual projects. Alternative routes and regional grid development strategies will consider spatial and environmental alternatives at this subsequent level of environmental assessment.

5.6 Indirect and Cumulative Effects

Developments included in the IP, in EirGrid's Transmission Development Plans, developments

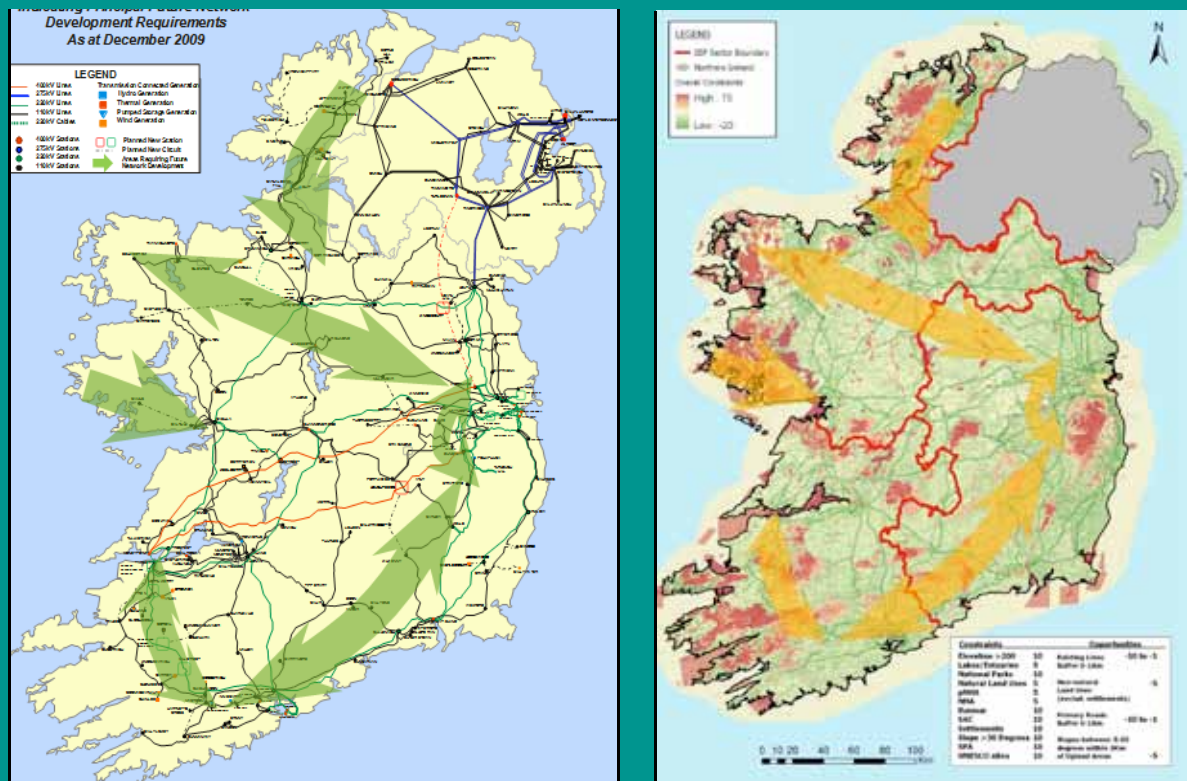


Figure 5.1
General Strategy for the future development of the grid & Overlay of Strategy on National Overall Development Potential Rating Map¹⁷

¹⁷ Note: The arrows on the maps are unscaled with indicative representation. They do not purport to represent specific projects, nor does it suggest that the eventual realisation of these projects will be contained within the areas identified within the arrows.



under SEAI's Offshore Renewable Energy Development Plan, any developments arising from a National Terrestrial Renewable Energy Generation Strategy and any developments arising from a high level plan for high level transmission requirements will help to facilitate the achievement of higher level government targets contained in strategic national and international energy and greenhouse gas emission policies – including the Kyoto Protocol and the National Renewable Energy Action Plan – however they will also facilitate the development of new energy generation infrastructure and other economic development (as also provided for by the National Development Plan and National Spatial Strategy).

The development of new energy generation infrastructure and other economic development will potentially – both indirectly and cumulatively – conflict with the protection of various environmental components including ecology, the landscape, cultural heritage, water resources and land resources – these potential conflicts will be mitigated by measures which have been integrated into the IP through the SEA and they will be addressed by lower tier environmental assessment, as appropriate. GRID 25 will facilitate the development of energy projects – particularly wind – in peripheral areas that contain the highest national concentrations of environmental sensitivities.

It is noted that although significant cumulative effects are likely to occur in combination with other policy documents such as the Offshore Renewable Energy Development Plan and Regional Planning Guidelines, it is not possible to identify the spatial location of these effects in this assessment due to the strategic nature of the IP and the other policy documents.

Cumulative effects are those that arise when the effects of the implementation of one plan occur in combination with those of other plans

or developments. The assessment of the likely combination of effects requires knowledge of the likely effects of all plans/developments under consideration. Other than statutory Development Plans, there has been very limited assessment of the likely effects of the types of developments that could occur in combination with the implementation of the IP of Grid 25. There are almost no spatially specific comparable plans or strategies at national level and there appear to be only two national plans that have been subject to SEA.

It is particularly critical to note that, in relation to the two main drivers of Grid 25, namely renewable energy generation and settlement, there has been no assessment of environmental effects.

The National Spatial Strategy – which determines the spatial pattern of future settlement and associated development – has not been subject to SEA. There is also no spatially specific National Wind/Renewable Energy Strategy, nor is there any SEA of such policy objectives. It is the sequence of policy assessment that facilitates the assessment of cumulative effects. The absence of these other relevant plans that create context (and their associated assessments) renders it premature – and therefore impractical – to make any meaningful assessment of cumulative effects between high level and national plans or policies.

Moreover, there is a subsidiarity in the role of plans and policies. This has two consequences. Firstly, subsidiarity means that infrastructure (such as transmission systems) follows the locations that are determined by, *inter alia*, settlement and energy policies and plans. Secondly, subsidiarity means that nationally driven developments (and their associated effects) generally occur prior to more local developments which later adjust to accommodate these higher tier decisions. Thus there is a low potential for effects to arise due to the combined occurrence of national, regional

and local developments because these rarely, if ever, occur simultaneously.

Subsidiarity and sequence are critical factors in high level SEA that limit the potential for comprehensive evaluation of cumulative effects during the early stages of implementation when all plans have not yet been subject to SEA. This means that at this stage in the evolution of SEA implementation in Ireland it is not possible to proceed beyond the identification of potential areas of cumulative interaction. This knowledge can be used in the future to scope the evaluation of those plans and policies when this occurs – so that they will examine the issues raised in this SEA in order to identify and assess the potential for cumulative effects with their plans as they are subsequently assessed.

5.7 Summary of General Environmental Impacts of Transmission Projects

Overhead Power Lines

As with any major infrastructure development, the environmental impacts associated with the development of the transmission system through the use of overhead lines can be significant if not properly identified at the early stages of planning and addressed through appropriate mitigation, whether that be to avoid, reduce or remediate the impact. Major potential impacts include the potential landscape and visual impacts arising from the imposition of new tower structures and poles which can potentially be significant particularly where the routing of the transmission line does not make appropriate use of the topography in the area and transmission lines are located in areas of prominence and of visual sensitivity. The impacts on biodiversity can potentially be significant, particularly where sensitive habitats are encountered and roads need to be built to facilitate access. If the transmission lines cross migratory paths of bird species, bird strikes can occur.

Other significant potential impacts include:

- Water resources and quality (ground/surface water quality impairment, interference with watercourses and associated wildlife);
- Noise (predominantly construction, but also operational);
- Cultural Heritage (interference with sites of archaeological significance during construction);
- Soils and Geology (soil compaction, drainage impedance);
- Material Assets (including land sterilisation, traffic and enhancement of infrastructure); and,
- Socio-Economic (human beings, Extremely Low Frequency Electromagnetic fields).

Underground Power Lines

In many cases the impact of underground construction will have common impact to those associated with the construction of overhead lines. There are some critical long-term differences such as the visual impact which will be less significant after construction has taken place provided adequate reinstatement is carried out. However, in order to construct the transmission line using underground methods, particularly on a cross country basis, a working area is required to allow construction machinery access along the length of the installation. This requires the removal of field boundaries and hedgerows (right of way preparation) followed by topsoil stripping to ensure machinery does not destroy soil structure and drainage properties. Where sensitive habitats are encountered it is difficult to reinstate the habitat to its original condition. There are also issues with controlling site drainage to ensure sedimentation of watercourses does not occur. Underground cables can also have an impact on the landscape on a short to medium term basis particularly where small holdings and significant hedgerows are encountered which can take several years to reinstate.



Construction of underground cables may involve significant direct impacts on archaeological heritage.

Construction of New Substations and Extension of Existing Substations

The construction of new substations can have a significant impact particularly where the area is undeveloped. Site selection needs to ensure sensitive landscapes and habitats are avoided. Opportunities for natural screening from topography and vegetation should be sought and used wherever possible as this will provide the best opportunity for integrating the facility into the existing landscape. It will be important to ensure that any substation is not located within the floodplain of major

watercourses, which could impact on the access and functioning of the substation. It will be important to ensure the location of any new substation is not within or adjacent to designated conservation sites and that sensitive habitats are avoided.

Where existing substations need to be extended it will be important to ensure the extension does not impact on any nearby built up areas and that the extension is appropriately designed to ensure adequate integration with the existing environment. The scale of the extension should be suited to the surrounding area and should not be inappropriate given the size of the existing facility and its surroundings.



Section 6 - Mitigation and Monitoring Measures

6.1 Mitigation

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the IP.

Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration is given in the first instance to preventing such effects or, where this is not possible for stated reasons, to lessening or offsetting those effects. Mitigation measures can be roughly divided into those that: avoid effects; reduce the magnitude or extent, probability and/or severity of effects; repair effects after they have occurred, and; compensate for effects, balancing out negative

impacts with other positive ones.

There are two types of mitigation measures. The first involves high-level preventative mitigation measures that were incorporated into the drafting of the IP document or by bringing about changes in organisational and working practices within EirGrid. These include seven major procedures, identified below, outlined in Section 9 of the Environmental Report and integrated into Section 5 of the IP, which will be employed to identify and avoid environmental effects. The second type of mitigation measures involves those that address the implementation of the IP. These are identified in Section 9.9 of the Environmental Report and have been integrated into Section 5 of the IP.

Table 6.1

Code	Mitigation Measure Title	Status
EMM1	Full Integration of Planning and Environmental Considerations in EirGrid's Transmission System Planning	Has already occurred. Changes will continue to be implemented.
EMM2	Preparation of Strategic Environmental Constraints Mapping	Has already occurred; will be updated on an ongoing basis, as appropriate, to include most up-to-date, relevant environmental data on an annual basis, during the preparation of the Environmental Appraisal Reports.
EMM3	Preparation of Evidence-based Environmental Guidelines	Has begun; Guidelines to be published.
EMM4	Consideration of the Broadest Possible Range of Alternatives in all Future Energy Transmission Strategies	Measure to be adhered to as relevant on adoption of IP.
EMM5	Preparation of Transmission Development Plan Environmental Appraisal Report	Measure to be adhered to as relevant on adoption of IP.
EMM6	Ongoing Co-operation in preparation of Renewable Energy Generation Guidelines and Strategies	Measure to be adhered to as relevant on adoption of IP.
EMM7	Integrating Offshore Grid connectivity requirements and environmental considerations in EirGrid's Strategic Environmental Framework (SEF)	Measure to be adhered to as relevant on adoption of IP.
EMM8 (A to K)	Other measures integrated into the IP	Measures to be adhered to for new projects as relevant and as appropriate on adoption of IP. Measures to be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Environmental Design Guidelines

Table 6.1
Mitigation Measures and Status of Implementation

Mitigation measures detailed in the Environmental Report and summarised on Table 6.1 opposite were recommended by the SEA and AA processes to be integrated into an earlier draft of the IP. The IP preparation team took on board this recommendation and fully integrated the measures into a new Section 5 in the IP.

6.2 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. Monitoring enables, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action. In addition to this, monitoring can also play an important role in assessing whether the IP is achieving environmental objectives and targets – measures which the IP can help work towards – whether these need to be reexamined and whether the proposed mitigation measures are being implemented.

EirGrid is responsible for the implementation of the monitoring programme set out in this section. This includes collating existing relevant monitored data, the preparation of preliminary and final monitoring evaluation reports, the publication of these reports and, if necessary, the carrying out of corrective action. A Steering Committee will be established within EirGrid to oversee the monitoring process.

Preliminary data on monitoring the likely significant environmental effects of implementing the IP will be used on an annual basis to inform the Environmental Appraisal Report of all new Transmission Development Plans (see EMM5). EirGrid will report on the IP implementation and associated SEA and AA monitoring on an annual basis within each Environmental Appraisal Report. A stand-alone Monitoring Report on the likely significant environmental effects of implementing the IP will be

prepared in order to inform the preparation of the next IP and accompanying SEA.

Opposite is a summary table outlining how likely significant effects (if unmitigated) are linked to relevant mitigation measure(s) - which have been integrated into the IP - and indicator(s) which will be used for monitoring.



Table 6.2

Likely Significant Effect, if unmitigated	Mitigation Measure Reference(s) from Section 9	Primary Indicator(s) for Monitoring
Loss of biodiversity with regard to Natura 2000 Sites	Environmental Mitigation Measure (EMM) 1 to EMM7, EMM.8.A, EMM.8.I, EMM.8.J, EMM.8.K	B1: Conservation status of habitats and species as reported upon under Article 17 of the Habitats Directive
Loss of biodiversity with regard to ecological connectivity	EMM1 to EMM7, EMM.8.A, EMM.8.I, EMM.8.J, EMM.8.K	B2: Percentage loss of functional connectivity without remediation resulting from development provided for by the IP
Loss of biodiversity with regard to Wildlife Sites	EMM1 to EMM7, EMM.8.A, EMM.8.I, EMM.8.J, EMM.8.K	B3: Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites resulting from development provided for by the IP
Effects on the landscape	EMM1 to EMM7, EMM.8.E, EMM.8.I, EMM.8.J, EMM.8.K	L1: Number of complaints received from statutory consultees regarding avoidable impacts on the landscape resulting from development provided for by the IP
Effects on entries to the Record of Monuments and Places	EMM1 to EMM7, EMM.8.D, EMM.8.I, EMM.8.J, EMM.8.K	CH1i: Number of unauthorised 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 IP
Effects on entries to the Records of Protected Structures	EMM1 to EMM7, EMM.8.D., EMM.8.I, EMM.8.J, EMM.8.K	CH1ii: Number of unauthorised developments occurring which result in full or partial loss to entries to the RPSs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the IP
Failure facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies.	EMM1 to EMM8, EMM.8.K	C1: Percentage electricity consumption from renewable energy
Actual and perceived effects on human health	EMM1 to EMM7, EMM.8.F, EMM.8.H, EMM.8.I, EMM.8.K	HH1i: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the IP, as identified by the Health Service Executive and Environmental Protection Agency HH1ii: Maximum noise level emanating from the installation at the façade of any near sited residential properties HH1iii: Compliance of the standard route planning criteria, including general proximity to settlements and dwellings, adopted for the development of the Network with all authoritative international and national guidelines for ELF EMF exposure
Adverse impacts upon the status of water bodies	EMM1 to EMM7, EMM.8.B and EMM.8.G, EMM.8.I, EMM.8.J, EMM.8.K	W1i: Classification of Overall Status (comprised of ecological and chemical status) under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009) W1ii: Poor, Sufficient, Good and Excellent classifications of bathing water as set by Directive 2006/7/EC W2: Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC
Failure to minimise the extent of greenfield areas sterilised	EMM1 to EMM7, EMM.8.C, EMM.8.J, EMM.8.K	MS1i: The extent of greenfield areas sterilised by the development of new transmission lines and associated infrastructure MS1ii: The reinforcement of existing transmission lines and the integration of new transmission infrastructure in proximity (0-1km) to motorways and dualled national primary roads

Table 6.2
SEA Summary Table: Likely Significant Effects, Mitigation Measures and Indicators for Monitoring





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