EIRGRID

ENVIRONMENTAL REPORT

for the Grid25 Implementation Programme 2011-2016

Strategic Environmental Assessment

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DELIVERING IRELAND'S ELECTRICITY FUTURE


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Grid25 Implementation Programme 2011-2016

Strategic Environmental Assessment

Table of Contents

List of Figures

List of Tables

List of Abbreviations

AA	Appropriate Assessment
CSO	Central Statistics Office
DAHG	Department of Arts, Heritage and the Gaeltacht
DCENR	Department of Communications, Energy and Natural Resources
DEHLG	Department of the Environment, Heritage and Local Government
EIA	Environmental Impact Assessment
EMFs	Electromagnetic Fields
EPA	Environmental Protection Agency
EU	European Union
GSI	Geological Survey of Ireland
NHA	Natural Heritage Area
NSS	National Spatial Strategy
RBD	River Basin District
RMP	Record of Monuments and Places
RPGs	Regional Planning Guidelines
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEO	Strategic Environmental Objective
SI No.	Statutory Instrument Number
SPA	Special Protection Area
WFD	Water Framework Directive

Glossary

Appropriate Assessment

The obligation to undertake Appropriate Assessment derives from Article 6(3) of the Habitats Directive 92/43/EEC. AA is a focused and detailed impact assessment of the implications of a strategic action or project, alone and in combination with other strategic actions and projects, on the integrity of a Natura 2000 site in view of its conservation objectives.

Biodiversity and Flora and Fauna

Biodiversity is the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems' (United Nations Convention on Biological Diversity 1992).

Flora is all of the plants found in a given area.

Fauna is all of the animals found in a given area.

Biotic Index Values (Q Values)

The Biotic Index Values, or Q values, are assigned to rivers in accordance with biological monitoring of surface waters - low Q ratings, as low as Q1, are indicative of low biodiversity and polluted waters, and high Q ratings, as high as Q5, are indicative of high biodiversity and unpolluted waters. Good status as defined by the Water Framework Directive equates to approximately Q4 in the national scheme of biological classification of rivers as set out by the Environmental Protection Agency.

Environmental Problems

Pursuant to Article 5(1), Annex I of Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27 June 2001, on the assessment of the effects of certain Plans and programmes on the environment (the Strategic Environmental Assessment Directive) requires that information is provided on, inter alia, 'any existing environmental problems which are relevant to the plan or programme', thus, helping to ensure that the proposed strategic action does not make existing environmental problems worse.

Environmental problems arise where there is a conflict between current environmental conditions and ideal targets. If environmental problems are identified at the outset they can help focus attention on important issues and geographical areas where environmental effects of the plan or programme may be likely.

Environmental Vectors

Environmental vectors are 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.

Mitigate

To make or become less severe or harsh.

Mitigation Measures

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing a human action, be it a plan, programme or project. Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration should be given in the first instance to preventing such effects or, where this is not possible, 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.

Recorded Monument

A monument included in the list and marked on the map which comprises the Record of Monuments and Places that is set out County by County under Section 12 of the National Monuments (Amendment) Act, 1994 by the Archaeological Survey of Ireland. The definition includes Zones of Archaeological Potential in towns and all other monuments of archaeological interest which have so far been identified. Any works at or in relation to a recorded monument requires two months' notice to the Department of the Environment, Heritage and Local Government under section 12 of the National Monuments (Amendment) Act, 1994.

Scoping

Scoping is the process of determining what issues are to be addressed, and setting out a methodology in which to address them in a structured manner appropriate to the plan or programme. The scope and the level of detail of the information to be included in the environmental report are determined in conjunction with the relevant environmental authorities.

Strategic Actions

Strategic actions include: Policies/Strategies, which may be considered as inspiration and guidance for action and which set the framework for Plans and programmes; Plans, sets of co-ordinated and timed objectives for the implementation of the policy; and Programmes, sets of projects in a particular area.

Strategic Environmental Assessment (SEA)

Strategic Environmental Assessment (SEA) is the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme before a decision is made to adopt it.

Strategic Environmental Framework (SEF)

EirGrid has introduced procedures and resources to effectively address planning, environmental and community issues in Transmission System Planning. New positions have been created, including the creation of a Grid25 Programme Management Office and an in-house expert Planning and Environmental Unit. Strategic Environmental Constraints Mapping has been prepared, this SEA has been prepared for the Grid25 Implementation Programme and new procedures have been adopted to ensure environmental input at all stages of pre-application decision making. Together, these comprise a Strategic Environmental Framework (SEF) by which EirGrid approaches all projects for transmission infrastructure development.

Strategic Environmental Objective (SEO)

Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international, national and regional policies which generally govern environmental protection objectives and against which the environmental effects of the Implementation Programme can be tested. The SEOs are used as standards against which the objectives of the Implementation Programme can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if not mitigated.

Section 1 - SEA Introduction and Background

1.1 Introduction and Terms of Reference

This is the Environmental Report for the Grid25 Implementation Programme (IP) 2011-2016 Strategic Environmental Assessment (SEA). The IP is intended as a practical expression of EirGrid's Grid25 Strategy – "A Strategy for the Development of Ireland's Electricity Grid for a Sustainable and Competitive Future" – which was published in October 2008 and provides for the development of Ireland's Electricity Transmission Grid[1].

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.

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.

1.2 SEA Definition[2]

Environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before such decisions are made.

Environmental Impact Assessment, or EIA, is generally used for describing the process of environmental assessment for individual projects, while Strategic Environmental Assessment, or SEA, is the term which has been given to the environmental assessment of plans and programmes, which help determine the nature and location of individual projects taking place.

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

Major electricity grid developments over the next decades will be guided by EirGrid's Grid25 Strategy. By anticipating the effects of implementing Grid25, and avoiding those which cannot be sustainably accommodated, such as by directing development towards more compatible and robust receiving environments, real improvements in environmental management and planning can occur. Benefits of considering environmental effects at this highest level include: that the scope of lower tier environmental assessments which may be required are likely to be reduced; the impacts arising from projects are also likely to be reduced; and planning applications are more likely to be granted consent.

1.3 SEA Directive and its transposition into Irish Law

Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27 June 2001, on the Assessment of the Effects of Certain Plans and Programmes on the Environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including energy.

The SEA Directive was transposed into Irish Law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (Statutory Instrument Number

[1] Following a detailed SEA scoping exercise, in accordance with advice from the EPA and emerging best practice for national SEAs, it is considered that the Implementation Programme level is the appropriate level to undertake an SEA, under the Directive 2001/42/EC and as transposed into Irish law.

[2] Note that there is a definition of strategic environmental assessment contained in Section 2 of the Planning and Development Act 2000 (as inserted by Section 4(1)(c) of the Planning and Development (Amendment) Act 2010). This definition references the assessment required under certain statutory regulations.

(SI No. 435 of 2004) and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Both sets of Regulations became operational on 21 July 2004. The Regulations have been amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (SI No. 200 of 2011) and the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 (SI No. 201 of 2011).

1.4 Legal Framework for the Grid25 Implementation Programme SEA

The European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (SI No. 435 of 2004) as amended requires the carrying out of an environmental assessment for all plans and programmes[3] (a) which are prepared for sectors including energy and which set the framework for future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive, or (b) which are not directly connected with or necessary to the management of a European site but, either individually or in combination with other plans, are likely to have a significant effect on any such site.

The environmental assessment must be carried out by the competent authority[4] of the plan or programme; in addition an Environmental Report (ER) must be prepared during the preparation of the plan or programme. EirGrid is the competent authority with respect to the IP for Grid25.

Prior to making a decision on the scope and level of detail of the information to be included in the ER, EirGrid – as required – gave notice to the relevant environmental authorities[5] indicating that a submission may be made on the scope and level of detail of the information to be included in the ER.

This ER – as required – identifies, describes and evaluates the likely significant effects on the environment arising from the IP and reasonable alternatives, taking account of the objectives and the geographical scope of the IP. For this purpose it contains the information specified in Schedule 2 of the Regulations and takes into account scoping submissions received from the EPA and DEHLG/ Department of Arts, Heritage and the Gaeltacht (DAHG).

On completion of the draft IP and an earlier version of this ER, EirGrid gave the environmental authorities consulted at scoping stage, as well as the public, at least 4 weeks to make submissions on the IP and ER; the environmental authorities were sent a copy of the draft IP and ER and a newspaper notice was published. Submissions made were taken into consideration before adoption of the IP.

Implementation of the IP, if unmitigated, has the potential to result in transboundary effects. However, no likely significant transboundary effects were identified in this SEA. Informal consultation took place at Department level with the Department of Enterprise, Trade and Investment (DETI). The topics addressed by the DETI submission and

[3] "plans and programmes" mean plans and programmes, as well as any modifications to them (a) which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government, and (b) which are required by legislative, regulatory or administrative provisions. (SI No. 435 of 2004, Interpretation)

[4] "competent authority" means the authority which is, or the authorities which are jointly, responsible for the preparation of the plan or programme. (SI No. 435 of 2004, Interpretation)

[5] The environmental authorities are:

- the Environmental Protection Agency (EPA);
- the Minister for the Environment, Heritage and Local Government, where it appears that the plan or programme might have significant effects in relation to architectural heritage or archaeological heritage or nature conservation, and;
- The Minister for Communications, Marine and Natural Resources where it appears that the plan or programme might have significant effects on fisheries or the marine environment.

the consequent updates made to an earlier version of this Environmental Report are detailed in the SEA Statement which accompanies the adopted IP.

During the preparation of the draft IP and before its adoption, EirGrid took into account both the ER and submissions made on the draft IP and ER by environmental authorities, other bodies and the public.

On adoption of the IP, an SEA Statement must be prepared, summarising how environmental considerations have been integrated into the IP, and the reasons for choosing the IP as adopted over other alternatives detailed in the ER and will be available on the website. The SEA Statement also includes information on monitoring the significant effects of implementing the Programme. EirGrid sent a copy of the SEA Statement together with the adopted IP to the environmental authorities consulted at scoping stage, as well as publishing a newspaper notice stating that a copy of the SEA Statement and IP are available for inspection.

Grid25 will set the framework for future development – but, crucially not for consent – of projects listed. In light of this ambiguity it is unclear whether an SEA is strictly required for a document such as the IP for Grid25. Notwithstanding this, in keeping with best environmental practice, and having regard to the precautionary principle, it has been determined that in the interests of optimum corporate and social responsibility the process of preparing, evaluating and developing the IP for Grid25 shall be undertaken in full accordance with the procedures and practice of SEA Directive in Ireland.

Section 2 - Context for the Implementation Programme

2.1 The Grid25 Implementation Programme

Grid25[6] 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.

Grid planning and development are highly dynamic processes that are constantly responding to changes in demand and the emerging conditions of the grid.[7] Grid development is essentially a reactive process – reacting to, and facilitating, identified demand for an enhanced network in an area, for example new generation sources, or new demand centres such as new centres of employment or population growth. As such, grid development, and Grid25 in particular, does not dictate where such new demand is to occur; rather, grid planning and development has significant cognisance of other strategies for spatial and strategic planning and development.

This Grid25 Implementation Programme (IP) is a practical strategic overview of how the early stages of Grid25 are intended to be implemented.

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.

The IP is not therefore a detailed land use plan for development, as might be considered comparable with a County Development Plan of a Planning Authority, which generally contains specific local policies and objectives. Rather it remains at the higher strategic level, and includes the identification of a strategic, decision-making framework process by which EirGrid will carry out its statutory function of developing the grid network.

The IP incorporates advice and comments received from both the Environmental Protection Agency (EPA) and the National Parks and Wildlife Service section (NPWS) of the Department of the Arts, Heritage and the Gaeltacht (DAHG), as well as from other parties during the period of public consultation in respect of the draft IP. It is accompanied by this SEA ER, which has been undertaken following a scoping exercise, in line with emerging best practice for the carrying out of SEAs for National-scale programmes. This SEA ER has been revised in response to submissions made during the period of public consultation.

It is important to note that, while other SEAs, such as in respect of land-use plans, may make

[6] Grid25 – "A Strategy for the Development of Ireland's Electricity Grid for a Sustainable and Competitive Future", published by EirGrid in October 2008.

[7] This dynamism is reflected in the Statutory reporting processes of the Commission for Energy Regulation (CER) which require the publication of annual reviews and update of a multi-annual Transmission Development Plan – prepared in accordance with Article 8(6) of The European Communities (Internal Market in Electricity) Regulations, 2000 (SI No. 445 of 2000), and which is submitted for approval to the Commission for Energy Regulation (CER).

retrospective recommendations[8] about how the plans or policies should be altered to avoid impacts on the environment, due to the high level and strategic nature of the SEA for the IP, most of the recommendations have been about how to change decision-making processes within the IP itself. As such, the recommended mitigation measures, in many instances, have already been incorporated into the IP in an iterative process, some of which have brought about changes in the organisational and working practices within EirGrid. All mitigation measures recommended by the SEA process have been integrated into Section 5 of the IP.

It is intended that following adoption, the IP and associated SEA will have a 5- year lifespan, with the review and drafting process for the subsequent IP and SEA commencing within the final year of that lifespan. However, the content of these documents will be subject to ongoing review and update over the period of Grid25, in the context of the EirGrid Transmission Development Plan, which is updated annually. An Environmental Appraisal Report will be produced to accompany each annual TDP, and to demonstrate how the TDP is in accordance with the provisions of the IP and SEA, or to identify any updates to these documents. Ongoing monitoring measures as set out in the SEA will also be addressed in each annual Environmental Appraisal Report. This relationship is set out graphically at Figure 2.1.

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.

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.

Grid25 has been prepared to contribute towards the achievement of the 40% renewable energy target and the actions outlined in the Government White Paper.

Grid25 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.

[8] These are usually included as 'mitigation measures'

The Vision of Grid25 "is of a grid developed to match future needs, so it can safely and reliably carry power all over the country to the major towns and cities, and onwards to every home, farm and business where the electricity is consumed and so it can meet the needs of consumers and generators in a sustainable way".

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.

2.4 Alternative Development Scenarios

Sections 6 and 7 of this report identify, describe and evaluate different scenarios for the development of the national transmission network, taking into account national energy planning, economic development policy, and the SEOs identified in Section 5.

The provisions of the IP which are required to realise the preferred alternative are evaluated in Section 8.

2.5 Relationship with other relevant Plans and Programmes

2.5.1 Introduction

The strategic context for energy infrastructure is set-out in the:

- Irish Government's Energy White Paper "Delivering a Sustainable Energy Future for Ireland" (March, 2007)
- National Development Plan 2007-2013,
- National Spatial Strategy 2002 -2020,
- Regional Planning Guidelines 2010-2022,
- County Development Plan and relevant Local Area Plans.

Electricity infrastructure is vital for County, Regional and National Development. Each Planning Authority is required to provide as an objective within its Development Plan for the provision/facilitation of infrastructure including energy.

2.5.2 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 levels 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.

2.5.3 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. It envisages a total investment of €184 billion over seven years to 'secure the further transformation of our country socially and economically within an environmentally sustainable framework'.

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.

During the period 2007–2013, the main focus of investment by EirGrid will entail improvement of the transmission network for electricity to accommodate increased usage and enhance security of supply, to allow increased connection of sustainable and renewable energy sources to the network and to support greater interconnection with Northern Ireland and Great Britain. Expenditure of some €770 million is envisaged on the transmission system over the period of the Plan. Such work on the transmission system will be undertaken by ESB (as asset owner) and will be carried out in accordance with EirGrid's Development Plan, as approved in advance by the CER. Ownership of the East-West Interconnector, for completion in 2012, will be vested in EirGrid.

2.5.4 Energy White Paper

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 33% of electricity consumption from renewable energy by 2020 (this target was subsequently increased to 40%).

The White Paper also includes 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,
- The publishing of a Grid Development Strategy by EirGrid (Grid25) which is required to be aligned to and facilitate greater certainty in relation to inter alia spatial strategy and regional development objectives.

2.5.5 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.

2.5.6 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.

2.5.7 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 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 2012.

2.5.8 County Wind 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 and practice, taking into account the Wind Atlas of Ireland (Sustainable Energy Ireland, 2003) and the Wind Energy Development Guidelines (DEHLG, 2006).

2.5.9 County Renewable Energy Strategies

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.

2.5.10 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 (see in particular Section 8.3) - including cumulative and in-combination effects. Information is not included on this data in Section 4 'Environmental Baseline' of this report 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.

2.6 Environmental Protection Objectives

The IP is subject to a number of high level environmental protection policies and objectives with which it must comply, including those which have been identified as Strategic Environmental Objectives in Section 5.

Examples of Environmental Protection Objectives include the aim of the EU Habitats Directive - which is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of Member States - and the purpose of the Water Framework Directive - which is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which, among other things, prevents deterioration in the status of all water bodies and protects, enhances and restores all waters with the aim of achieving good status by 2015.

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

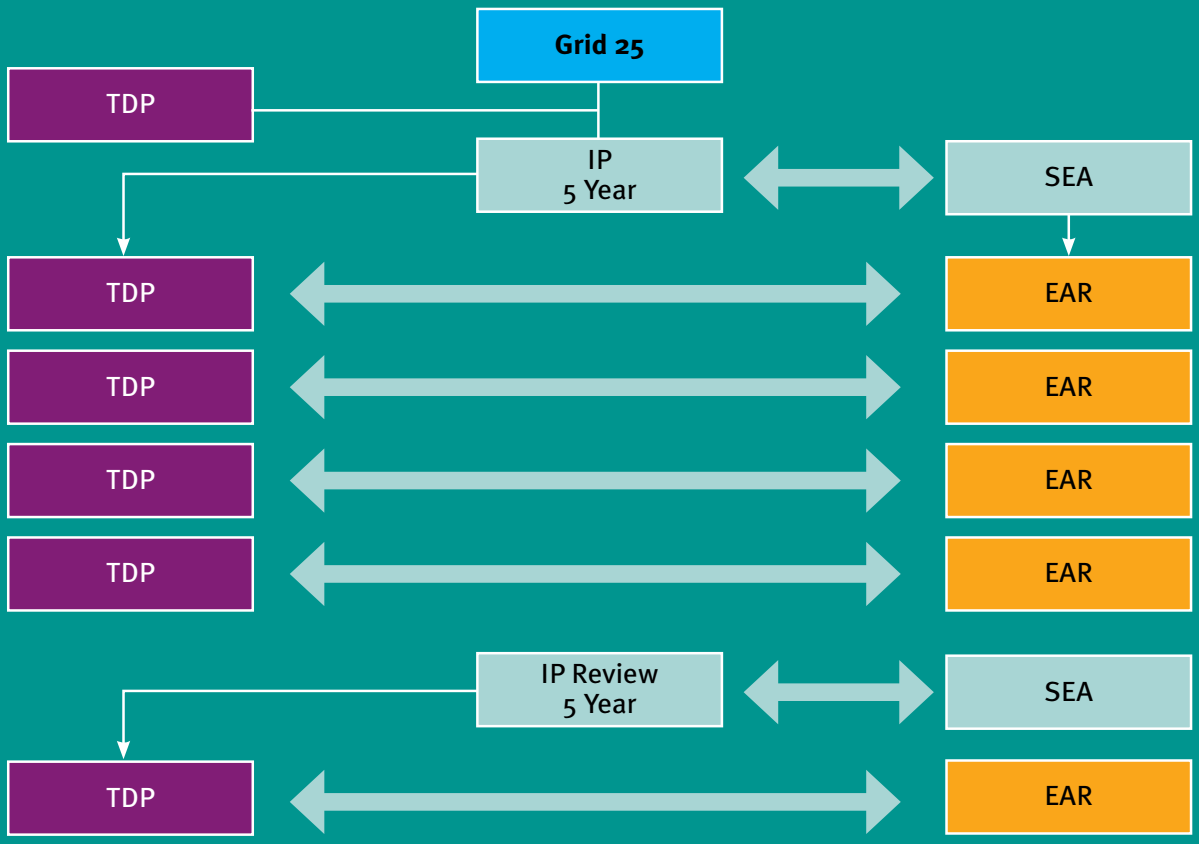


Figure 2.1 Structure for Grid25 strategy and associated Implementation Programme, SEA and Transmission Development Plan*

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

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.

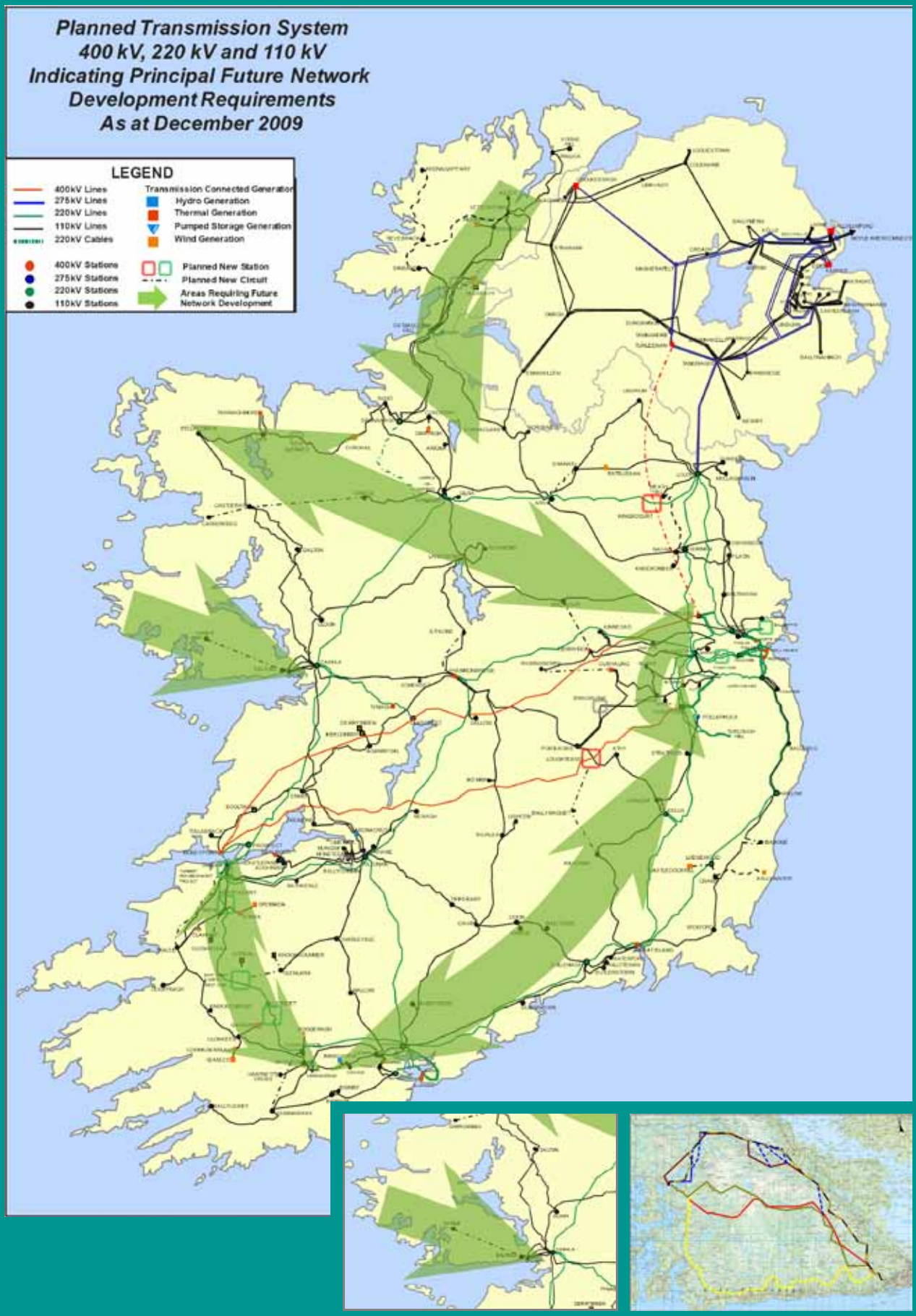


Figure 2.2 New Procedures for Transmission System Planning to take account of Planning and Environmental Considerations

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.

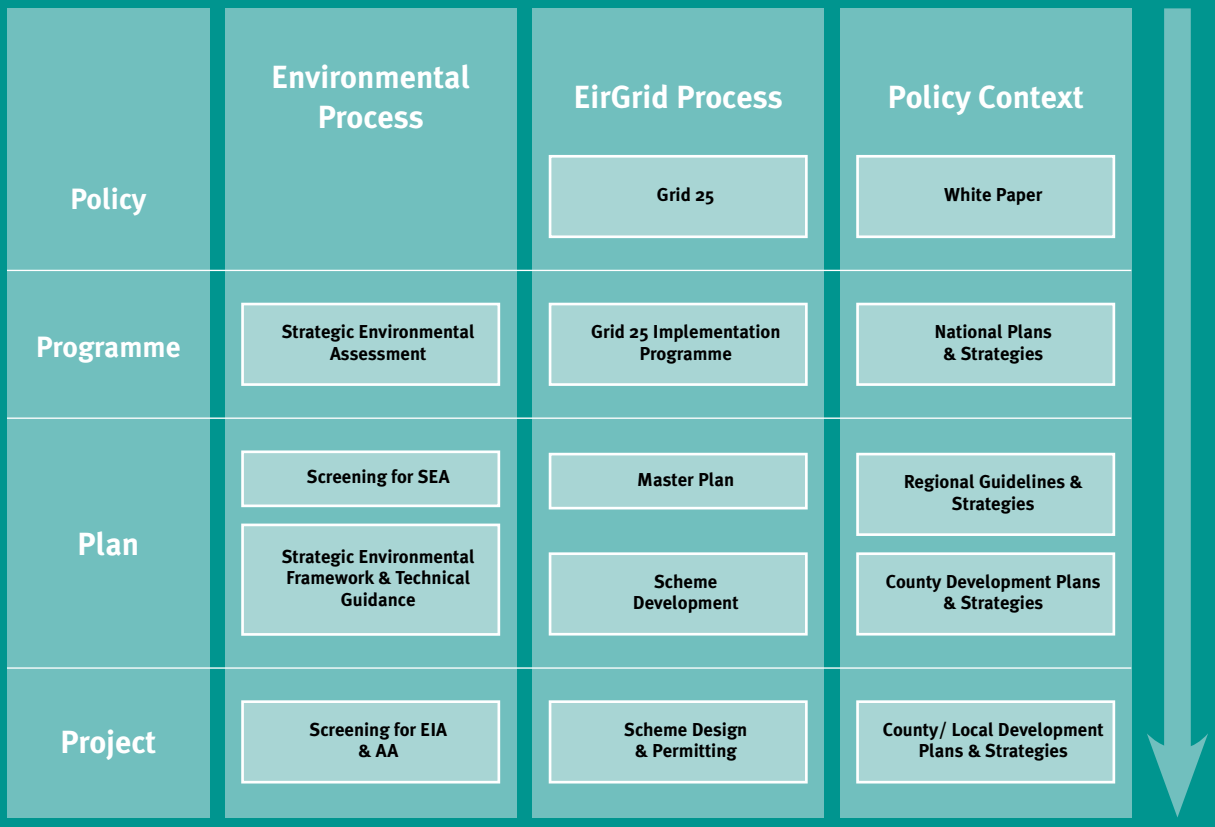


Figure 2.3 Strategic Decision Making Process (illustrating integration of environmental considerations at each level)

Section 3 - SEA Methodology

3.1 Introduction to the Iterative Approach

This section details how 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 3.1 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 Assessment (also prepared by EIServices; see Section 3.2) 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 Department of the Environment, Heritage and Local Governmant (DEHLG).

The main changes to the IP arising from both the SEA and Appropriate Assessment processes are detailed in Section 9 of this report.

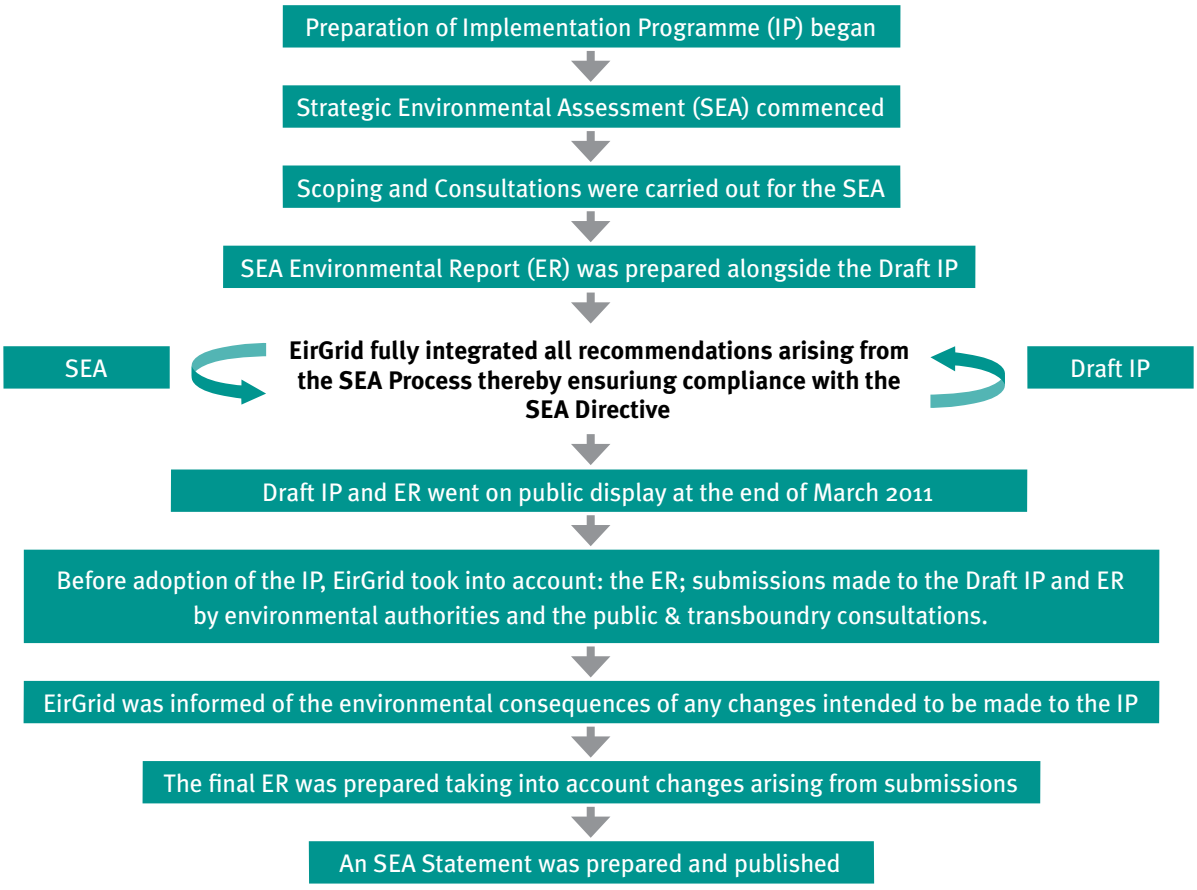


Figure 3.1 IP and SEA Stages

3.2 Appropriate Assessment

An Appropriate Assessment (AA) under Article 6 of the Habitats Directive has been undertaken on the IP.

The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC). The preparation of the IP, SEA and AA have taken place concurrently and the findings of the AA have informed both the IP and the SEA.

Measures which have been integrated into the IP which provide for the protection of ecological sensitivities – including Natura 2000 Sites – (see Section 9 of this Report) have been developed by and alongside the AA process.

3.3 Subsidiarity

In accordance with the established European principle of subsidiarity, the SEA Directive states that: Where plans and programmes form part of a hierarchy, Member States shall, with a view to avoiding duplication of the assessment, take into account the fact that the assessment will be carried out, in accordance with this Directive, at different levels of the hierarchy (Articles 4.3 and 5).

3.4 Scoping

3.4.1 Introduction

In consultation with the relevant authorities, the scope of environmental issues to be dealt with by the SEA together with the level of detail to which they are to be addressed was broadly decided after preliminary collection of environmental baseline data. Scoping of the SEA was concurrent with certain issues being selected for further examination after certain data was obtained. Scoping allowed the SEA to become focused upon key issues, such as those relating to existing and potential environmental issues and environmental problems[9].

Scoping facilitated the selection of issues relevant to the environmental components which are specified under the SEA Directive – biodiversity, fauna, flora, population, human health, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, and landscape.

3.4.2 Scoping Notices

As environmental authorities identified under the SEA Regulations, EPA, DEHLG and the Department of Communications, Energy and Natural Resources (DCENR) were all sent SEA scoping notices – which included the information specified by the SEA Regulations and a draft Scoping Report – by EirGrid on 18 December 2009 indicating that submissions or observations in relation to the scope and level of detail of the information to be included in the environmental report could be made to EirGrid. These notices were accompanied by a draft Scoping Report which included a brief outline of the likely content of the IP.

3.4.3 Scoping Responses

A written submission on the scope of the SEA was received from the EPA dated 10 February 2010. This submission included information under the following headings:

- Scope of SEA and GRID25 Implementation Programme;
- EPA SEA Process Checklist;
- Up-to-date Environmental Monitoring Data etc.;
- Geographical Information Systems;
- Appropriate Assessment;
- Scoping Meetings/Workshops;
- Alternatives;
- Consultation;
- Assessment of Likely Significant Effects;

[9] Annex I of the SEA Directive requires that information is provided on 'any existing environmental problems which are relevant to the plan or programme', thus, helping to ensure that the proposed strategic action does not make existing environmental problems worse. Environmental problems arise where there is a conflict between current environmental conditions and ideal targets. If environmental problems are identified at the offset they can help focus attention on important issues and geographical areas where environmental effects of the plan or programme may be likely.

- Mitigation of Significant Effects;
- Monitoring Proposals;
- Process and SEA Environmental Report Compliance;
- Integration of SEA and Plan/Programme;
- Documentation of the SEA Process;
- Possible Proposed Amendments to the Draft Programme;
- Information on the Decision/SEA Statement;
- SEA Guidance /Methodology;
- Environmental Authorities;
- Environmental Impact Assessment (EIA);
- Obligations with respect to National Plans and Policies and EU Environmental Legislation etc.; and,
- EPA Report: Ireland's Environment 2008 'Main Environmental Challenges'.

A written submission on the scope of the SEA was also received from the DEHLG dated 5 February 2010. This submission included information on:

Archaeology

- International Conventions;
- National Policies, Plans and Programmes;
- Relevant Policies and Plans at County Level; and,
- Development Issues.

Nature Conservation

- Habitats Directive Appropriate Assessment;
- The need for an iterative approach;
- In combination and cumulative effects;
- Interactions with the Offshore Renewable Energy Plan;
- Consideration of likely environmental and ecological effects;
- Protection of Natura 2000 sites and the integrity of these sites;
- Protected species; and,
- Strategic Environmental Objectives (SEOs).

In addition, meetings were held between EirGrid, EIServices and the EPA at which the approach to be taken in the preparation of the IP, the development of the Strategic Environmental Framework (see Section 3.8) and the development of the SEA scope were discussed.

Also, a meeting was held between EirGrid and representatives from the DEHLG at which advice and guidance on the Appropriate Assessment was provided.

The information provided in the written responses to the SEA scoping notice by environmental authorities and the information provided at meetings with these authorities was taken into account through the preparation of the Scoping Report (see below), during the preparation of the Environmental Report – including the mitigation measures (see Section 9) – and throughout the process to date.

The relevant authorities in Northern Ireland were also sent non-statutory SEA scoping notices. No responses were received.

3.4.4 Scoping Report

Based on the above consultations the draft Scoping Report was finalised which included information on the legislative content, alternatives, the existing environment and environmental objectives and contained a proposed approach to the environmental assessment. The report focused upon the key sensitivities of ecology, landscape and archaeology.

3.4.5 Scoping Decisions

Based on the outputs of the above, it was decided to scope out air quality as a topic to be considered

by the SEA. The topic of climatic factors is however included.

Although no conclusive evidence has been found to prove that electromagnetic fields (EMFs) are harmful to human health (see Section 4.10.3), perceived effects on human health arising from EMFs have been integrated into the assessment and are included in Strategic Environmental Objective (SEO) HH1.

3.5 Environmental Baseline Data

The SEA process is informed by the environmental baseline (i.e. the current state of the environment) to facilitate the identification and evaluation of the likely significant environmental effects of implementing the provisions of the IP and the alternatives and the subsequent monitoring of the effects of implementing the provisions of the IP as adopted.

The SEA Directive requires that information on the baseline environment be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and the likely evolution of the current environment in the absence of the plan or programme (in this case the IP).

3.6 Alternatives

The SEA Directive requires that reasonable alternatives (taking into account the objectives and the geographical scope of the plan or programme) are identified, described and evaluated for their likely significant effects on the environment. In accordance with this requirement, three Scenarios for the development of the National Transmission Network are examined at this strategic level.

3.7 The SEA Environmental Report

In this Environmental Report, which was placed on public display alongside the draft IP and subsequently updated, the likely environmental effects of the IP and the alternatives are predicted and their significance evaluated. Consultations between EirGrid and the EPA and DEHLG took place during the preparation of iterations of the Environmental Report and AA.

The Environmental Report provides EirGrid as well as the public with a clear understanding of the likely environmental consequences of decisions regarding how subsidiary regional developments will be conceived and delivered.

Mitigation measures to prevent or reduce significant adverse effects posed by the IP are identified in Section 9 – these have been integrated into the IP.

The Environmental Report was required to be altered in order to take account of recommendations contained in submissions and in order to take account of changes which were made to the draft IP on foot of submissions.

The Environmental Report is required to contain the information specified in Annex I to the SEA Directive and Schedule 2 of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (SI No. 435 of 2004) (see Table 3.1).

3.8 Strategic Environmental Constraints Mapping

Strategic Environmental Constraints Mapping (for a summary of this mapping study, see Appendix II) has been separately prepared by RPS on behalf of EirGrid in order to provide relevant information on environmental constraints so that environmental issues can be taken into consideration from the earliest possible stages of strategic transmission reinforcement.

The Strategic Environmental Constraints Mapping has been used to inform the environmental baseline description provided in Section 4 of this Report and certain mitigation measures identified in Section 9. The mapping is part of the overall Strategic

Environmental Framework (SEF) as captured in Section 2.3.5 of the IP and in the Glossary of this Environmental Report.

3.9 The SEA Statement

On adoption of the IP the SEA Statement was made public and includes information on how environmental considerations have been integrated into the IP – highlighting the main changes to the IP which resulted from the SEA process, how the Environmental Report and consultations have been taken into account – summarising the key issues raised in consultations and in the Environmental Report indicating what action was taken in response, and the reasons for choosing the IP in the light of the other alternatives, identifying the other alternatives considered, commenting on their potential effects and explaining why the IP was selected.

3.10 Difficulties Encountered

3.10.1 Introduction

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

3.10.2 Mapping of Landscape Constraints

There is currently no published national landscape mapping for Ireland. Landscape Constraints Rating mapping (Section 4.7) has been prepared as part of the Strategic Environmental Constraints Mapping and this provides a basis for the evaluation provided in this SEA Environmental Report.
The Landscape Constraints Rating mapping combines Visual Sensitivity Mapping (as identified from the natural land cover types in the CORINE dataset) and Topographical Mapping (developed from the 50m digital terrain model and catchment watersheds). Each of the landscape constraints were given a value and overlaid upon each other.

Although information was available for ecological designations in Northern Ireland, compatible landscape mapping was not available.

It is noted that the Landscape Constraints Rating mapping does not identify certain micro landscape features, such as drumlins and steep sided stream valleys, at a regional level. Such features will be taken into account as appropriate through route selection and lower tier assessments (EIS and Environmental Reports).

3.10.3 Mapping of Cultural Heritage

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.

3.10.4 Mapping of Development Opportunities

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.

3.10.5 Mapping of Development Potential

There was no composite mapping of potential for transmission development available. An Overall Development Potential Rating[10] map (Section 4.15) comprises 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

[10] also referred to as Overall Constraints Rating

associated with the development of the transmission system. In addition to the constraints, the Opportunity Areas (Section 4.14) are included in order to identify locations which represent potential opportunities to develop transmission infrastructure with a reduced environmental impact.

3.10.6 Mapping of Tentative UNESCO Sites Proposed

It is noted that there are a number of tentative UNESCO sites proposed in Ireland, however the extent of the boundaries for these proposed sites has not been defined and there are no readily available maps to plot these areas. The tentative sites are not designated or specifically protected at present. Revisions of the SEF and specifically the Strategic Environmental Constraints Mapping should take account of new designated sites as appropriate.

3.10.7 Data on Indicator W2

With regard to the availability of data for the monitoring of indicators (see also Section 10 Monitoring) it is noted that Indicator W2 (Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC) is to be sourced from the EPA; however, data may not be available for the preliminary monitoring evaluation as the groundwater threshold values to which this indicator relates have not yet been identified by the EPA.

3.10.8 Offshore Data

The SEA Directive requires the identification of a range of environmental effects including those which are indirect. Interconnection across water (see Section 8.8) and renewable energy generation infrastructure enabled by the IP (see Section 8.3), for example, can cause potential indirect and cumulative effects on both the onshore and offshore environments. Currently available offshore environmental data is not sufficiently complete to facilitate a comprehensive evaluation of likely impacts to the transition zone between terrestrial and marine environments.

The SEA identifies the need for a high level integration of onshore and offshore strategic transmission development strategies, and associated SEA, to capture likely offshore and onshore constraints and corresponding opportunity areas. Figure 9.1 illustrates a qualitative indication of potential general locations for land/sea connections where there are less sensitive onshore environments in the vicinity of coasts. This qualitative indication was determined by the sensitivity of onshore environments in the vicinity of coasts, as illustrated by the Overall Development Potential Rating mapping[11] for the various regions[12] to which Grid25 relates (see Figures 4.23 to 4.26) as well as relevant corresponding data – including that relating to landscape and ecological constraints – for Northern Ireland. It would be useful if offshore grids generally aimed to make landfall in these areas and it would be desirable for such decisions to consider comparable, equivalent on-shore and offshore data.

Any consideration of alternative routes/locations for land/sea connections will be required to consider spatial and environmental alternatives at the next level of environmental assessment – i.e. that of lower tier plans, multiple or individual projects – as is required by mitigation measure EMM4 under Section 9.5 which has been integrated into the IP.

[11] The Overall Development Potential Rating combines mapping of environmental constraints associated with the development of the transmission system with opportunity areas which represent potential opportunities to develop transmission infrastructure with a reduced environmental impact.

[12] The Border Region, the Midlands Region, the South-East Region, the West Region, the Mid West Region, the South-West Region and the Dublin and Mid-East Regions.

Table 3.1

Checklist of Information included in this Environmental Report

Information Required to be included in the Environmental Report	Corresponding Section of this Report
(A) Outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes	Sections 5 and 2
(B) Description of relevant aspects of the current state of the environment and the evolution of that environment without implementation of the plan or programme	Section 4
(C) Description of the environmental characteristics of areas likely to be significantly affected	Sections 4, 5, 7 and 8
(D) Identification of any existing environmental problems which are relevant to the plan or programme, particularly those relating to European protected sites	Section 4
(E) List environmental protection objectives, established at international, EU or national level, which are relevant to the plan or programme and describe how those objectives and any environmental considerations have been taken into account when preparing the Plan	Sections 5, 6, 7 and 9
(F) Describe the likely significant effects on the environment including the interrelationships between each environmental factor	Sections 7 and 8, interrelationships addressed as they arise in each section
(G) Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the plan or programme	Section 9
(H) Give an outline of the reasons for selecting the alternatives considered, and a description of how the assessment was undertaken (including any difficulties)	Sections 3, 6 and 7
(I) A description of proposed monitoring measures	Section 10
(J) A non-technical summary of the above information	Non-Technical Summary (separately Bound)

Section 4 - Environmental Baseline

4.1 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.

Ecology and the landscape were determined during the SEA scoping process as environmental components most at risk of potential negative impacts arising from implementation of the Implementation Programme (IP). Consequently these environmental components are considered in greater detail than other components.

For parts of the baseline descriptions of the environmental components of ecology and the landscape, the country has been divided into three Sectors (see Figure 4.1) based on combinations of regions identified in the National Spatial Strategy 2002–2020:

- Sector 1: The Border and West;
- Sector 2: The Midland, Mid-East, South-East and Greater Dublin; and,
- Sector 3: The Mid-West and South-West.

4.2 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 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 (for a summary of the Strategic Environmental Constraints Mapping Study, see Appendix II of this report) illustrates that there is a marked concentration of these vulnerabilities in the western and northern parts of Ireland.

4.3 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.

Figure 4.1
Sectors used in the Strategic Environmental Constraints Mapping [13]

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

4.4 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 Section 8 of this report.

4.5 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.

4.6 Biodiversity and Flora and Fauna

4.6.1 Nature Designations

4.6.1.1 Overview

Nature conservation designations include:

- Special Areas of Conservation[14] (SACs);
- Special Protection Areas[15] (SPAs);
- UNESCO World Heritage and UNESCO Biosphere sites;
- Areas Special Scientific Interest[16];
- Natural Heritage Areas[17] (NHAs);
- Ramsar Sites[18]; and,
- Other designations such as Salmonid Waters, Freshwater Pearl Mussel catchments, Flora Protection Order sites and Nature Reserves.

Sites designated for nature conservation comprise sites of European and National importance due to the presence of habitats – such as grasslands, raised bogs, fens, alluvial woodlands and estuaries – or species – such as Atlantic salmon, freshwater pearl mussel, otter and various migratory birds – that are rare or under threat in Ireland and/or the EU.

4.6.1.2 The Habitats Directive and Natura 2000 Sites

The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora) has been transposed into Law by the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011). The main purpose of the Directive is to ensure the appropriate conservation of natural habitats and of wild fauna and flora. Member States must establish an ecological network of Special Areas of Conservation (SAC) under the Directive. The network (Natura 2000) is composed of sites hosting a range of natural habitats and species

[14] 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.

[15] designated under the Birds Directive (EC Directive 79/409/EEC on the conservation of wild birds)

[16] designated under the Environment (Northern Ireland) Order 2002

[17] designated under the Wildlife Act; NHAs are legally protected from damage from the date they are formally proposed for designation. Proposed NHAs (pNHAs) were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated - designation will proceed on a phased basis over the coming years.

[18] designated under the Convention on Wetlands of International Importance

listed in Annex I and II of the Directive but also includes Special Protection Areas designated under the Birds Directive.

Additional information on Natura 2000 sites is provided in the Appropriate Assessment (AA) report which accompanies the IP and this Environmental Report. It is general practice, when screening a plan or project for compliance with the Habitats Directive, to identify all Natura 2000 sites within the functional area of the plan/programme itself and within 15 km of the boundaries of the area the plan/programme applies to. This approach is currently recommended in the DoE document *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* and as a precautionary measure, to ensure that all potentially affected Natura 2000 sites are included in the AA. As the Grid25 IP applies to the entire Republic of Ireland, an AA was carried out on all Natura 2000 sites within the Republic. In addition, all Natura 2000 sites within 15km of the border with Northern Ireland were also included in the AA. Figure 4.2 maps Natura 2000 sites within the Republic of Ireland and Northern Ireland.

4.6.1.3 National Parks and UNESCO Sites

EirGrid's Strategic Environmental Constraints Mapping has included National Parks and United Nations Educational, Scientific and Cultural Organization (UNESCO) sites (see Figure 4.3). These designations are important on both a national and international basis and they often coincide with international natural and cultural heritage designations.

The UNESCO World Heritage List comprises sites of outstanding universal value: cultural, natural or mixed. The UNESCO Biosphere Reserves List comprises areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use.

National Parks are designated by the DAHG and there are 6 located in Ireland.

4.6.2 Ecological Constraints Mapping

Ecological Constraints Rating has been prepared as part of the overall 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 the greatest weighting allocated to designations of international importance, i.e. SACs, SPAs and Ramsar sites. Each of the identified ecological constraints were given a value and overlaid upon each other[19].

Figure 4.4 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.

[19] 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 European and international designations (SAC, SPA and Ramsar) reflects the greater significance of these designations when considering infrastructure development.

Three factors were attributed a rating of 10 points:

- Ramsar Sites;
- SACs; and,
- SPAs.

Three factors were attributed a weighting of 5 points:

- 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.

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).

4.6.3 Ecological Constraints by Sector

4.6.3.1 Sector 1: The Border and West

There are over 200 SACs within the Border and West Sector which represents over 50% of the SACs nationally (by number). Major SAC designations include:

- Connemara Bog Complex which has many Annex I habitats represented as qualifying interests, e.g. Alkaline fens, Active Blanket Bog, North Atlantic Wet Heaths, Natural Dystrophic Lakes, Oligotrophic Waters, transition mires and quaking bogs, coastal lagoons and reefs, Otter and Salmon;
- Cloghernagore Bog and Glenveagh National Park which includes Alkaline fens, Active Blanket Bog, *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils, North Atlantic Wet Heaths, Oligotrophic Waters, Freshwater Pearl Mussel, Otter and Salmon as its qualifying interests; and,
- Owenduff/Nephin Complex which includes oligotrophic to mesotrophic standing waters, oligotrophic waters, Active Blanket Bog, North Atlantic Wet Heaths, Natural Dystrophic Lakes, and transition mires and quaking bogs, Otter and Salmon amongst its qualifying interests.

There are 64 SPAs in this sector which represents almost half of the number nationally. Lough Corrib, Lough Carra, Lough Mask, Owenduff, Galway Bay and Glenveagh all comprise SPAs that overlap with SACs; indeed Lough Corrib, Owenduff and Galway Bay are also Ramsar sites. Many of these SPAs have large migratory birds present in nationally and internationally significant numbers, for example Cummeen Strand SPA in the Sligo Bay Complex has large numbers of Brent Geese. Whooper swans and Greenland white fronted geese are present in Lough Corrib, Lough Mask and the Owenduff complex. Studies have shown that these species are particularly at risk from collision with inappropriately located overhead lines.

The Sector 1 Ecological Constraints Rating map (see Figure 4.5) confirms that the main ecological sensitivities lie towards the western extent of this sector. The red shading represents locations where numerous designations overlay e.g. Lough Corrib, Lough Mask, Owenduff, Galway Bay Complex and Glenveagh which are both SACs and SPAs and in some cases Ramsar sites and therefore are afforded a higher weighting in terms of constraints rating. For the most part, route planning in the coastal regions and hinterlands will be difficult, but ecological sensitivities are reduced in the inland areas of the sector.

4.6.3.2 Sector 2: The Midland, Mid-East, South-East and Greater Dublin

There are 91 SACs in this sector. In terms of extent, the Wicklow Mountains is the largest SAC; however as many of the SAC designations in this sector are river-based, they tend to traverse long linear corridors which whilst being difficult to avoid represent only a relatively small area over which to traverse. River SACs include the River Barrow/Nore SAC, Slaney River Valley SAC, the Lower River Suir SAC and the Boyne and Blackwater SAC.

In terms of the river SACs the main qualifying interests relate to species contained therein such as salmon, lamprey species, otters, Freshwater Pearl Mussel (and in the case of the River Nore, a unique species only found in this river catchment (*Margaritifera durrovensis*).

The Wicklow Mountains SAC includes oligotrophic to mesotrophic standing waters, Active Blanket Bog,

North Atlantic Wet Heaths, Natural Dystrophic Lakes, and Otter amongst its qualifying interests. Other upland SACs include the Slieve Bloom, Galtee and Comeragh Mountains where the qualifying interests are North Atlantic Wet Heaths and Active Blanket Bog.

The Sector 2 Ecological Constraints Rating map (Figure 4.6) illustrates the linear nature of the River SACs and their estuaries with upland SACs also prominent in the area.

4.6.3.3 Sector 3: The Mid-West and South-West

The region has in excess of 100 SACs representing approximately one quarter of the SACs nationally. Some of the major SAC designations include:

- Killarney National Park/ Macgillycuddy's Reeks – includes Alkaline fens, Active Blanket Bog, *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils, North Atlantic Wet Heaths, Oligotrophic Waters, Freshwater Pearl Mussel, Otter and Salmon as its qualifying interests;
- Lower River Shannon – predominantly coastal habitats, such as mudflats, sand banks, salt marsh, coastal lagoons, large shallow inlets, estuaries and dune systems. Important qualifying species include Freshwater Pearl Mussel, salmon, lamprey and otter;
- Kenmare River - predominantly coastal habitats, reefs, coastal lagoons, large shallow inlets, estuaries and dune systems. Important qualifying species include *Vertigo* snail, salmon, lamprey and otter; and,
- Blackwater River - predominantly coastal habitats, such as mudflats, sand banks, salt marsh, coastal lagoons, large shallow inlets, estuaries and dune systems. Important qualifying species include Freshwater Pearl Mussel, salmon, lamprey and otter.

There are 29 SPAs within the sector with a large proportion designated due to large slow moving migratory birds. Examples of these SPAs include Little Brosna Callows SPA, Blackwater Callows, Killarney National Park, Lough Derg (Shannon) SPA, Tralee Bay SPA which include Whooper Swan, Greenland white fronted geese, Barnacle geese and Brent geese as qualifying interests.

The Sector 3 Ecological Constraints Rating map (Figure 4.7) identifies the west of this sector as the main location of environmentally sensitive sites. As identified above the eastern areas are less environmentally sensitive with less ecological designations. Examples of sensitive areas include the Killarney National Park, the River Shannon, Lough Derg and Castlemaine Harbour.

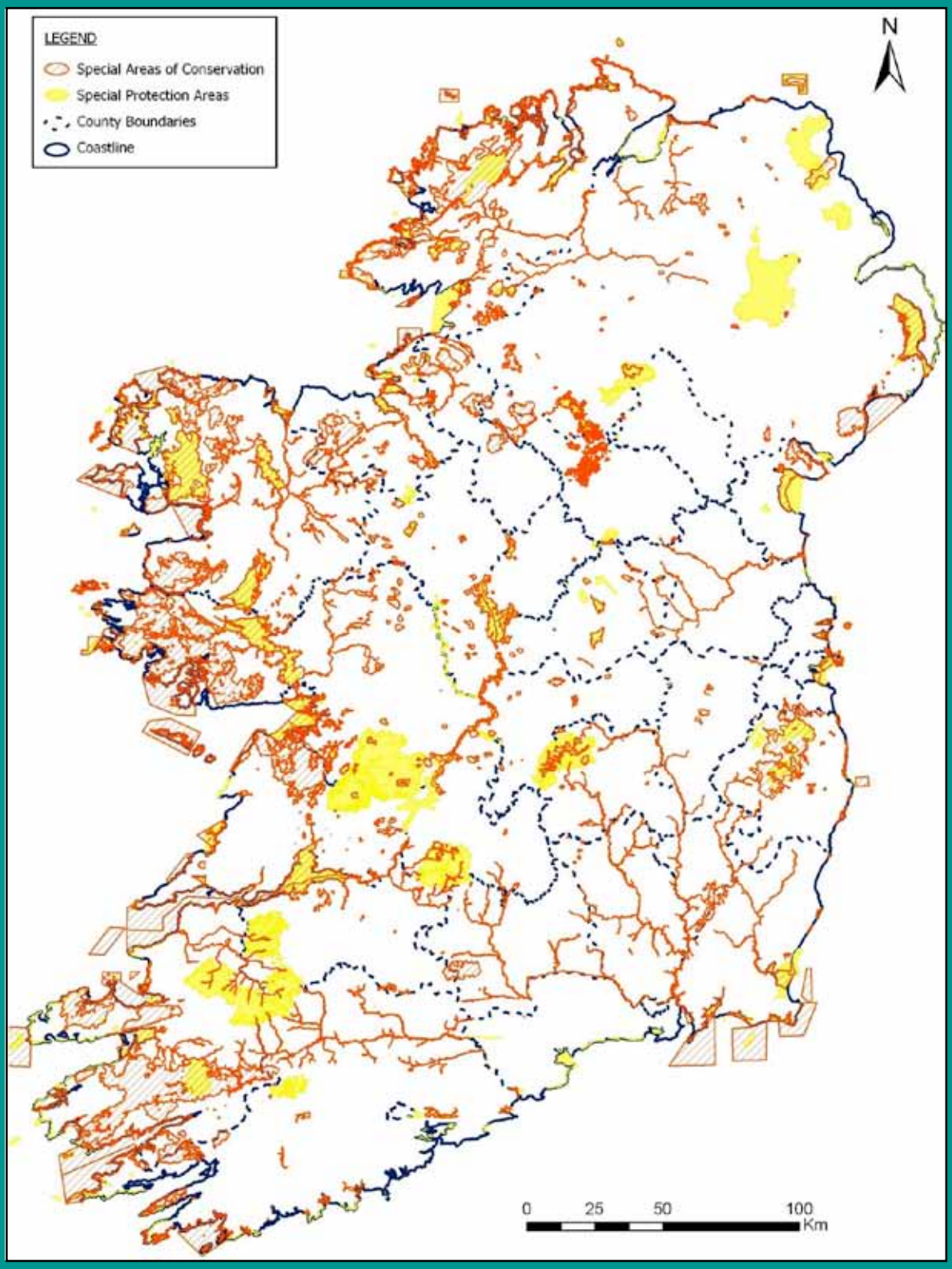


Figure 4.2
Natura 2000 sites within the Republic of Ireland and Northern Ireland [20]

[20] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

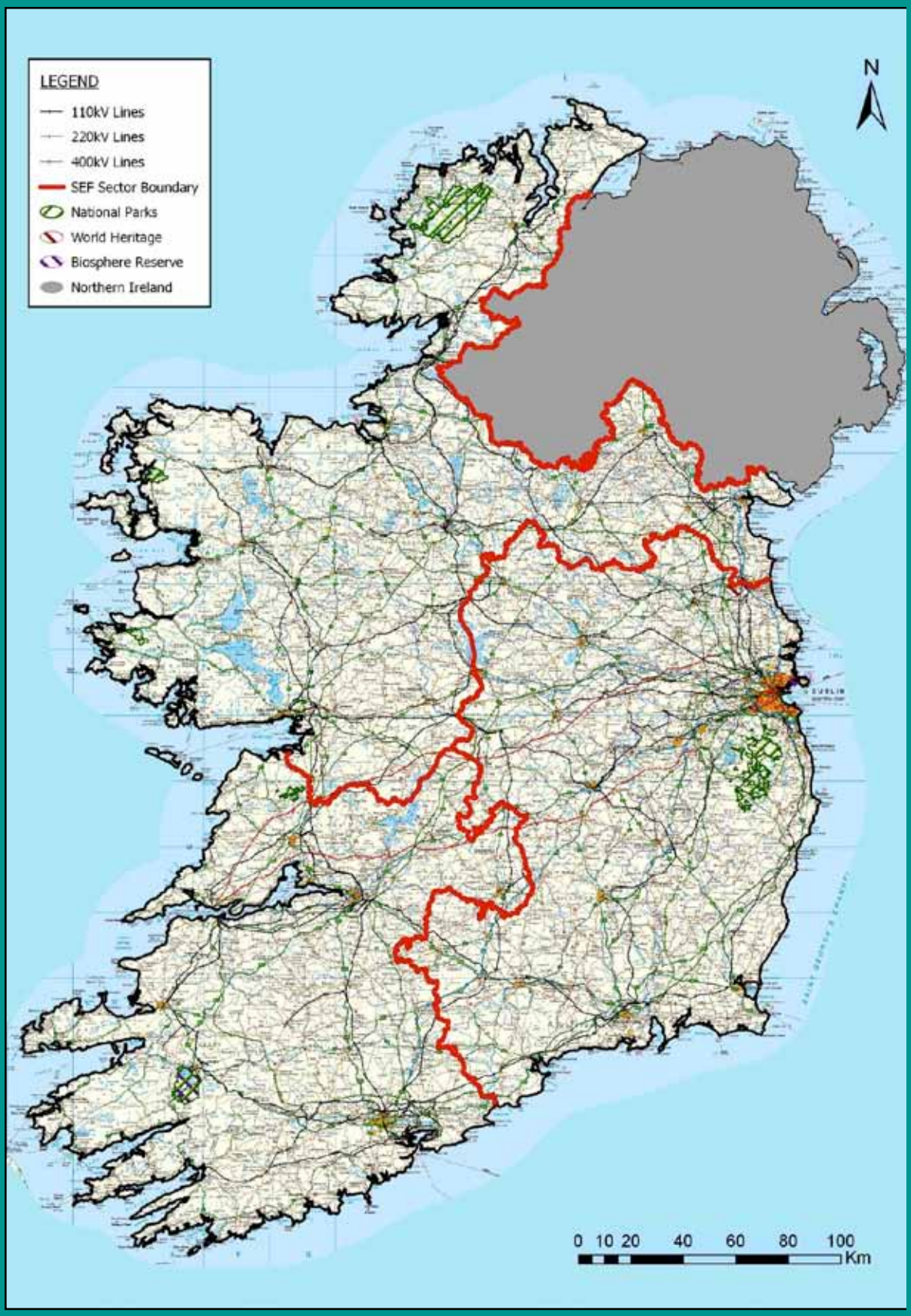


Figure 4.3
National Parks and UNESCO Sites [21]

[21] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

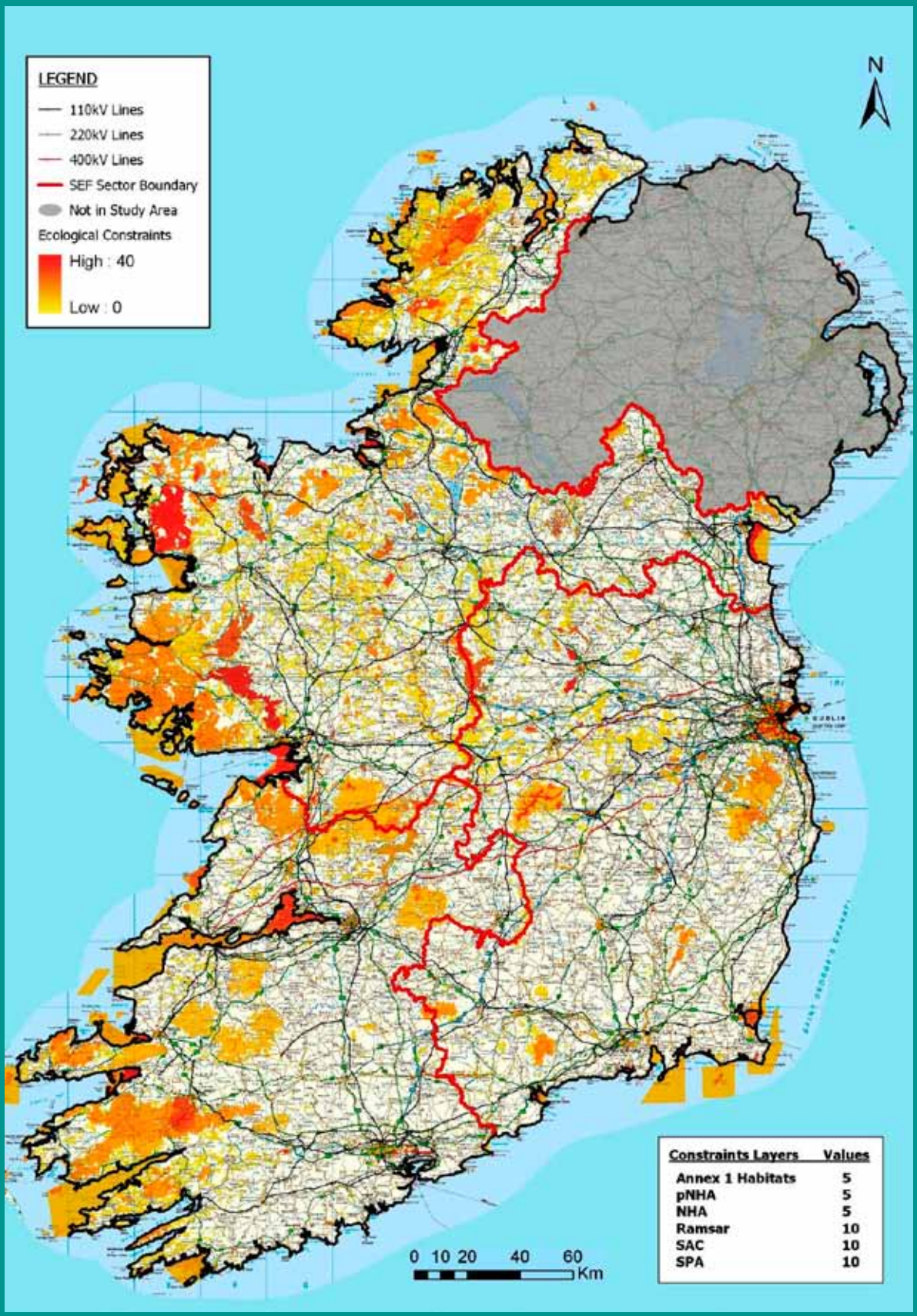


Figure 4.4
National Ecological Constraints Rating [22]

[22] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping
Note that the CORINE land cover dataset has been used to identify areas likely to contain annexed habitats i.e. habitats listed in Annex I of the Habitats Directive.

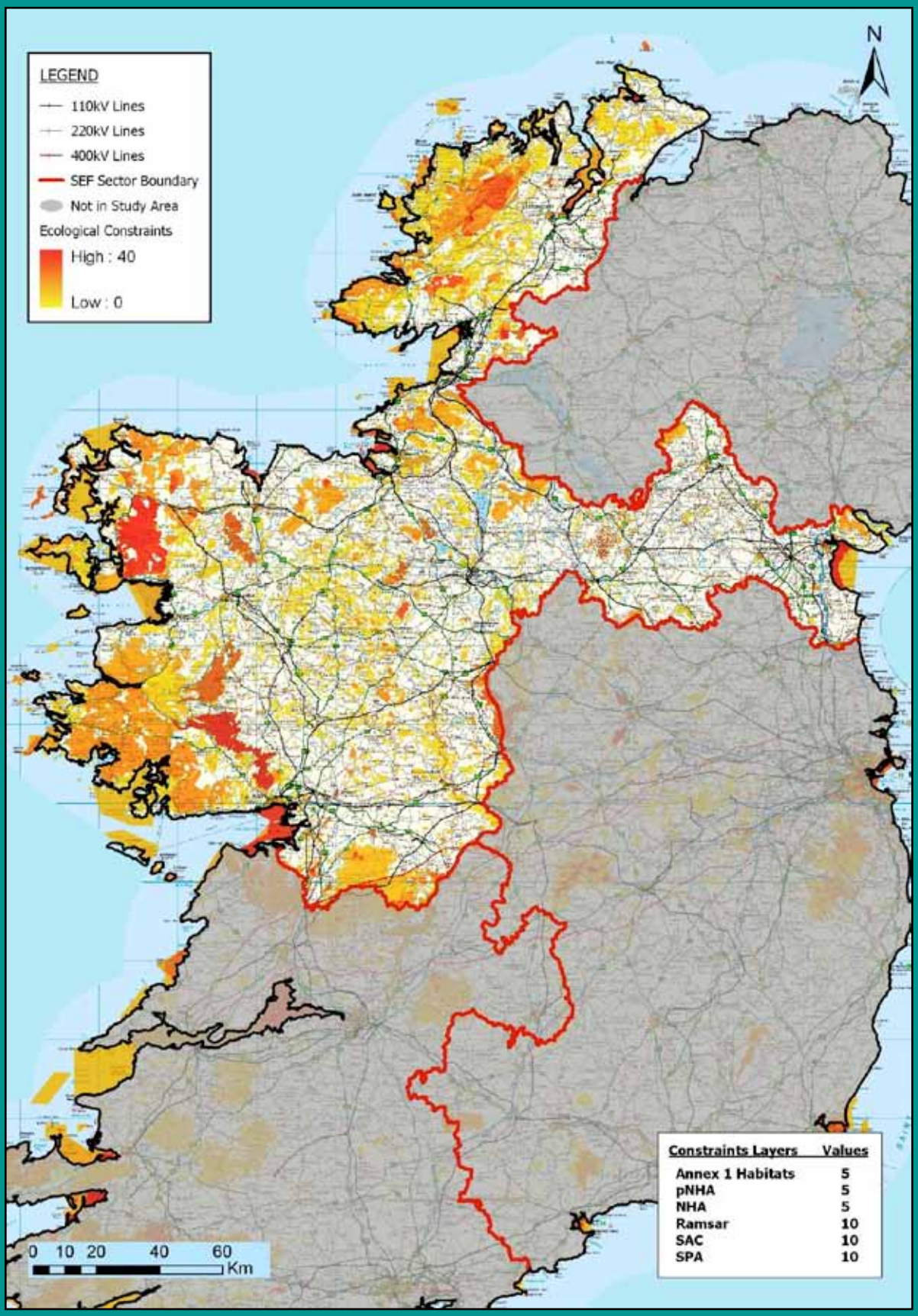


Figure 4.5
Sector 1 (The Border and West) Ecological Constraints Rating [23]

[23] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping
Note that the CORINE land cover dataset has been used to identify areas likely to contain annexed habitats i.e. habitats listed in Annex I of the Habitats Directive

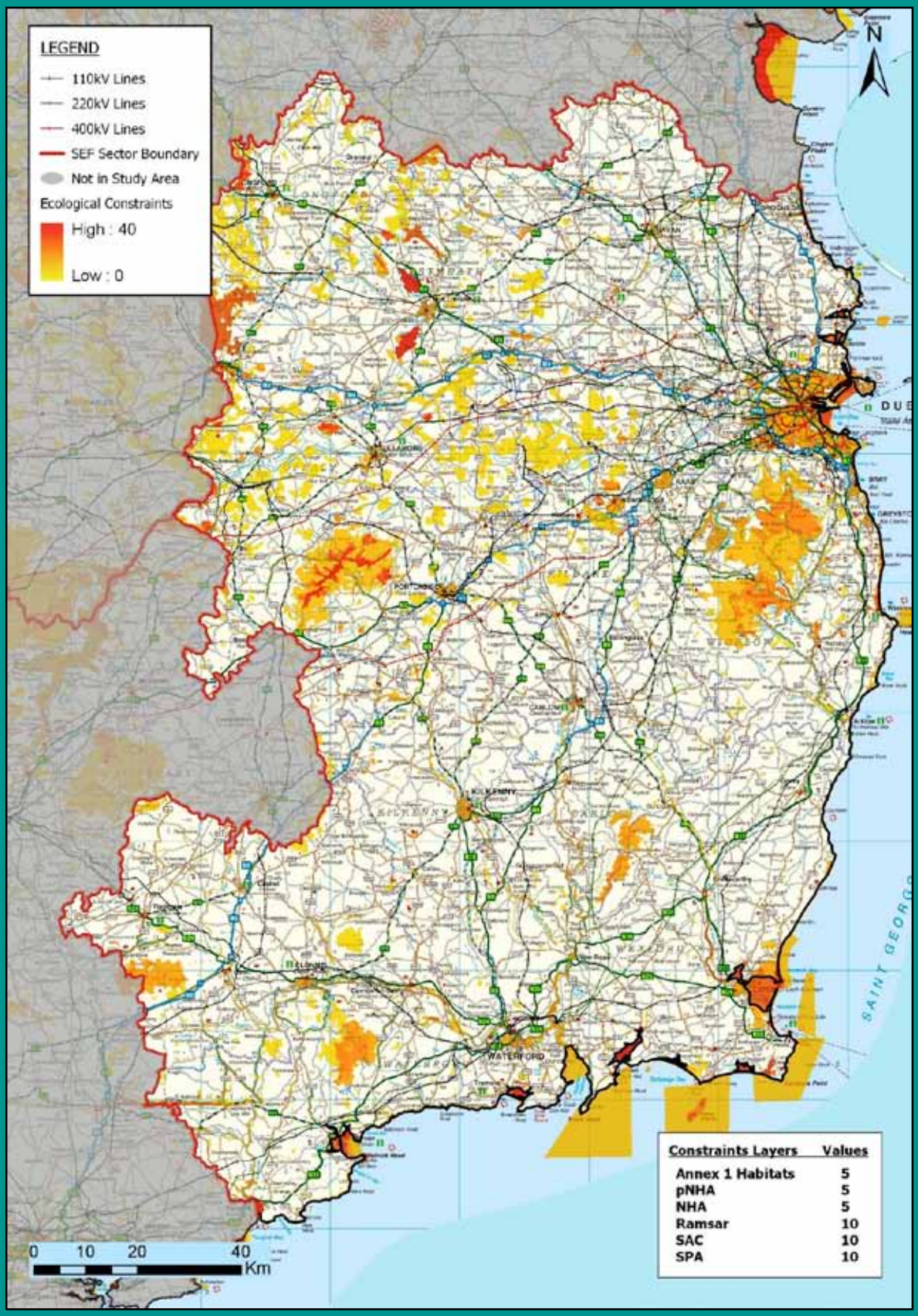


Figure 4.6
Sector 2 (The Midland, Mid-East, South-East and Greater Dublin) Ecological Constraints Rating [24]

[24] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping
Note that the CORINE land cover dataset has been used to identify areas likely to contain annexed habitats i.e. habitats listed in Annex I of the Habitats Directive.

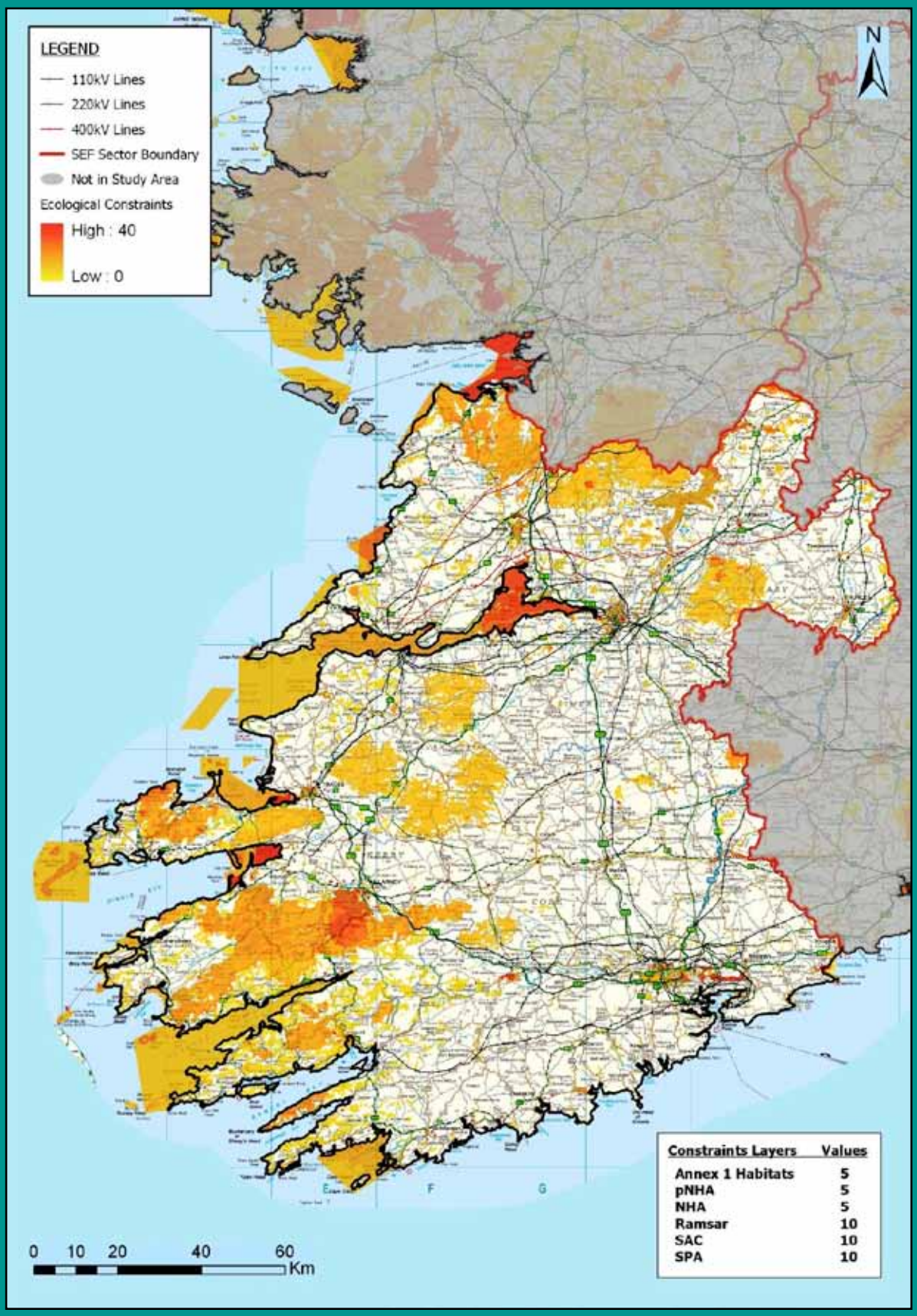


Figure 4.7
Sector 3 (The Mid-West and South-West) Ecological Constraints Rating [25]

[25] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping
Note that the CORINE land cover dataset has been used to identify areas likely to contain annexed habitats i.e. habitats listed in Annex I of the Habitats Directive

4.7 Landscape

4.7.1 Published National Landscape Mapping

There is currently no published national landscape mapping for Ireland.

4.7.2 Visual Sensitivity Mapping

A visual sensitivity map has been prepared as part of the Strategic Environmental Constraints Mapping based on CORINE[26] landcover characteristics that are likely to be indicative of conditions of high visual vulnerability.

The visual sensitivity mapping has been prepared as part of the Strategic Environmental Constraints Mapping on both a national/regional and more detailed, localised level.

This section considers the mapping which has been prepared on a national/regional level. The mapping which was prepared at a localised level will be considered by lower tier developments and alternatives.

Two land cover types are identified by the national/regional mapping:

- Forests; and,
- Other natural land cover types[27].

Forestry can have significantly different visual implications than the other land uses, having regard to the potential screening it affords, and therefore has been mapped separately. The Strategic Environmental Constraints Mapping notes that forested areas could potentially provide intrinsic visual absorption capacity if used as 'cover' (e.g. circuits running 'alongside' or 'behind' a forest) but if dissected with a wayleave could have a high visual impact.

The other natural landcover types have been mapped so as to facilitate avoidance of these areas where feasible.

Figure 4.8 shows the Visual Sensitivity Map at a national level. In general, visual sensitivities 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). Forest land cover types occur predominantly in upland areas.

4.7.3 Topographical Mapping

A topography map has been prepared as part of the Strategic Environmental Constraints Mapping which identifies all areas greater than 200 metres (Malin Ordnance Datum). This contour has been used as a somewhat conservative threshold to define upland areas and is representative of the lower limit of upland grasslands and heath habitats in Ireland.

In addition, the areas where slopes are greater than 30 degrees have also been identified, with the view to identifying areas where the construction of transmission infrastructure would be particularly difficult.

Catchment maps of the major river catchments have been sourced from the River Basin District projects and are also included on the topography mapping. The purpose of the catchment boundaries is to identify the major watersheds within the different sectors. Those areas where the catchment boundaries coincide with those areas greater than 200 metres are considered vulnerable for transmission circuit development.

The topographical mapping also identifies possible opportunities for transmission circuit development

[26] The CORINE (Co-ordination of Information on the Environment) dataset has been created from satellite imagery and represents different landcover classifications throughout Europe.

[27] These include: Peat Bogs, Water Bodies, Natural Grasslands, Moors and Heathland, Intertidal Flats, Beaches, Dunes, Sand, Inland Marshes, Stream Courses, Estuaries, Sparsely Vegetated Areas, Burnt Areas, Salt Marshes and Bare Rocks.

adjacent to these upland areas. The areas of land within 3km of the 200 metre contour and under 200 metres and with a slope between 5 degrees and 30 degrees has been identified on the mapping. These areas may be suited to transmission circuit development given the natural screening afforded by the upland areas in the immediate vicinity.

The national topographical mapping shown on Figure 4.9 identifies:

- Upland areas;
- Steep side slopes;
- Catchment boundaries; and,
- Possible opportunity areas where transmission circuits may be more easily integrated into the existing landscape.

4.7.4 Landscape Constraints and Opportunities Mapping

Landscape Constraints and Opportunities Rating mapping 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.

The Landscape Constraints and Opportunities Rating mapping combines Visual Sensitivity Mapping (as identified from the natural land cover types in the CORINE dataset) shown on Figure 4.8 and the Topographical Mapping (developed from the 50m digital terrain model and catchment watersheds) shown on Figure 4.9. Each of the landscape factors were given a value and overlaid upon each other[28].

Figure 4.10 shows the Landscape Constraints and Opportunities Rating at a national level. 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.

4.7.5 Landscape Constraints by Sector

4.7.5.1 Sector 1: The Border and West

The sensitive land use types within this sector are extensive as can be seen from the sensitive land use mapping included shown on Figure 4.11. Large parts of Donegal, Galway, Sligo, Leitrim and Mayo have expansive areas of natural land use types that are intrinsically sensitive to transmission system development. The upland areas tend to coincide with these natural land use types as can be seen from the topography mapping.

[28] A weighting system applied through Geographical Information System (GIS) software was used in order to calculate the sensitivities of each area.

Three factors were attributed a rating of 10 points:

- Elevation › 200m;
- Forestry Landcover Areas; and,
- Slope › 30 Degrees).

Two factors were attributed a weighting of 5 points:

- Lakes and Estuaries; and,
- Other Natural Landcover Types.

One factor was attributed a weighting of minus 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.

Construction on the transmission grid

The overall landscape constraints rating mapping combines both the sensitive land use types and the topography mapping to provide a composite landscape constraints rating and as would be expected at this high level assessment the major landscape constraints are located to the west of the sector where the upland areas and sensitive land use types are located.

4.7.5.2 Sector 2: The Midland, Mid-East, South-East and Greater Dublin

In terms of the landscape sensitivities, the upland mountainous areas, represented by the red colour grading in the landscape rating mapping, are obvious constraints (Figure 4.12). In addition, there are extensive bog lands in the midlands around Offaly and Westmeath which represent sensitive land use types that have a low intrinsic ability to absorb major infrastructure development; these are represented by the yellow shading in the landscape constraints rating.

4.7.5.3 Sector 3: The Mid-West and South-West

The area has large areas of natural land use types representing sensitive landscape features. As would be expected, these areas correlate well with the annexed habitats and designated sites illustrated in the ecological mapping but also the upland areas indentified in the topography mapping (Figure 4.13).

The landscape constraints rating mapping for this sector illustrates the natural land use types and upland areas in the areas around Killarney National Park, south Kerry and north Cork. The high constraints score is consistent with the high elevations and natural land use types predominantly upland vegetation and blanket bog occurring in these areas.

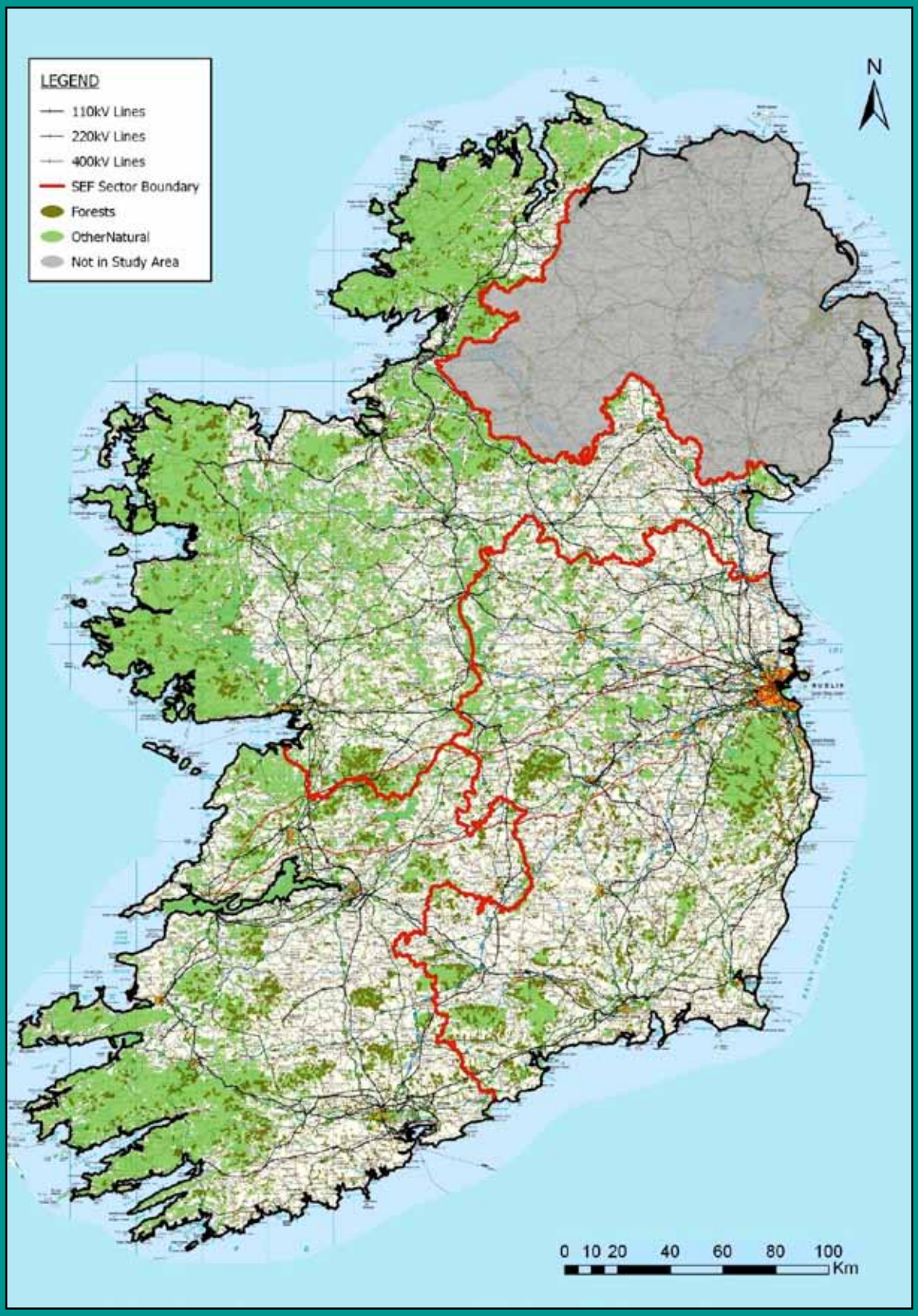


Figure 4.8
National Visual Sensitivity Mapping [29]

[29] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

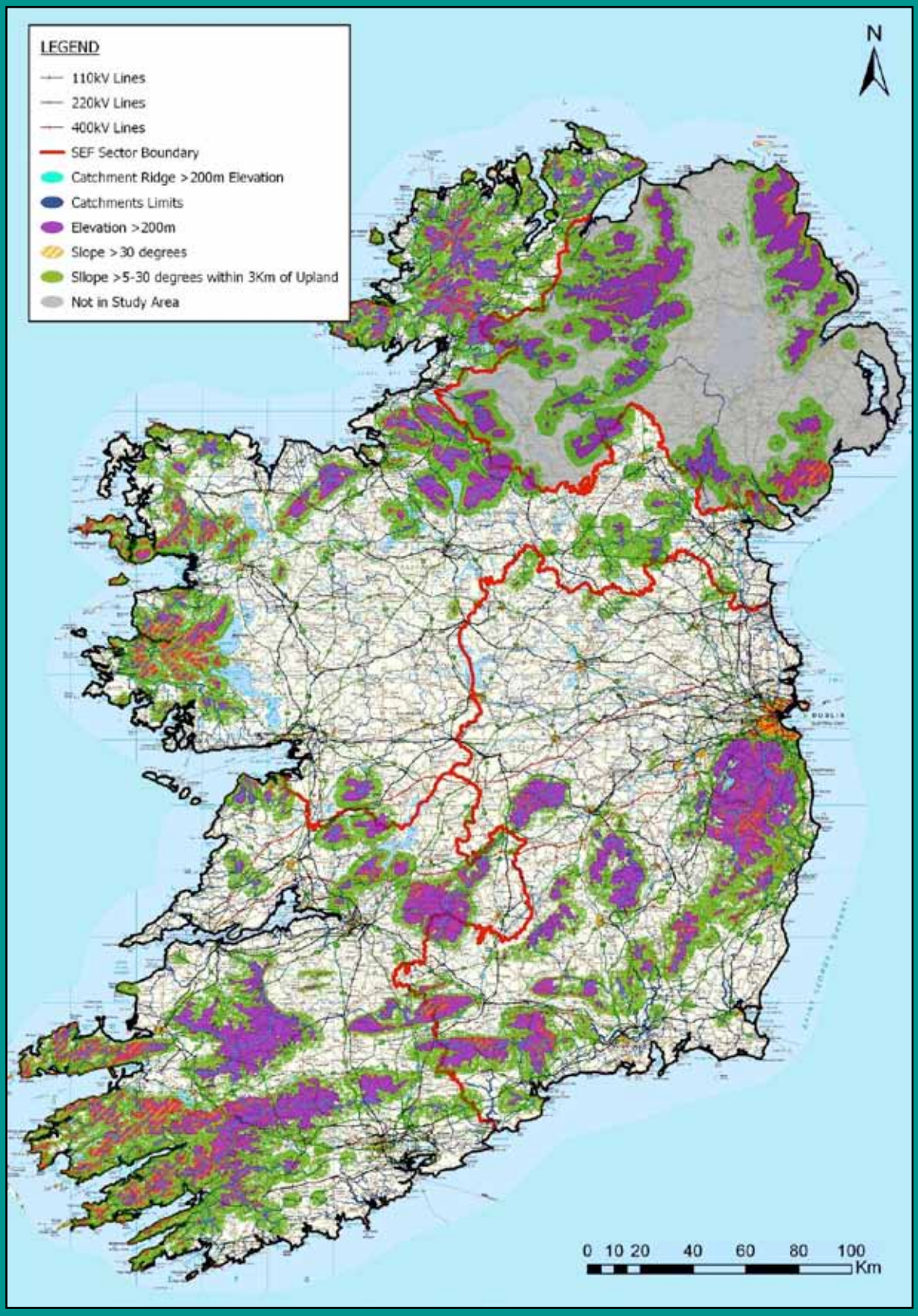


Figure 4.9
National Topographical Mapping [30]

[30] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

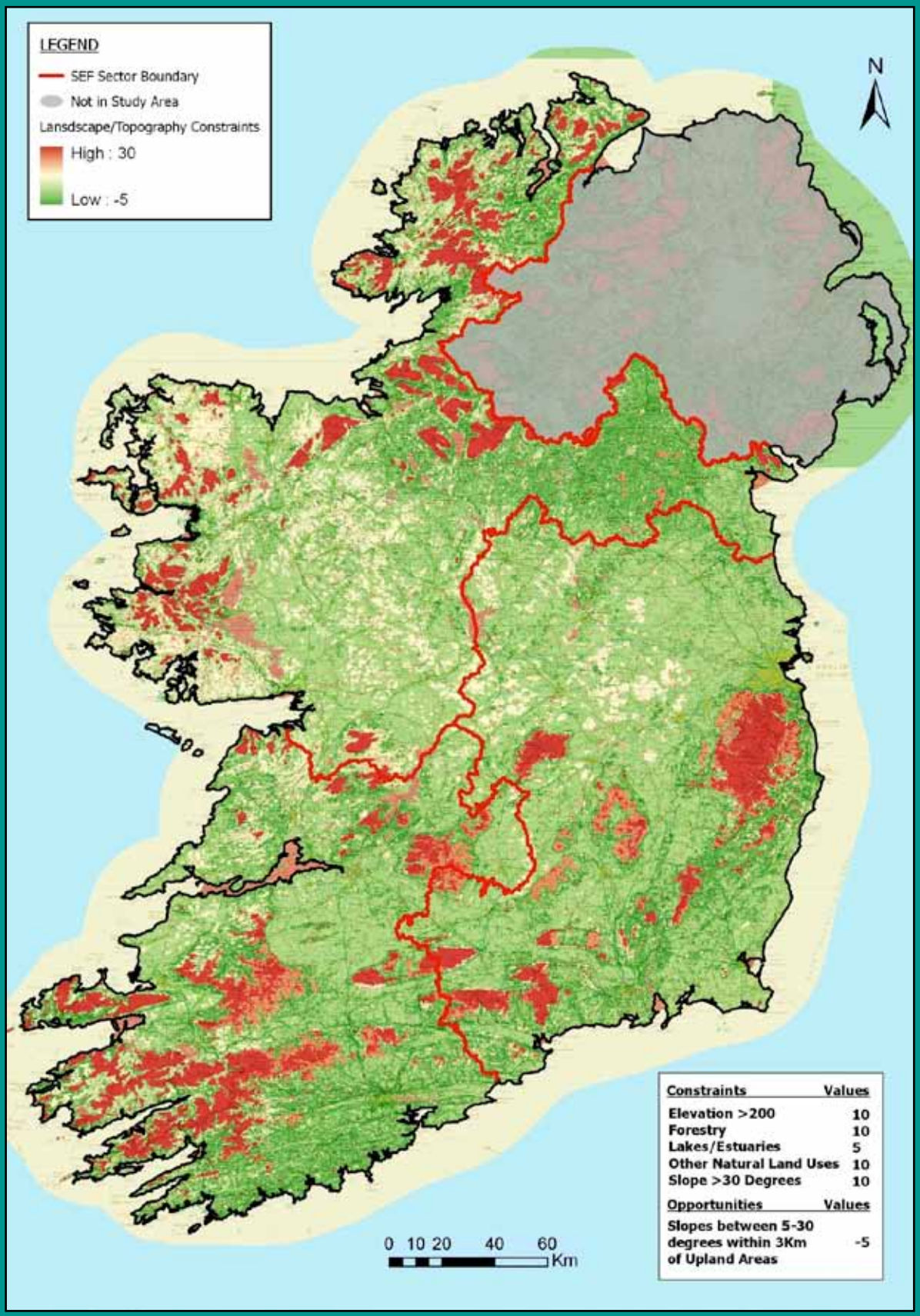


Figure 4.10
National Landscape Constraints and Opportunities Rating [31]

[31] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

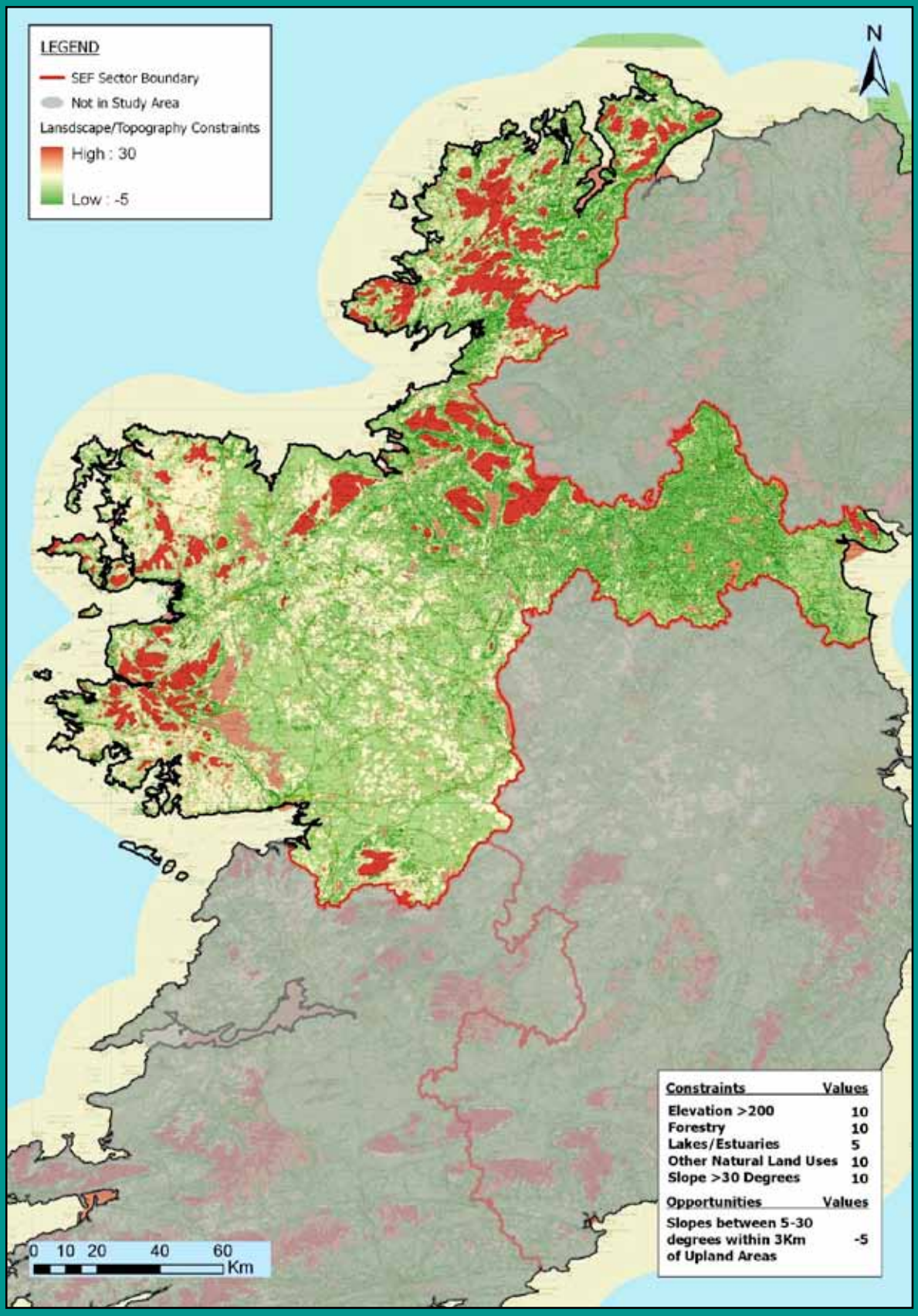


Figure 4.11
Sector 1 (The Border and West) Landscape Constraints and Opportunities Rating [32]

[32] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

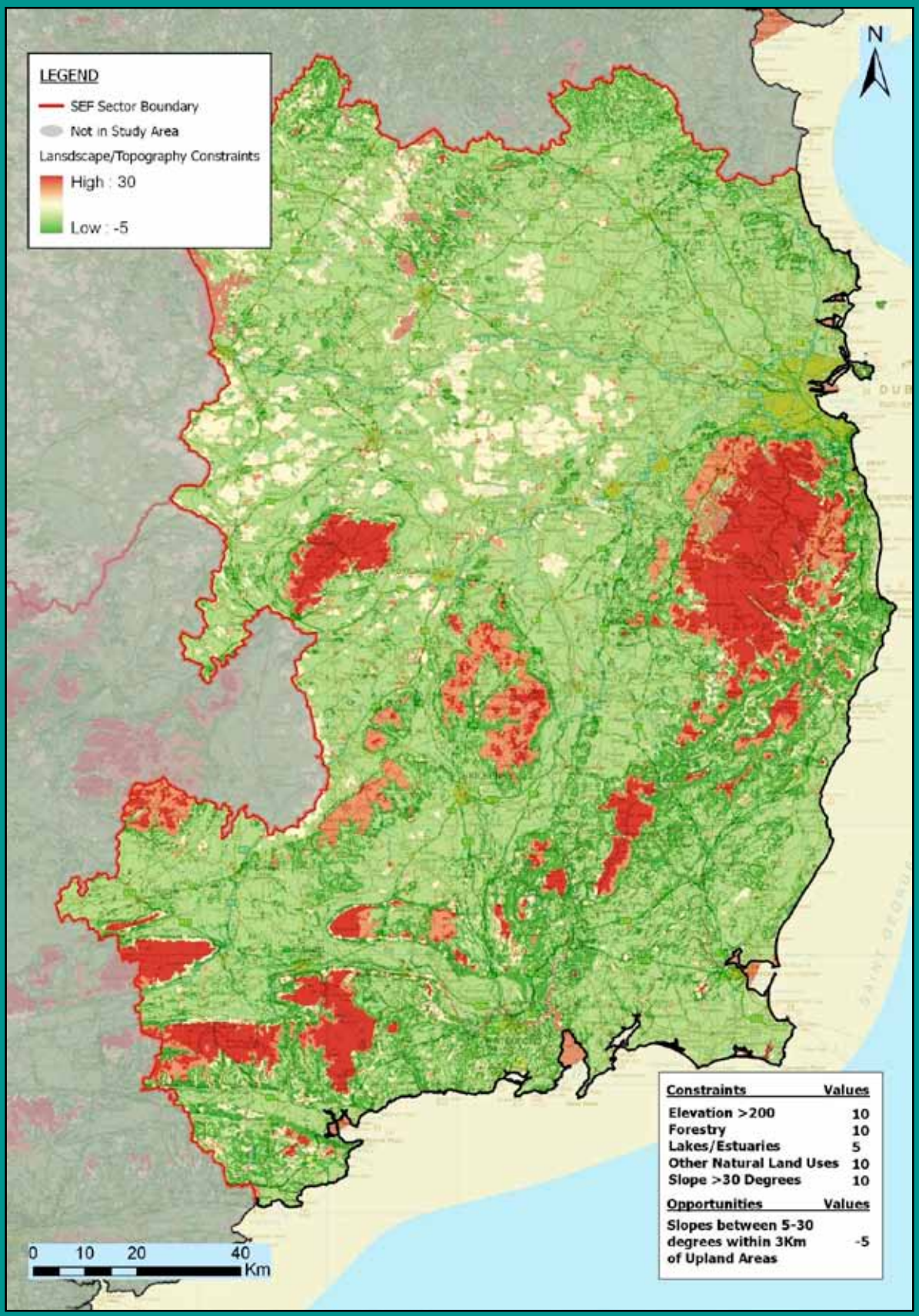


Figure 4.12
Sector 2 (The Midland, Mid-East, South-East and Greater Dublin) Landscape Constraints and Opportunities Rating [33]

[33] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

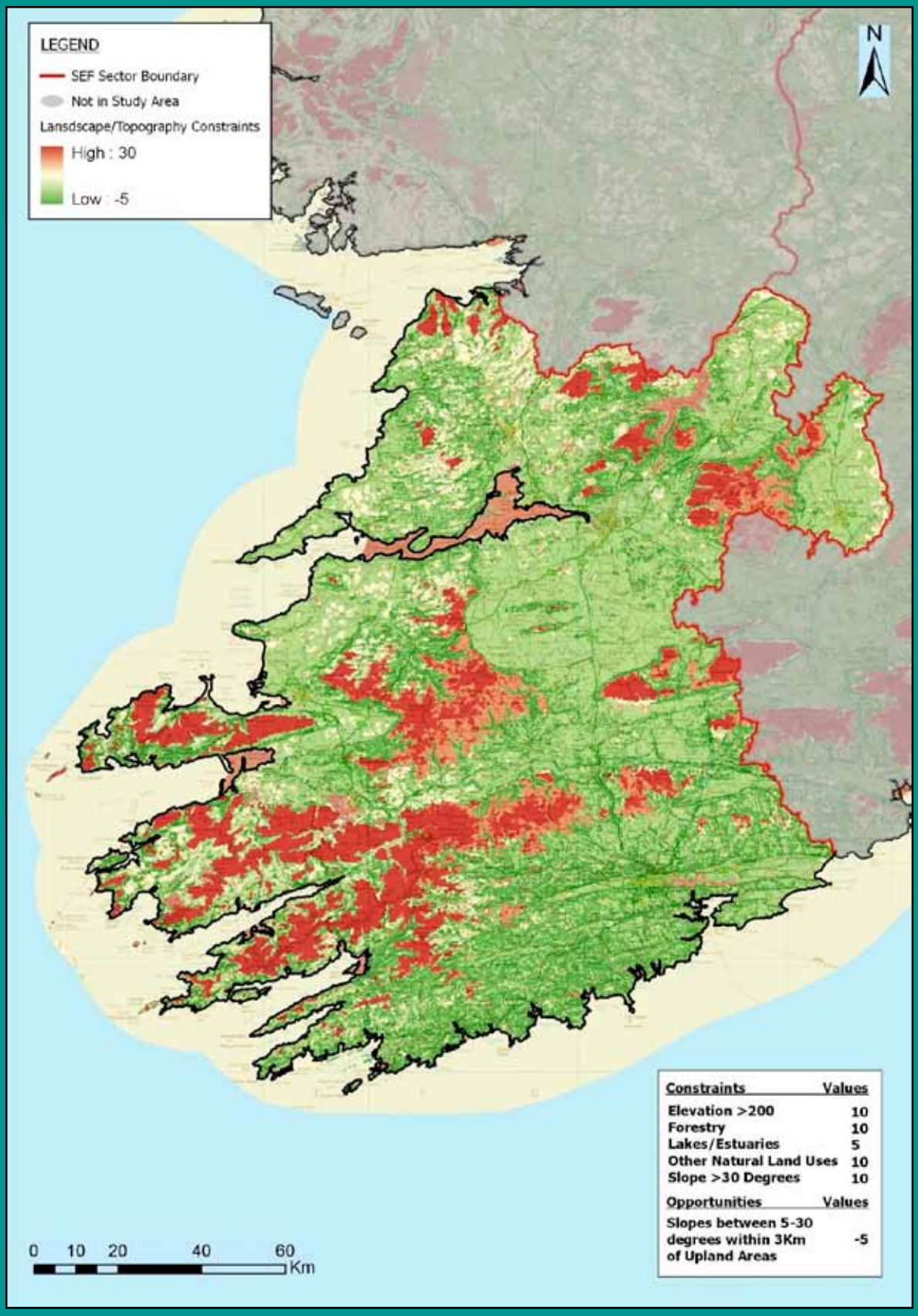


Figure 4.13
Sector 3 (The Mid-West and South-West) Landscape Constraints and Opportunities Rating [34]

[34] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

4.8 Cultural Heritage

4.8.1 Published Cultural Heritage Mapping

There is currently no comprehensive mapping of cultural heritage at a national scale.

4.8.2 Archaeological Heritage

4.8.2.1 Introduction

Archaeological sites and monuments vary greatly in form and date; examples include earthworks of different types and periods, (e.g. early historic ringforts and prehistoric burial mounds), megalithic tombs from the Prehistoric period, medieval buildings, urban archaeological deposits, and underwater features.

Archaeological sites may have no visible surface features; the surface features of an archaeological site may have decayed completely or been deliberately removed but archaeological deposits and features may survive beneath the surface.

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

4.8.2.2 Record of Monuments and Places

A primary source 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 Record of Monuments and Places (RMP) is an inventory, put on a statutory basis by amendment to the National Monuments Act 1994, of sites and areas of archaeological significance. It records known upstanding archaeological monuments, the original location of destroyed monuments, and the location of possible sites identified through documentary, cartographic and photographic research.

The term 'monument' includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes.

All monuments in existence before 1700 A.D. are automatically considered to be historic monuments within the meaning of the National Monuments Acts.

4.8.3 Architectural Heritage

4.8.3.1 Introduction

The term architectural heritage is defined in the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 as meaning all structures and buildings together with their settings and attendant grounds, fixtures and fittings; groups of structures and buildings; and, sites which are of technical, historical, archaeological, artistic, cultural, scientific, social, or technical interest.

4.8.3.2 Record of Protected Structures

A primary source of information for known architectural heritage is the Record of Protected Structures (RPS) of every local authority which is legislated for under Section 51 of the Planning and Development Act 2000. Inclusion of structures or parts of structures which form part of the architectural heritage and which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, on these records contributes towards the protection of architectural heritage.

Protected structures are defined by Section 2 of the Planning and Development Act to mean "(a) a structure, or (b) a specified part of a structure, which is included in a record of protected structures, and, where that record so indicates, includes any specified feature which is within the attendant grounds of the structure…"

In relation to a protected structure or proposed protected structure, where the record so indicates, the following may be encompassed:

- The interior of the structure;
- The land lying within the curtilage[35] of the structure;
- Any other structures lying within that curtilage and their interiors; and,
- Fixtures and features which form part of the interior or exterior of the protected structure.

4.8.3.3 National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) is a State initiative under the administration of the Department of the Environment, Heritage and Local Government and 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 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for the Environment, Heritage and Local Government to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

4.8.4 Conclusion

Although there is currently no comprehensive mapping of cultural heritage at a national scale, reference to the RMP, RPSs and NIAH identifies widespread siting of cultural heritage throughout the country, of varying significance and consequence.

4.9 Climatic Factors

4.9.1 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% 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 2008[36], it is estimated that Ireland's emissions in 2008 were 23% higher than the baseline estimate set on the 1990 figure.

With regard to overall emissions, Agriculture remains the single largest contributor to the overall emissions, at 27.3% of the total, followed by Energy (power generation & oil refining) at 21.8% and Transport at 21.1%. The remainder is made up by the Residential sector at 11.2%, Industry and Commercial at 16.9%, and Waste at 1.6%.

Increased housing stock has driven the gradual upward trend in the emissions from the Residential sector after 1998 following a sharp reduction in the early 1990s and stabilisation that resulted from fuel switching. Emissions in the Residential sector

[35] There is no definition of "curtilage" in the planning legislation. Curtilage is normally taken to be the parcel of ground immediately associated with the Protected Structure, or in use for the purposes of the structure. Protection extends to the buildings and land lying within the curtilage. While the curtilage sometimes coincides with the present property boundary, it can originally have included lands, features or even buildings now in separate ownership, e.g. the lodge of a former country house, or the garden features located in land subsequently sold off. Such lands are described as being attendant grounds, and the protection extends to them just as if they were still within the curtilage of the Protected Structure.

[36] EPA (2010) Ireland's Greenhouse Gas Emissions for 2008 Wexford: EPA

increased by 8.7% between 2007 and 2008. This was the main sectoral increase in 2008 and would appear to reflect increased use of domestic heating as a result of the winter months of 2008 being significantly colder than for the same period in 2007.

Between 1990 and 2007, Transport shows the greatest overall increase at 176% but emissions decreased for the first time in 2008. The increase up to 2007 can be attributed to general economic prosperity and increasing population and consequent increasing vehicle numbers as well as the reliance on private cars and rapidly increasing road freight transport. The economic downturn reversed the trend in 2008.

Other sectors showing substantial increases on 1990 are Energy Industries at 29.2% and Industry and Commercial at 19.1%, which reflect increasing demand for electricity and higher industrial activity respectively. Emissions from Agriculture reached a peak in 1998 and have decreased to below their 1990 level in the last couple of years, reflecting long-term decline in cattle population and in fertiliser use, primarily due to the provisions of the Common Agricultural Policy.

The EU has set legally binding targets to reduce the greenhouse gases across the EU by at least 20% by 2020, compared with 1990 levels. To facilitate this two carbon emission reduction methods exist at EU level. One method is applied through the Emissions Trading Scheme (ETS) while a second emission reduction target is applied in the non-ETS sector. Taken together, the combined ETS and non-ETS EU-wide reductions will result in an overall EU-wide reduction of 14% compared to 2005, which is equivalent to a reduction of 20% compared to 1990.

Any generation plants greater than 50MW fall under the EU Large Combustion Plant directive (2001/80/EC). This directive was transposed into Irish law by the Large Combustion Plant Regulations 2003 (S.I. No. 644 of 2003) and limits the emissions of certain pollutants into the air from large combustion plants. There are also some combustion plants associated with other facilities (i.e. where energy production is not the main activity) which are also licensed under the directive. The EPA is charged with ensuring that generation plants meet their requirements under these directives

There are a number of other EU directives and national policy initiatives that apply restrictions to emissions from generation units.

4.9.2 Energy White Paper

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 33% of electricity consumption from renewable energy by 2020 (this target was subsequently increased to 40%).

The White Paper also includes a number of Actions which are set to achieve the Strategic Goal of Ensuring that Electricity Supply Consistently Meets Demand. These actions are identified in Section 2.5.4.

4.10 Population and Human Health

4.10.1 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 population of Ireland has grown rapidly with an estimated population of 4,239,848 based on the 2006 census. 70% of the country's population lives in towns, villages and open countryside outside the main cities in Leinster, Munster and Connacht.

National densities of population are shown on Figure 4.14. Highest population densities are found in the Dublin and Cork City areas.

The Overall Development Potential Rating mapping (see Section 4.15) 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.

4.10.2 Noise

Noise is unwanted sound. Traffic noise alone is harming the health of almost one third of Europeans[37]

The Noise Directive – Directive 2002/49/EC relating to the assessment and management of environmental noise – is part of an EU strategy setting out to reduce the number of people affected by noise in the longer term and to provide a framework for developing existing EU policy on noise reduction from source. The Directive requires competent authorities in Member States to:

- Draw up strategic noise maps for major roads, railways, airports and agglomerations, using harmonised noise indicators and use these maps to assess the number of people which may be impacted upon as a result of excessive noise levels;
- Draw up action plans to reduce noise where necessary and maintain environmental noise quality where it is good; and,
- Inform and consult the public about noise exposure, its effects, and the measures considered to address noise.

The Directive does not set any limit value, nor does it prescribe the measures to be used in the action plans, which remain at the discretion of the competent authorities.

Disturbance due to noise is subjective and depends on a number of factors mainly associated with 'arcing' during certain weather conditions on high voltage projects and other factors such as the duration of the works, noise characteristics and public perception of the project. In order to minimise the disruption of a project to near sited receptors, it is standard to conduct a noise investigation to accurately assess the noise impact and to specify a range of specific mitigating measures which will ensure that acceptable noise limits are maintained.

Impacts occurring on noise levels are localised. Increases in noise levels at construction stage are generally temporary, during day light 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 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.

4.10.3 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.

[37] World Health Organization Regional Office for Europe (2003) Technical meeting on exposure-response relationships of noise on health 19-21 September 2002 Bonn, Germany Bonn: WHO

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.

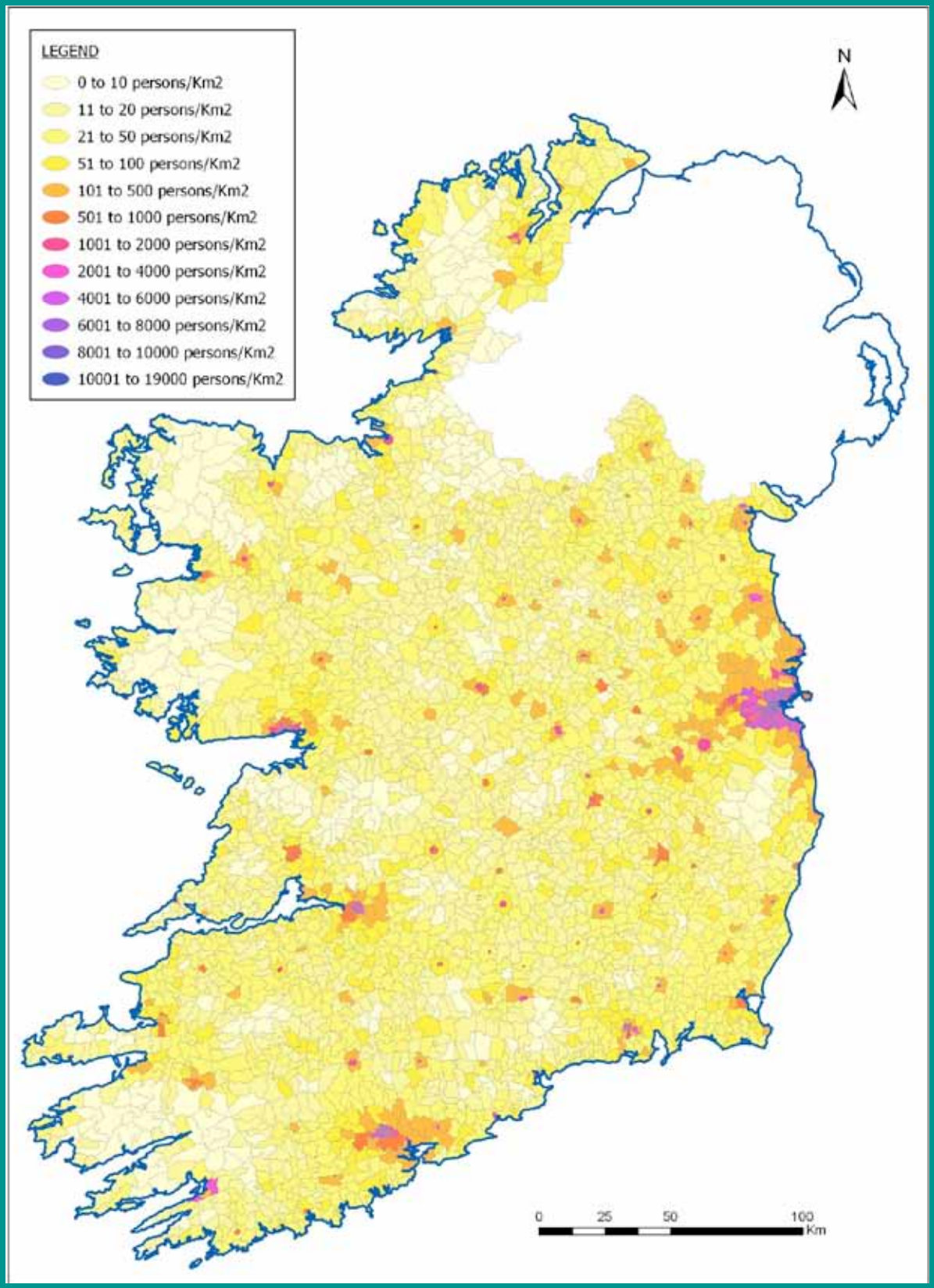


Figure 4.14
National Population Density [38]

[38] Source: Central Statistics Office (2006) Census 2006 Volume 1 - Population Classified by Area

4.11 Water

4.11.1 Introduction

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.

4.11.2 Water Framework Directive

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.

4.11.3 River Basin Districts and Water Bodies

The WFD requires the preparation of a management plan for all the waters in an area called a River Basin District (RBD). For the purpose of implementing the WFD, some 400 river basins on the island of Ireland have been divided into 8 RBDs (Figure 4.15). These comprise areas of land that are drained by a large river or number of rivers and the adjacent estuarine / coastal areas. The management of water resources will be within these RBDs, identified as follows:

- 1 of these lies wholly in Northern Ireland (the North Eastern RBD)
- 4 lie wholly in Ireland (the Eastern RBD, the Western RBD, the South Eastern RBD and the South Western RBD); and,
- 3 are located within both Ireland and Northern Ireland (the Shannon International RBD, the North Western International RBD and the Neagh Bann International RBD).

4.11.4 River Basin Management Plans

Draft River Basin Management Plans were published for each RBD in December 2008 and following a consultation period final Plans have been adopted in 2010 by the Minister for the Environment, Heritage and Local Government.

The Plans provide an indication of the existing status of all our waters and a programme of measures required to improve the status where it is currently less than good and to protect it where it is currently good or better.

Whilst basic measures such as the Habitats Directive and Drinking Water Directive will be applicable to transmission system development additional measures associated with morphological impact will also be relevant.

4.11.5 Water Quality Information[39]

4.11.5.1 River Quality

The water quality in the 13,200 km of river and stream channels surveyed by the EPA, using a biological assessment method, is regarded as a representative indicator of the national status of such waters and reflects any overall trends in conditions. The data are collected on a three-year cycle with the latest such period ending in 2009.

The total river length surveyed in 2006–2008 falling into the four biological water quality classes

[39] Environmental Protection Agency (2009) Water Quality in Ireland 2007 – 2008 Key Indicators of the Aquatic Environment Wexford: EPA

is shown in Figure 4.16. This shows that 70% of channel length to be satisfactory, indicating a slight reduction of just over one per cent since the 2004–2006 monitoring cycle. Less than one per cent (0.5%), the same as in the previous cycle, was classed in the most polluted condition.

Figure 4.17 shows the latest quality breakdown of the proportion of channel length in each River Basin District for 2006–2008 with the corresponding percentage for the previous period (2004–2006) shown in parentheses. As would be expected, the less densely populated and less developed, as well as less intensely farmed, regions have the higher proportions of unpolluted channel. At RBD level, recent improvements, i.e. increase in unpolluted length, are noted in just two RBDs (South Western and South Eastern) while significant deterioration is recorded for two others (North Western and Shannon).

4.11.5.2 Lake Quality

Nutrient enrichment, resulting in eutrophication, is the principal pressure on lake quality in Ireland and is caused by inputs of nutrients which result in plant growth in lakes, particularly planktonic algal forms which contribute towards the reduction of oxygen levels in the water.

The number of lakes assessed in the period 2006–2008 was 433, with a surface area of 1193.6 km^2. Figure 4.18 gives a breakdown of this assessment. The majority of the lakes (354 or 81.7%) examined in the period 2006–2008 were of satisfactory quality, i.e. oligotrophic or mesotrophic status. The water quality of the remaining lakes (79 or 18.3%) was less than satisfactory. Of these, 18 lakes were classified as hypertrophic, i.e. the most enriched status. Lakes in the unenriched (oligotrophic/mesotrophic) status categories accounted for 1079.1 km (90.4%) while a further 58.7 km^2 (5%) of lake surface area was classified as eutrophic and 11.2 km^2 (1%) was classified as hypertrophic.

4.11.5.3 Estuarine and Coastal Water Quality

The water quality of estuarine and coastal waters is assessed using the EPA's Trophic Status Assessment Scheme (TSAS) which detects the occurrence of eutrophication in estuarine and nearshore waters. The trophic status of 89 water bodies from 32 estuarine and coastal areas around Ireland was assessed for the period 2006–2008. The assessment of these waters shows that seven (8%) were classed as eutrophic, seven (8%) as potentially eutrophic, 40 (45%) as intermediate and 35 (39%) were unpolluted.

The location and classification of the individual estuarine and coastal water bodies is shown in Figure 4.19. As can be seen from this figure all of the eutrophic or potentially eutrophic areas are to be found along the east and south coasts with the majority of unpolluted water bodies located on the west and north-west coasts.

4.11.5.4 Shellfish Waters

In accordance with Council Directive 2006/113/EC, on the quality required of shellfish waters, seawater and shellfish samples were taken from designated shellfish waters during 2007 and 2008 and analysed for trace metals and organohalogens. The Directive aims to protect and/or improve the quality of coastal and brackish water bodies in which shellfish live, in order to contribute to the quality of edible shellfish products. Regulations (S.I. No. 55 of 2009) provide for the designation of an additional 49 shellfish waters sites to the previously designated 14, bringing the total to 63 at which environmental quality parameters/parameter groups must be monitored.

Monitoring typically shows Irish shellfish growing waters to be of high quality with respect to the substances monitored – samples from 2007 and 2008 were generally within EU maximum/guide limits.

4.11.5.5 Groundwater Quality

Groundwater accounts for approximately 26% of the total drinking water supplied in Ireland, while the proportion rises to 75% in some counties. The majority of private supplies are reliant on groundwater and may have inadequate treatment or, in many cases, no treatment at all. Therefore, to protect private supplies, and possibly reduce the risk of pollution of public supplies, there needs to be adequate protection of groundwater as a resource.

Between 2007 and 2008 67% of all EPA monitoring locations had faecal coliforms – which are indicative of potential water contamination – in at least one sample. Approximately 34% of the 1,891 samples taken between 2007 and 2008 tested positively for faecal coliforms and 19% of samples had greater than 10 faecal coliforms/100 ml.

Aquifer Productivity and Maximum Faecal Coliform Count/100 ml during 2007–2008 is shown on Figure 4.21. The groundwater monitoring locations in Karst Limestone areas, particularly in the west of Ireland, show the greatest degree of pollution. This reflects the vulnerable nature of the more dynamic flow systems to pollution and the lack of attenuation capacity in extremely vulnerable areas with shallow soil or subsoil.

4.11.5.6 Drinking Water

In Ireland, the majority of drinking water (83%) originates from surface water (i.e. rivers and lakes) with the remainder originating from groundwater (11%) and springs (6%). A breakdown of the water supply zones and the proportion of the population served is illustrated on Figure 4.20. The EPA carries out over 220,000 monitoring tests on the 944 public water supplies, 777 public group water schemes, 706 private group water schemes and 624 small private supplies with the drinking water standards. A summary of the results of these tests is outlined in Figures 4.16, 4.17 and 4.18.

- *E. coli*, an indicator of whether human or animal waste has entered the water supply, was detected in less than 1% of all samples taken in public water supplies; however, *E. coli* was detected in 77 out of 944 public water supplies indicating intermittent contamination of over 8% of public water supplies;
- The quality of group water schemes continues to be inferior to public water supplies. *E. coli* was detected in almost 36% of private group water schemes. This means that 246 out of 688 schemes monitored were contaminated at least once during 2006; and,
- There was satisfactory compliance (99.3%) with the 26 chemical parameters across all water supplies; however, compliance is in need of improvement for some parameters (e.g. fluoride, nitrate and lead) [40].

4.11.5.7 Bathing Waters

The number of designated bathing areas is 131 including both seawater (122) and freshwater (9) sites. Results for 2007 and 2008 show that the quality of bathing water in Ireland was relatively good. In 2008, 93% of sites (122 of 131) complied with the EU mandatory values. This represents a decrease of 4% of bathing sites attaining sufficient water quality compared with 2007.

[40] EPA (2009) The Provision and Quality of Drinking Water in Ireland: A Report for the Years 2007-2008 Wexford: EPA

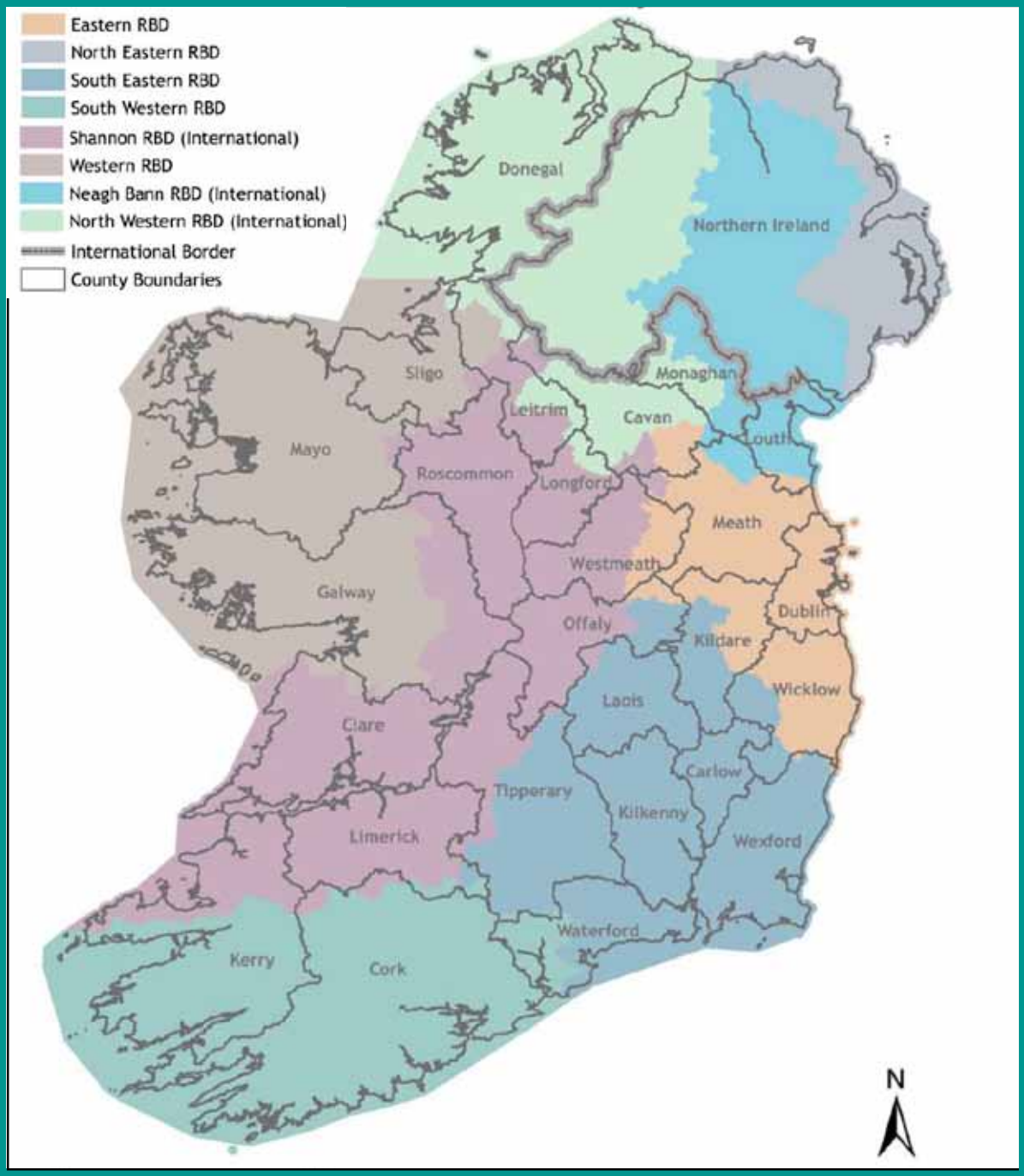


Figure 4.15
National and Northern Ireland River Basin Districts

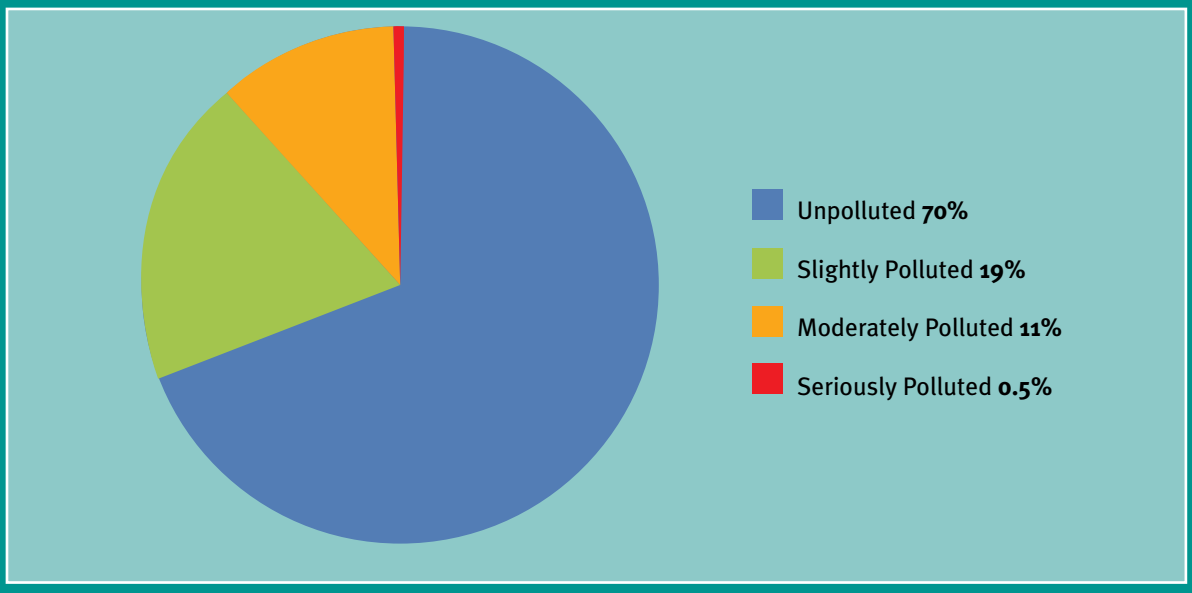


Figure 4.16
National River Quality 2006-2008 – % Channel Length in each Class [41]

Require	Unpolluted	Slightly Polluted	Moderately Polluted	Seriously Polluted
South Western RBD	91% (90%)	8% (8%)	2% (2%)	0% (0.2%)
Western RBD	84% (84%)	9% (10%)	7% (5%)	0.1% (0.1%)
North Western IRBD (South)	62% (71%)	19% (15%)	19% (13%)	0.3% (0.5%)
Shannon IRBD	61% (67%)	26% (22%)	12% (11%)	1.0% (0.7%)
South Eastern RBD	67% (62%)	20% (26%)	12% (12%)	0.3% (0.4%)
Eastern RBD	49% (52%)	33% (28%)	17% (19%)	1.1% (1.3%)
Neagh Bann IRBD (South)	48% (49%)	31% (30%)	21% (20%)	0% (0.6%)

Figure 4.17
National River Quality 2006-2008 – % Channel Length in each Class in each RBD [42]

Lake Quality 2006 - 2008		
Trophic Status	**Number of Lakes**	**Surface Area (km²)**
Oligotrophic	227 (52.4%)	704.8 (59.0%)
Mesotrophic	127 (29.3%)	374.3 (31.4%)
Moderately Eutrophic	28 (6.5%)	44.6 (3.7%)
Highly Eutrophic	9 (2.1%)	12.9 (1.1%)
Strongly Eutrophic	24 (5.5%)	45.8 (3.8%)
Hypertrophic	18 (4.2%)	11.2 (1.0%)

Figure 4.18
National Lake Quality 2006-2008 [43]

[41] Environmental Protection Agency (2009) Water Quality in Ireland 2007 – 2008 Key Indicators of the Aquatic Environment Wexford: EPA
[42] Ibid
[43] Ibid

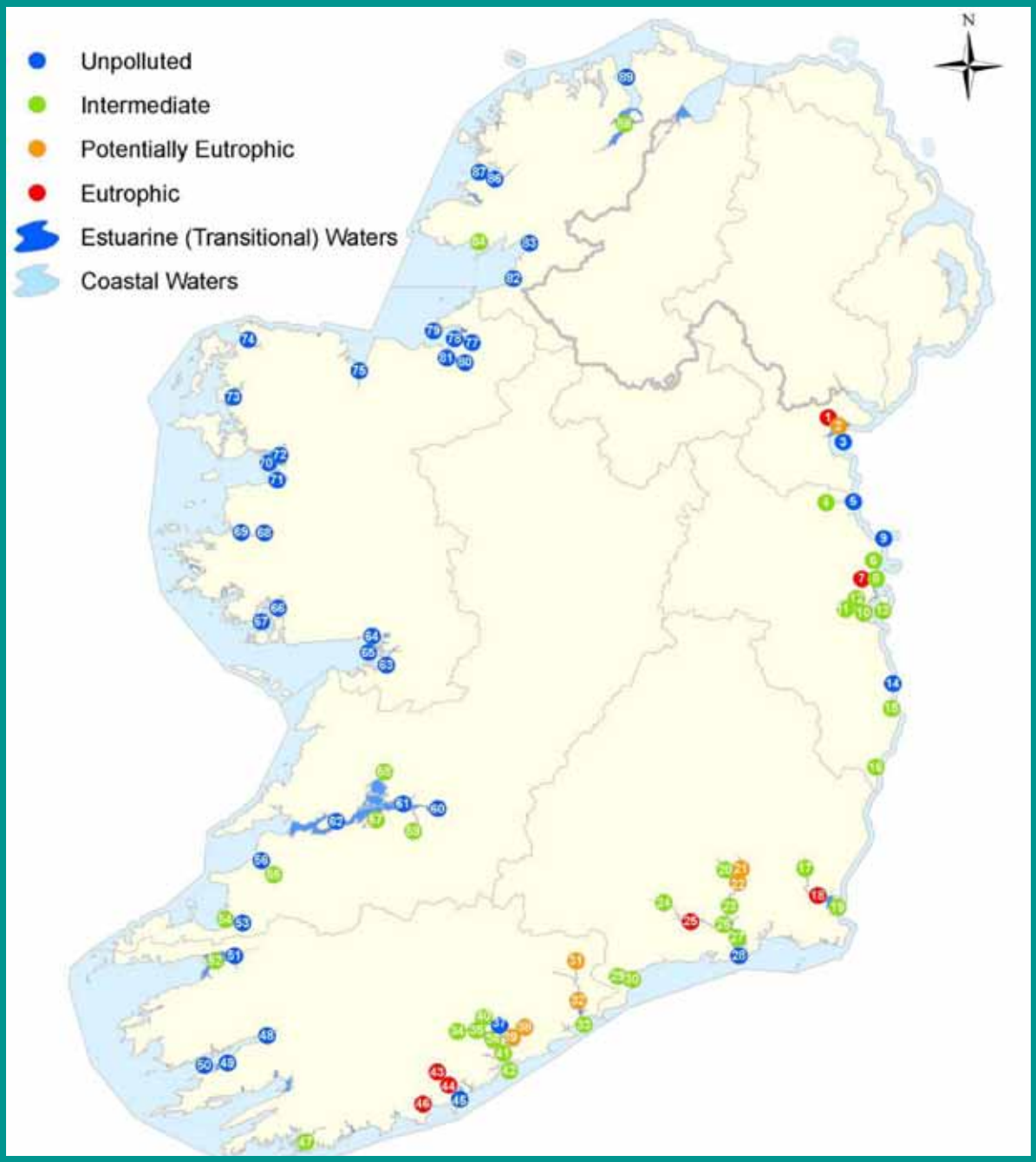


Figure 4.19
National Estuarine and Coastal Quality [44]

Type of Supply	No. of Water Supply Zones [45]	% of Total Population Served
Public Water Supply	944	81.8%
Public Group Water Scheme	777	3.2%
Private Group Water Scheme	706	6.0%
Small Private Supply	624	0.3%
Exempted Supplies [46]	Unknown	8.7%

Figure 4.20
National Water Supply

[44] Ibid.

[45] A water supply zone is a geographically defined area within which drinking water comes from one or more sources and water quality is uniform.

[46] Exempted supplies are supplies that are provided from either an individual supply providing less than 10m3 a day on average or serving fewer than 50 persons and do not supply water as part of a public or commercial activity. Exempted supplies may also be a supply used exclusively for the purposes in respect of which the sanitary authority is satisfied that the quality of the water has no influence, either directly or indirectly, on the health of consumers concerned (e.g. industrial cooling water).

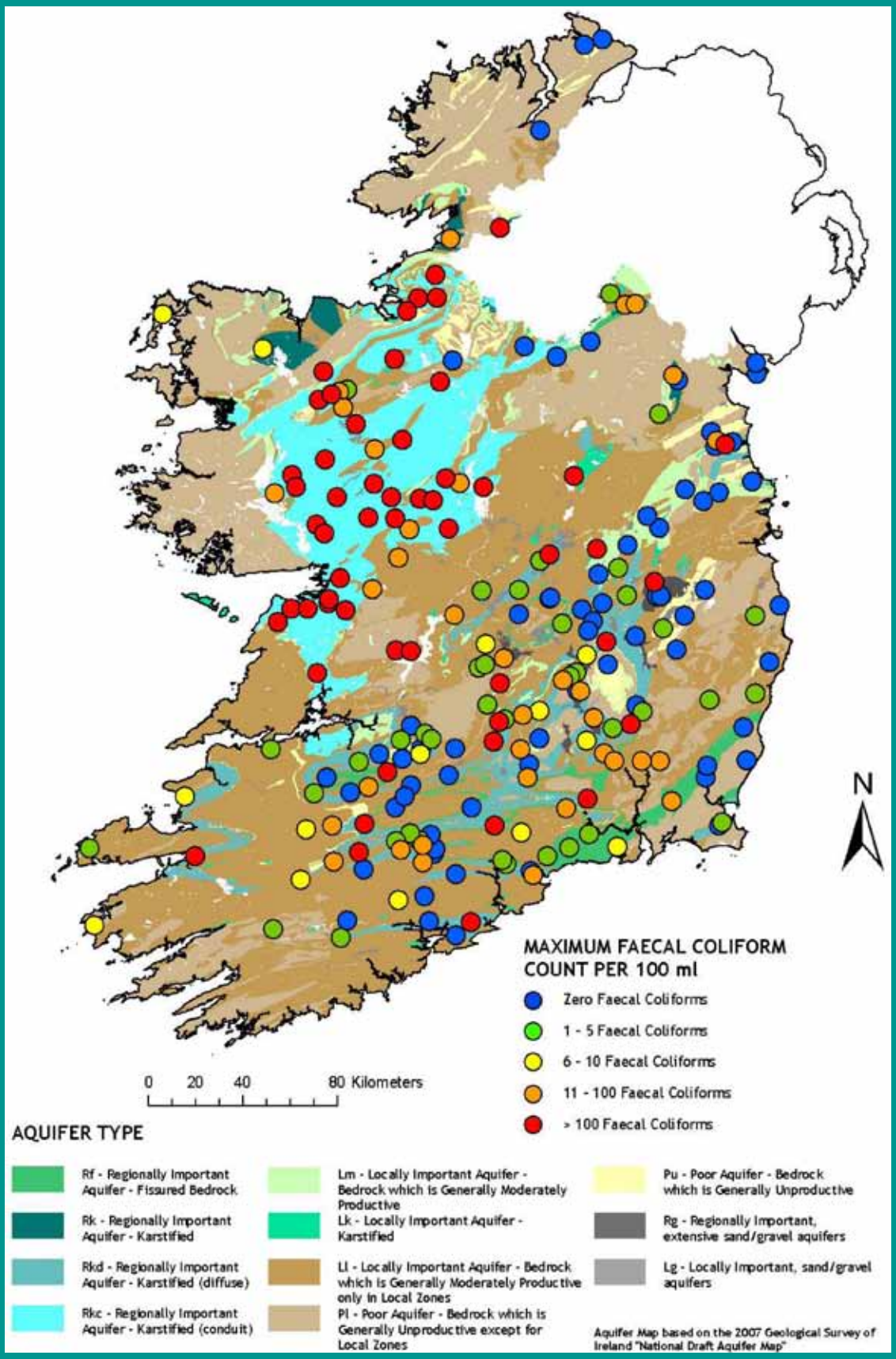


Figure 4.21
National Aquifer Productivity and Maximum Faecal Coliform Count/100ml [47]

[47] Ibid

4.12 Material Assets

4.12.1 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 4.14) which would be likely to be more robust with regard to the accommodation of development under the IP.

Such infrastructure includes:

- Existing transmission lines – 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.

4.12.2 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 4.15). The development limits of existing settlements were digitised from the urban areas which are included on the most recent OSI 1:50,000 Discovery Series mapping (Figure 4.22).

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.

4.12.3 Traffic

County Councils are responsible for regional roads in their County while the National Roads Authority controls National Roads and Motorways.

The Traffic Management Guidelines contain a section on road works, outlining general requirements. The Road Traffic Act 1961 enables the controlling authority to issue directions to persons carrying out roadworks. The DEHLG has published Guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads in April 2002. Any proposed working methods will have to embrace the principles outlined in this publication.

Given the remote nature of part of the transmission line network, it will be necessary to gain access to lands from all classifications of roads, i.e. National roads to minor roads.

Traffic issues, such as construction and post construction journey numbers and traffic volumes, will be considered by lower tier assessments and addressed in Traffic Management Plans.

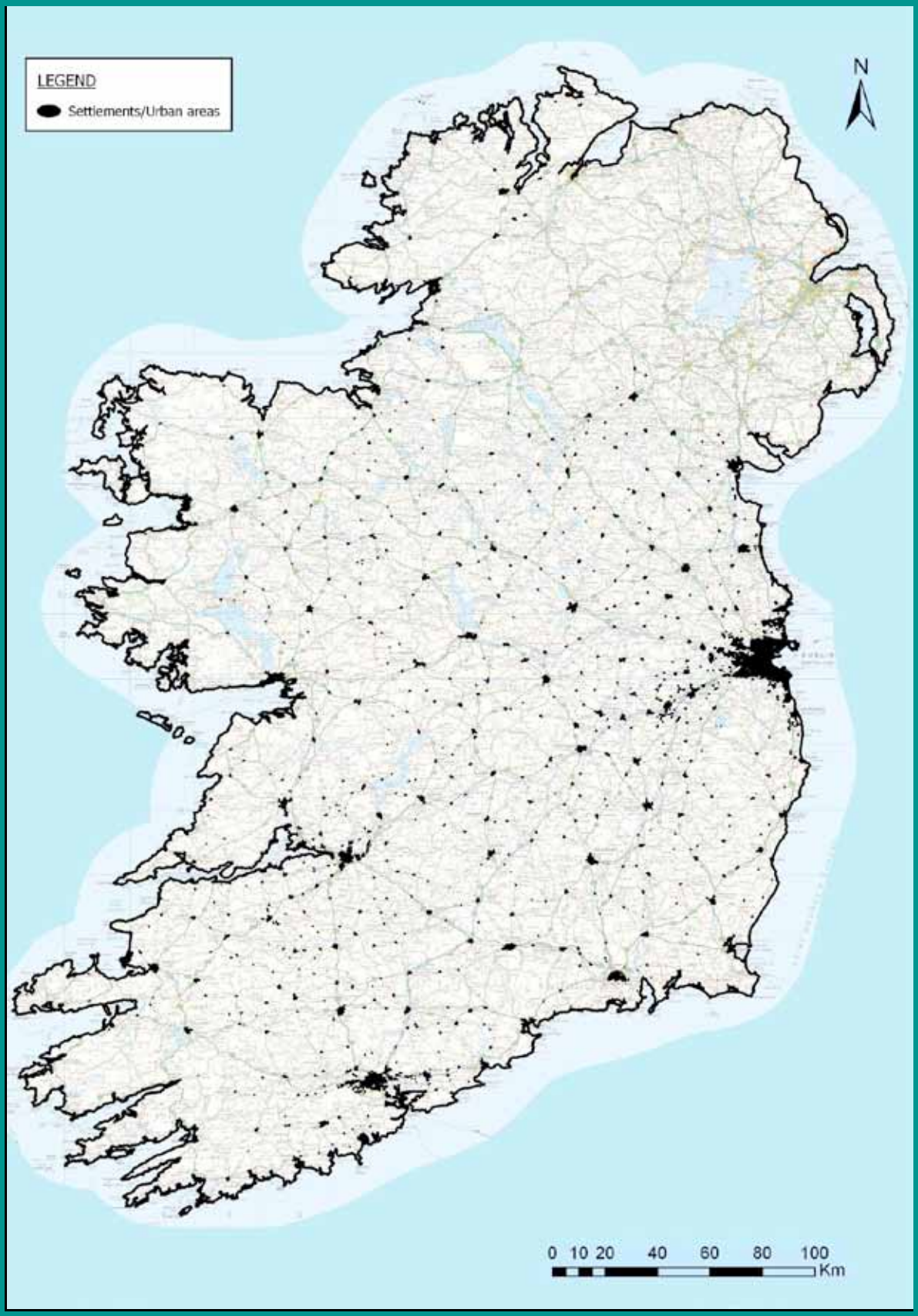


Figure 4.22
Settlements/Urban Areas [48]

[48] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

4.13 Soil

4.13.1 Introduction

Soil is the top layer of the earth's crust. It is formed by mineral particles, organic matter, water, air and living organisms. Soil can be considered as a non-renewable natural resource because it develops over very long timescales. It is an extremely complex, variable and living medium and performs many vital functions including: food and other biomass production, storage, filtration and transformation of many substances including water, carbon, and nitrogen. Soil has a role as a habitat and gene pool, serves as a platform for human activities, landscape and heritage and acts as a provider of raw materials. Such functions of soil are worthy of protection because of their socio-economic as well as environmental importance.

Soils in any area are the result of the interaction of various factors, such as parent material, climate, vegetation and human action.

To date, there is no legislation which is specific to the protection of soil resources. However, there is currently an EU Thematic Strategy on the protection of soil which includes a proposal for a Soil Framework Directive, which proposes common principles for protecting soils across the EU.

4.13.2 Peat Soils

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 (Section 4.7) 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 4.15.

4.13.3 Geological Features

There is no comprehensive nationally published database of important geological features – the GSI and the DAHG are currently identifying sites of geological interest across the Country that will be proposed as Natural Heritage Areas.

4.13.4 Sealing of Soil and Mineral Resources

Article 5 of the proposal of the Soil Framework Directive states that, for the purposes of preserving the various functions of soil, sealing, and the development of artificial surfaces on top of soil resources, should be limited. The proposed Directive also states that soil should be used in a sustainable manner which preserves its capacity to deliver ecological, economic and social services, while maintaining its functions so that future generations can meet their needs.

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 assessment does not consider individual quarries; this should be addressed during detailed routeing studies.

4.13.5 Soil Compaction and Drainage

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.

4.14 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 buffer [49] either side of the feature was integrated into the Overall Development Potential Mapping (see Section 4.15) 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.

[49] 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).

4.15 Overall Development Potential Rating

Overall Development Potential Rating [50] mapping 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 (see Section 4.14) 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.

Eight constraint factors were attributed a rating of 10 points:

- SACs;
- SPAs;
- Ramsar Sites;
- National Parks;
- UNESCO Sites;
- Elevation › 200m;
- Slope › 30 Degrees; and,
- Settlements [51]

Three constraint factors were attributed a rating of 5 points:

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

Two 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).

Two 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 4.23 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.

[50] also referred to as Overall Constraints Rating

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

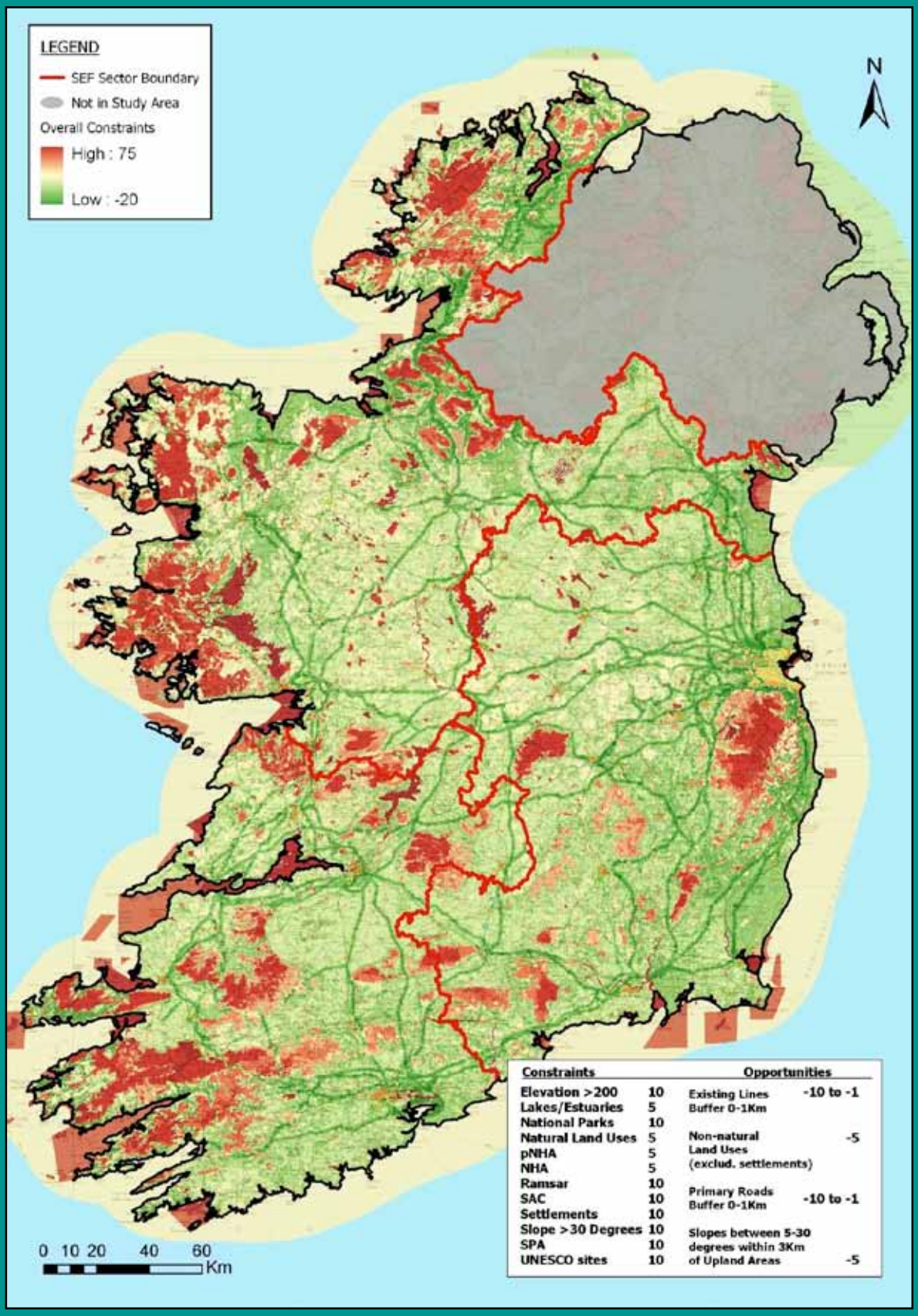


Figure 4.23
National Overall Development Potential Rating [52]

[52] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

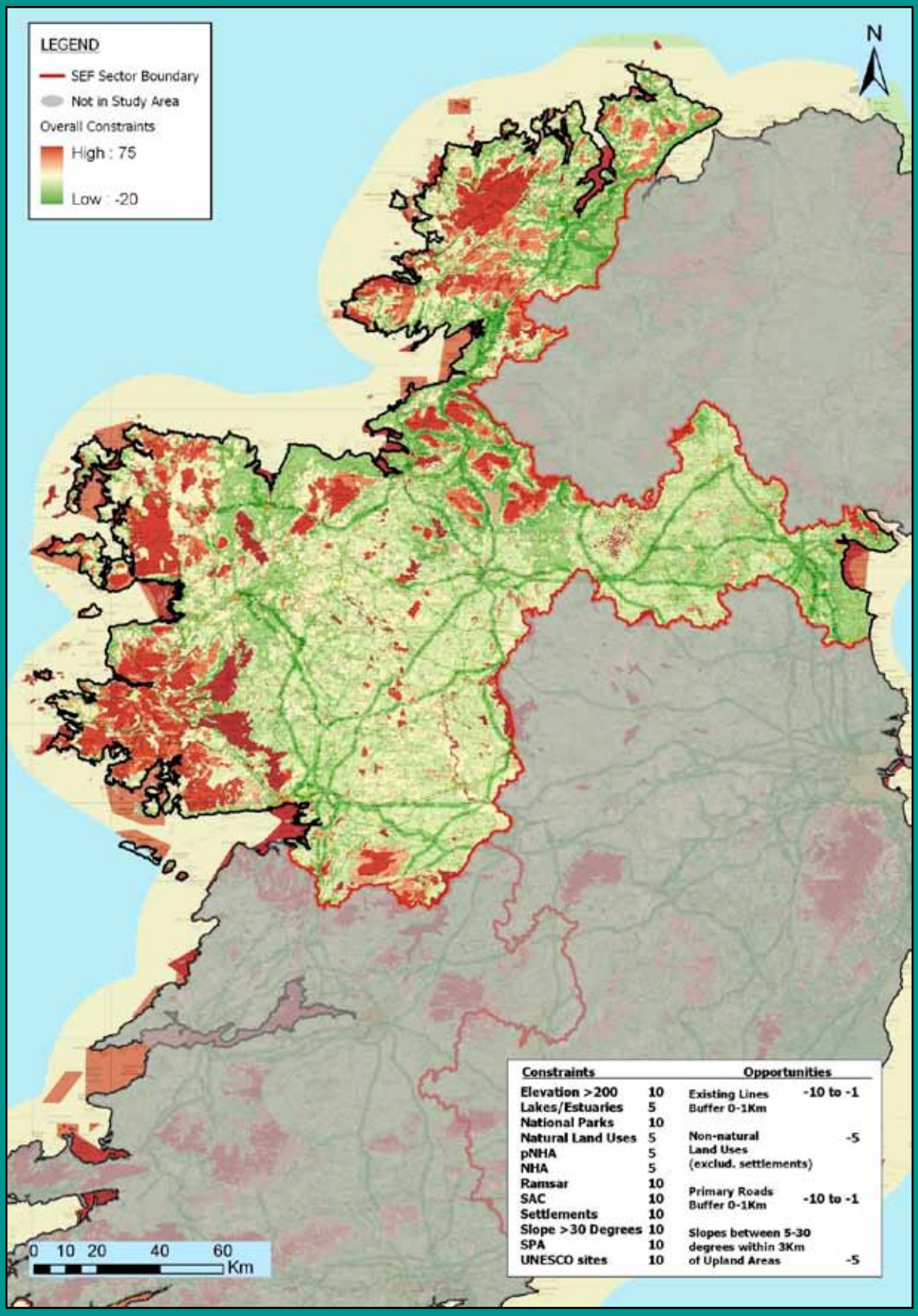


Figure 4.24
Sector 1 (The Border and West) Overall Development Potential Rating [53]

[53] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

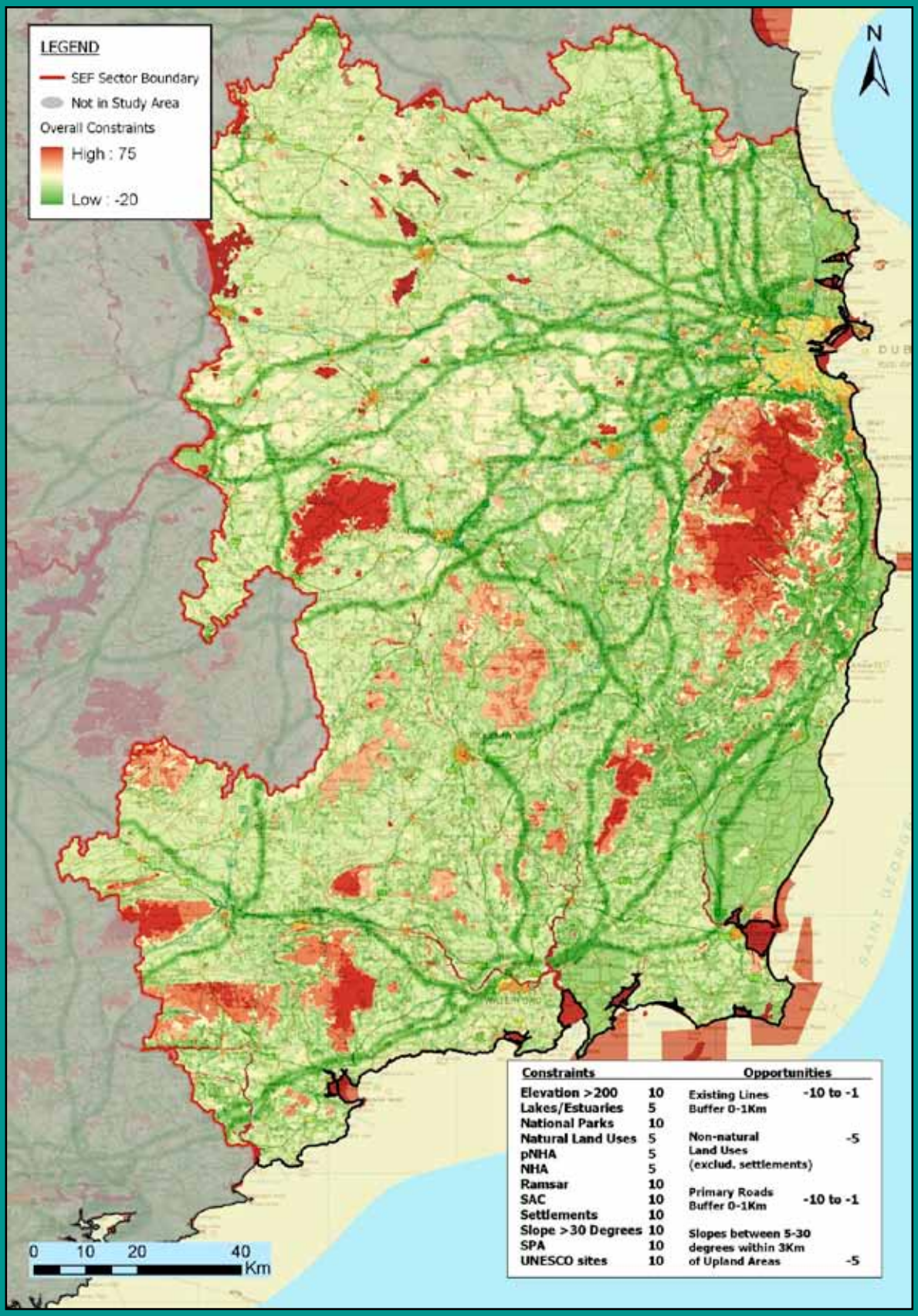


Figure 4.25
Sector 2 (The Midland, Mid-East, South-East and Greater Dublin) Overall Development Potential Rating [54]

[54] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

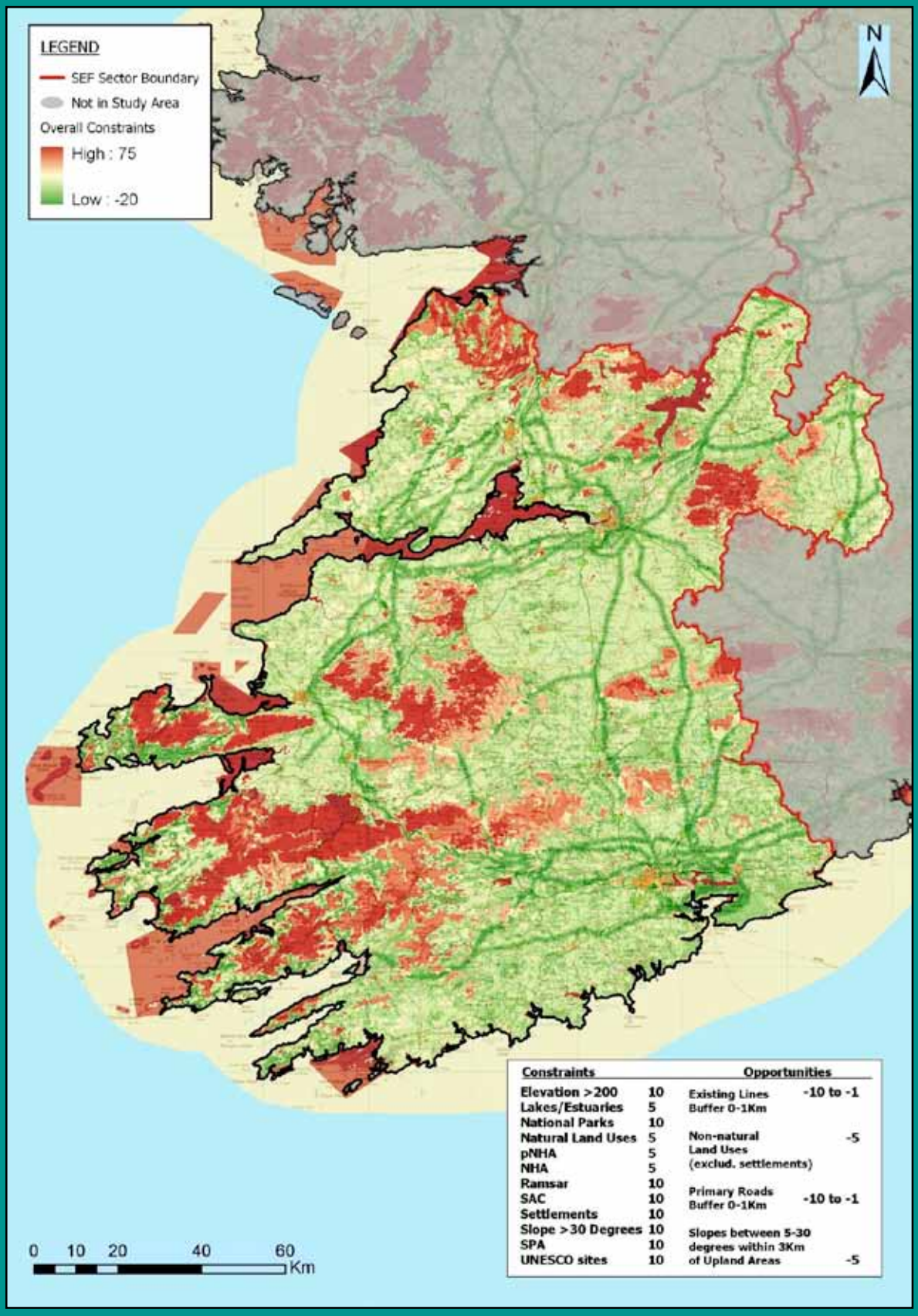


Figure 4.26
Sector 3 (The Mid-West and South-West) Overall Development Potential Rating [55]

[55] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping

Section 5 - Strategic Environmental Objectives

5.1 Introduction

Strategic Environmental Objectives (SEOs) are methodological measures against which the environmental effects of the Implementation Programme (IP) for Grid25 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 are distinct from the objectives of the IP and are developed from international and national policies which generally govern environmental protection objectives. Such policies include those of various European Directives which have been transposed into Irish law and which are intended to be implemented across the country.

The SEA Directive requires that the evaluation of the IP be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected. In compliance with this requirement the SEA will focus upon the most relevant aspects of the environmental characteristics. The SEOs are linked to indicators which can facilitate monitoring the environmental effects of the IP, as well identifying targets which the IP can help work towards.

5.2 Biodiversity, Flora and Fauna

5.2.1 International, European and National Strategic Actions

5.2.1.1 Habitats Directive 1992

The European Council Directive on the Conservation of natural habitats and of wild fauna and flora (92/43/EEC), referred to as the Habitats Directive, aims to ensure the conservation of certain natural habitats and species at favourable conservation status.

Special Areas of Conservation (SACs) are designated and protected under the Habitats Directive 1992 (92/43/EEC) due to their conservation value for habitats and species of importance in the European Union.

The Habitats Directive establishes Natura 2000, a network of protected areas throughout the EU. SACs together with Special Protection Areas (SPAs) – which are designated under the 1979 and 2009 Birds Directives – make up the Natura 2000 network of protected sites.

Article 6 of the Habitats Directive provides for the need to undertake Appropriate Assessments of plans or projects which have the potential to impact upon Natura 2000 sites.

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. The Directive requires that ecological connectivity and areas of ecological value outside the network of designated ecological sites are maintained, and it recognises the need for the management of these areas through land use planning and development policies.

The integration of the requirements of Article 6 of the Habitats Directive into the Planning and Development Acts and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) puts the requirement for Appropriate Assessment into context for both projects and plans.

5.2.1.2 Birds Directive 1979

The 1979 European Council Directive on the Conservation of Wild Birds (79/409/EEC), referred to as the Birds Directive, – as well as its amending acts (particularly, Directive 2009/147/EC) – seeks to protect, manage and regulate all bird species naturally living in the wild within the European territory of the Member States, including the eggs of these birds, their nests and their habitats; and to regulate the exploitation of these species.

The Directive places great emphasis on the protection of habitats for endangered as well as migratory species, especially through the establishment of a coherent network of Special Protection Areas (SPAs).

SPAs are protected under the Directive and have been designated in Ireland by the DAHG due to their conservation value for birds of importance in the European Union.

5.2.1.3 UN Convention on Biological Diversity 1992

The United Nations Convention on Biological Diversity 1992 requires the promotion of the conservation and sustainable use of biodiversity.

5.2.1.4 National Biodiversity Plan 2002

The preparation and implementation of Ireland's National Biodiversity Plan 2002[56] complies with an obligation under the UN Convention on Biological Diversity. The overall goal of the Plan is to secure the conservation, including where possible the enhancement and sustainable use, of biological diversity in Ireland and to contribute to conservation and sustainable use of biodiversity globally. Objectives following on from this goal are to:

- Conserve habitat diversity, including all sites of special biodiversity importance;
- Conserve species diversity;
- Conserve genetic diversity, both wild and domesticated; and,
- Contribute to the conservation and sustainable use of biodiversity and to advancing other obligations of the CBD in the EU, regionally and internationally.

Comments were invited by DEHLG in the second half of 2010 on a new Draft Second National Biodiversity Plan.

5.2.1.5 Convention on Wetlands of International Importance 1971

The Convention of Wetlands of International Importance, especially as Water Fowl Habitat, was established at Ramsar in 1971 and ratified by Ireland in 1984. The main aim of the Convention is to secure the designation by each contracting state of wetlands in its territory for inclusion in a list of wetlands of international importance for waterfowl. This entails the commitment of each contracting state to a policy of protection and management of the designated wetlands, and of formulating and implementing planning so as to promote the conservation of designated wetlands and, as far as possible, the wise use of wetlands in its territory.

5.2.1.6 UNESCO World Heritage Sites

Ireland ratified the World Heritage Convention concerning the Protection of the World Cultural and Natural Heritage in 1991. The Convention is an international agreement which was adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1972. The Convention established the World Heritage List which comprises sites of outstanding universal value – cultural, natural or mixed. The Convention defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List and sets out the duties of States Parties in identifying potential sites and their

[56] Department of Arts, Heritage, Gaeltacht and the Islands (2002) National Biodiversity Plan Dublin: Government of Ireland

role in protecting and preserving them. By signing the Convention, Ireland has pledged to conserve not only the World Heritage sites situated on its territory, but also to protect its national heritage.

5.2.1.7 UNESCO Biosphere Reserves

Biosphere reserves are areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use. They are internationally recognised, nominated by national governments, and remain under sovereign jurisdiction of the states where they are located. A biosphere reserve is a representative ecological area with 3 mutually reinforcing functions: conservation, sustainable development, and logistic support for scientific research and education. Collectively, all biosphere reserves form a World Network linked by exchanges of experience and knowledge. They are part of a UNESCO scientific programme. The biosphere reserve concept can be used as a framework to guide and reinforce projects to enhance people's livelihoods and ensure environmental sustainability.

5.2.1.8 Wildlife Act 1976 and Wildlife (Amendment) Act 2000

The basic designation for wildlife is the Natural Heritage Area (NHA). They cover nationally important semi-natural and natural habitats, landforms or geomorphological features, wildlife plant and animal species or a diversity of these natural attributes. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation. Proposed NHAs (pNHAs) were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated – designation will proceed on a phased basis over the coming years.

5.2.1.9 IUCN and National Parks

In 1969, the International Union for the Conservation of Nature (IUCN) recommended that all governments agree to reserve the term "National Park" to areas sharing the following characteristics:

- Where one or several ecosystems are not materially altered by human exploitation and occupation; where plant and animal species, geomorphological sites and habitats are of special scientific, educational and recreational interest or which contain a natural landscape of great beauty;
- Where the highest competent authority of the country has taken steps to prevent or eliminate as soon as possible exploitation or occupation in the whole area and to enforce effectively the respect of ecological, geomorphological or aesthetic features which have led to its establishment;
- Where visitors are allowed to enter, under special conditions, for inspirational, educational, cultural and recreational purposes.

5.2.1.10 'Wildlife Site' as defined by the Planning and Development Act 2010

The Planning and Development Act 2000, as amended, defines a 'wildlife site' as:

(a) an area proposed as a natural heritage area and the subject of a notice made under section 16(1) of the Wildlife (Amendment) Act 2000;

(b) an area designated as or proposed to be designated as a natural heritage area by a natural heritage area order made under section 18 of the Wildlife (Amendment) Act 2000;

(c) a nature reserve established or proposed to be established under an establishment order made under section 15 (amended by section 26 of the Wildlife (Amendment) Act 2000) of the Wildlife Act 1976;

(d) a nature reserve recognised or proposed to be recognised under a recognition 5 order made under section 16 (amended by section 27 of the Wildlife (Amendment) Act 2000) of the Wildlife Act 1976, or

(e) a refuge for fauna or flora designated 10 or proposed to be designated under a designation order made under section 17 (amended by section 28 of the Wildlife (Amendment) Act 2000) of the Wildlife Act 1976.

This definition has been taken into account during the formulation of SEO B3.

5.2.1.11 European Communities (Birds and Natural Habitats) Regulations 2011

The European Communities (Birds and Natural Habitats) Regulations 2011 consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in the CJEU judgements.

5.2.2 SEOs, Indicators and Targets

SEO B1:	To ensure compliance with the Habitats Directive with regard to the protection of Natura 2000 Sites and Annexed habitats and species[57]
Indicator B1:	Conservation status of habitats and species as reported upon under Article 17 of the Habitats Directive
Target B1:	Maintenance of favourable conservation status for all habitats and species protected under national and international legislation to be unaffected by implementation of the IP [58]

SEO 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
Indicator B2:	Percentage loss of functional connectivity without remediation resulting from development provided for by the IP
Target B2:	No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the IP

[57] 'Annexed habitats and species' refers to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

[58] Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
(a) no alternative solution available;
(b) imperative reasons of overriding public interest for the plan to proceed; and,
(c) adequate compensatory measures in place

SEO B3:	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites[59]
Indicator 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
Target B3:	Avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites resulting from development provided for by the IP

5.3 Landscape

There is currently no published national landscape mapping for Ireland.

Landscape Constraints Rating mapping has been prepared as part of the Strategic Environmental Constraints Mapping and this provides a basis for the evaluation provided in this SEA Environmental Report. The Landscape Constraints Rating mapping combines Visual Sensitivity Mapping (as identified from the natural land cover types in the CORINE dataset) and the Topographical Mapping (developed from the 50m digital terrain model and catchment watersheds). Each of the landscape constraints were given a value and overlaid upon each other.

5.3.1 SEO, Indicator and Target

SEO 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[60]
Indicator L1:	Number of complaints received from statutory consultees regarding avoidable impacts on the landscape resulting from development provided for by the IP
Target L1:	No avoidable impacts on the landscape resulting from development provided for by the IP

5.4 Cultural Heritage

5.4.1 Archaeological Heritage

5.4.1.1 Valletta Convention 1992

The European Convention on Protection of the Archaeological Heritage known as the Valletta Convention of 1992. This was ratified by Ireland in 1997 and requires that appropriate consideration be given to archaeological issues at all stages of the planning and development process.

5.4.1.2 National Heritage Plan for Ireland 2002

The core objective of the National Heritage Plan for Ireland 2002[61] is to protect Ireland's heritage. In this regard the polluter pays and the precautionary principle are operable.

[59] See definition of 'Wildlife Sites' under Section 5.2.1.10

[60] The Landscape Constraints Rating mapping factors are:
- Elevation › 200m;
- Forestry Landcover Areas;
- Slope › 30 Degrees;
- Lakes and Estuaries; and,
- Other Natural Landcover Types.

[61] Department of Arts, Heritage, Gaeltacht and the Islands (2002) National Heritage Plan for Ireland Dublin: Government of Ireland

5.4.1.3 National Monuments Acts

Archaeology in Ireland is protected under the National Monuments Acts 1930 to 2004.

Recorded monuments are protected by inclusion on the list and marked on the map which comprises the Record of Monuments and Places (RMP) set out County by County under Section 12 of the National Monuments (Amendment) Act, 1994 by the Archaeological Survey of Ireland. The definition includes Zones of Archaeological Potential in towns and all other monuments of archaeological interest which have so far been identified.

Any works at, or in relation to a recorded monument requires two months' notice to the Department of the Environment, Heritage and Local Government under section 12 of the National Monuments (Amendment) Act, 1994.

Direct impacts on national monuments in State or Local Authority care or subject to a preservation order require the consent of the Minister for the Environment, Heritage and Local Government under Section 14 of the National Monuments Act 1930 as amended by Section 5 of the National Monuments (Amendment) Act 2004.

5.4.2 Architectural Heritage

5.4.2.1 Planning and Development Act 2000

Records of Protected Structures (RPSs) are legislated for under Section 51 of the Planning and Development Act 2000 and include structures which form part of the architectural heritage and which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

5.4.3 SEO, Indicators and Targets

SEO CH1:	To avoid unauthorised impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPSs)
Indicator 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
Indicator 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
Target CH1i:	No 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
Target CH1ii:	No 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

5.5 Climatic Factors

5.5.1 Energy White Paper

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 33% of electricity consumption from renewable energy by 2020 (this target was subsequently increased to 40%).

The White Paper also includes 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,
- The publishing of a Grid Development Strategy by EirGrid (Grid25) which is required to be aligned to and facilitate greater certainty in relation to, inter alia, spatial strategy and regional development objectives.

5.5.2 Kyoto Protocol

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% 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.

5.5.3 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.

5.5.4 SEO, Indicator and Target

SEO C1:	To help to facilitate the achievement of higher level targets contained in the Government's Energy White Paper Delivering a Sustainable Energy Future for Ireland - the Energy Policy Framework 2007-2020 and targets relating to the Kyoto Protocol
Indicator C1:	Percentage electricity consumption from renewable energy
Target C1:	Contribute towards an increase in electricity consumption from renewable energy (ultimately 40% by 2020)

5.6 Population and Human Health

5.6.1.1 Introduction

The impact of implementing the IP on human health will be determined by the impacts which the IP will have upon environmental vectors. Such potential actual and/or perceived impacts could include: temporary construction noise along the length of any route corridors selected, operational noise impact in the vicinity of any proposed substations and from the power lines themselves, or spillages which impact upon bathing or drinking waters; or, those arising from electromagnetic fields.

5.6.1.2 Emission Limits

Emission limits for discharges to air, soil and water are set with regards to internationally recognised exposure limit values. These are generally set to be many times the safe exposure limit – in order to provide protection. In the event that the IP began to have adverse health effects on surrounding populations it is likely that it would have been identified as being in breach of such emission standards at a very early stage – and long before the manifestation of any adverse health effects in the population. Nonetheless for the sake of consistency with the requirements of the SEA Regulations this section includes an SEO, indicator and target for health.

5.6.1.3 Population and Settlements

The Overall Development Potential Rating mapping included in the Strategic Environmental Constraints Mapping and shown in Section 4.15 of this report has integrated the country's main population areas and areas of high building density.

Settlement areas provide an opportunity for routeing 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.

Actual and perceived environmental effects on population and human health include those relating to noise and electromagnetic fields.

5.6.2 SEO, Indicators and Targets

SEO HH1:	Minimise proximity of development to concentrations of population in order to reduce actual and perceived environmental effects

Indicator 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
Target HH1i:	No spatial concentrations of health problems arising from environmental factors resulting from development provided for by the IP
Indicator HH1ii:	Maximum noise level emanating from the installation at the façade of any near sited residential properties
Target HH1ii:	Ensure that the maximum noise level emanating from the installation does not exceed 30 dB LAeq at the façade of any near sited residential properties, in line with the requirements of BS 4142 (1997), "Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas"
Indicator 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
Target HH1iii:	Ensure compliance of the standard route planning criteria adopted for the development of the Network with all authoritative international and national guidelines for ELF EMF exposure

5.7 Water

5.7.1 The Water Framework Directive 2000

Since 2000, Water Management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). The WFD has been transposed into Irish legislation by the European Communities (Water Policy) Regulations 2003 (SI No. 722 of 2003), as amended. 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 protect, enhance and restore all waters with the aim of achieving good status by 2015.

5.7.2 Quality Standards for Surface Waters

The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009) is the final major piece of legislation needed to support the WFD and gives statutory effect to Directive 2008/105/EC on environmental quality standards in the field of water policy. The Surface Waters Regulations also give further effect to the WFD, establishing a framework for Community action in the field of water policy and Directive 2006/11/EC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.

The Surface Waters Regulations apply to all surface waters – including lakes, rivers, canals, transitional waters, and coastal waters – and provide, inter alia, for:

- The establishment of legally binding quality objectives for all surface waters and environmental quality standards for pollutants;
- The examination and where appropriate, review of existing discharge authorisations by Public Authorities to ensure that the emission limits laid down in authorisations support compliance with the new water quality objectives/standards;
- The classification of surface water bodies by the EPA for the purposes of the Water Framework Directive;
- The establishment of inventories of priority substances by the EPA, and;
- The drawing up of pollution reduction plans by coordinating local authorities (in consultation with the EPA) to reduce pollution by priority substances and to cease and/or phase out discharges, emissions or losses of priority hazardous substances.

In order to satisfy the overall WFD objective of 'good status', a surface water body must achieve the requirements of the good ecological[62] and chemical[63] status.

5.7.3 Quality Standards and Threshold Values for Ground Water

Detailed provisions to achieve the aims of the WFD for ground water have been presented in a Groundwater Directive (Directive 2006/118/EC on the protection of groundwater against pollution and deterioration).

This Directive sets up environmental objectives of good groundwater quantity and good groundwater quality (chemical status), as well as ensuring a continuity to the 1980 Groundwater Directive (Directive 80/68/EEC on the protection of groundwater against pollution caused by dangerous

[62] Ecological status comprises: biological quality elements, physiochemical conditions and hyrdomorphological quality elements. The overall ecological status of the water body is determined by the lowest level of status achieved across all quality elements.

[63] Chemical status assessment is based on compliance with the standards laid down for priority substances by Directive 2008/105/EC on environmental quality standards in the field of water policy (the Surface Waters Regulations give effect to the environmental standards established by this Directive).

substances) which is due to be repealed under the WFD by the end of 2013.

Article 3 of the 2006 Directive requires that the assessment of the chemical status of groundwater use both quality standards identified in Annex I of the Directive and threshold values to be set by individual member states.

Groundwater quality standards are environmental quality standards expressed as the concentration of a particular pollutant, group of pollutants or indicator of pollution in groundwater, which should not be exceeded in order to protect human health and the environment. Annex I of the Directive sets standards for two pollutants: Nitrates - 50mg/l - and; Active substances in pesticides[64], including their relevant metabolites, degradation and reaction products - 0,1 µg/l and 0,5 µg/l (total[65]).

Irish groundwater threshold values[66] are currently in the process of being set by the EPA.

5.7.4 Bathing Water

EU Mandatory and Guide levels are set out for bathing waters in the 1976 Bathing Water Directive (Directive 76/160/EEC) as implemented in Ireland by the Quality of Bathing Water Regulations, 1992, (SI No. 155 of 1992). The purpose of the Bathing Water Regulations is the protection of human health.

Mandatory Values are values which must be observed if the bathing area is to be deemed compliant with the Directive. Compliance with guide values exceeds guidance with mandatory values and can be regarded as quality objectives which bathing sites should endeavour to achieve.

A new 2006 Bathing Water Directive (2006/7/EC) which entered into force in March 2008, revises the 1976 Directive with the purpose of preserving, protecting and improving the quality of the environment and protecting human health by complementing the Water Framework Directive (2000/60/EC). The 2006 Bathing Water Directive is implemented by the Bathing Water Quality Regulations 2008 (SI No. 79) of 2008.

The 2006 Directive establishes a new classification system for bathing water quality based on four classifications 'poor', 'sufficient', 'good' and 'excellent' and generally requires that a classification of 'sufficient' be achieved by 2015 for all bathing waters.

The new classification system is currently being introduced and related to current EU guide and mandatory standards specified in the 1976 EU Bathing Water Directive (76/160/EEC) by the EPA[67]. The 'good' classification is related to compliance with guide and mandatory values, the 'sufficient' classification is related to compliance with the mandatory values only, whereas the 'poor' classification reflects non-compliance with mandatory values. The 1976 Directive does not have bathing water standards that equate to an 'excellent' classification.

[64] 'Pesticides' means plant protection products and biocidal products as defined in Article 2 of Directive 91/414/EEC and in Article 2 of Directive 98/8/EC, respectively.

[65] 'Total' means the sum of all individual pesticides detected and quantified in the monitoring procedure, including their relevant metabolites, degradation and reaction products.

[66] Threshold values are to be established by Member States for all pollutants and indicators of pollution which characterise groundwater bodies classified as being at risk of failing to achieve good groundwater chemical status under the WFD. Threshold values are required to be established in a way that, should the monitoring results at a representative monitoring point exceed the thresholds, this will indicate a risk that one or more of the conditions for good groundwater chemical status - with regard to the ability of groundwater to support human uses and with regard to waters used for the abstraction of drinking water - are not being met.

[67] Transitional measures are in place until the new Bathing Water Quality Regulations 2008 (SI No. 79 of 2008) are fully implemented.

5.7.5 SEOs, Indicators and Targets

Note that these also relate to the quality of soils.

SEO W1:	To prevent impacts upon the status of surface waters in line with the recommendations outlined in the River Basin Management Plans
Indicator 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)
Target W1i:	Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status'[68] by 2015
Indicator W1ii:	Poor, Sufficient, Good and Excellent classifications of bathing water as set by Directive 2006/7/EC
Target W1ii:	Not to cause deterioration in bathing waters or affect the ability of bathing waters to achieve – as a minimum – the 'Sufficient' classification as set by Directive 2006/7/EC, and where possible the 'Good' or 'Excellent' classifications

5.8 Material Assets and Soil

5.8.1 Soil, Mineral and Land Sterilisation

Article 5 of the proposal of the Soil Directive states that, for the purposes of preserving the various functions of soil, sealing (the development of artificial surfaces on top of soil resources) should be limited. The proposed Directive also states that soil should be used in a sustainable manner which preserves its capacity to deliver ecological, economic and social services, while maintaining its functions so that future generations can meet their needs.

The development of transmission networks and associated development can result in the sealing off or sterilisation of soil and mineral resources. Such development could also sterilise lands within or in proximity to existing settlements.

In addition, sterilisation and compaction of topsoil could alter the infiltration and drainage characteristics of the soils.

5.8.2 Existing Infrastructure

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

5.8.3 Traffic

Traffic issues will be considered by lower tier assessments and addressed in Traffic Management Plans.

[68] Good status as defined by the WFD equates to approximately the following in the current national schemes of classification as set out by the EPA:

- Q4 in the biological classification of rivers;
- Mesotrophic in the classification of lakes; and,
- Unpolluted status in the Assessment of Trophic Status of Estuaries and Bays in Ireland (ATSEBI).

5.8.4 SEO, Indicators and Targets

SEO MS1:	To minimise effects upon the sustainable use of land, mineral resources or soils
Indicator MS1i:	The extent of greenfield areas sterilised by the development of new transmission lines and associated infrastructure
Indicator 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
Target MS1i:	To minimise the extent of lands sterilised by the development of new transmission lines and associated infrastructure
Target MS1ii:	To maximise the reinforcement of existing transmission lines and the integration of new transmission infrastructure in proximity (0-1km) to motorways and dualled national primary roads

220 kV double circuit transmission line

Section 6 - Description of Alternative Scenarios

6.1 Introduction

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.

This section identifies and describes different alternative development scenarios, taking into account higher level objectives as well as the geographical scope of the IP.

The scenarios are evaluated in Section 7.
The provisions of the IP which are required to realise the selected alternative are evaluated in Section 8.
Mitigation measures to prevent or reduce significant adverse effects posed by the IP are identified in Section 9 – these have been integrated into the IP.

6.2 National Transmission Network Development Scenarios

6.2.1 Introduction

The following summarises 3 'Scenarios'[69] for the future development of the National Transmission Network. These are neither predictions nor preferences – the 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.

6.2.2 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).

6.2.3 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.

6.2.4 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, combined 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).

[69] 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.

Section 7 - Evaluation of Alternative Development Scenarios

7.1 Introduction

This section determines the relative merits of the three alternative scenarios described in Section 6 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.

7.2 Methodology

7.2.1 Use of Baseline

The written description and supporting maps of the environmental baseline in Section 4 of this ER are used in the evaluation. In particular, the National Overall Development Potential Rating Mapping of environmental sensitivities and opportunities (see Section 4.15) – reproduced as Figure 7.1 – is used in order 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 Overlay Mapping and the mapping of individual environmental components were considered by EirGrid during the preparation of the IP.

7.2.2 Use of Strategic Environmental Objectives

The Strategic Environmental Objectives (SEOs) which are identified in Section 5 are also used for the evaluation.

Based on an understanding of existing and emerging environmental conditions a series of SEOs are identified and developed in order to assess the likely environmental effects which would be caused by implementation of each of the three scenarios. The scenarios are evaluated using compatibility criteria (Table 7.1) in order to determine how they are likely to affect the status of these SEOs.

Table 7.2 collates all the SEOs which have been developed from international and national policies which generally govern environmental protection objectives.

The SEOs and the three scenarios are arrayed against each other to identify which interactions – if any – would cause impacts on specific components of the environment.

Where the appraisal identifies a likely conflict with the status of an SEO the relevant SEO code is entered into the conflict column – e.g. B1 which stands for SEO likely to be affected – in this instance 'To ensure compliance with the Habitats Directive with regard to the protection of Natura 2000 Sites and Annexed habitats and species'[70].

[70] 'Annexed habitats and species' refers to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

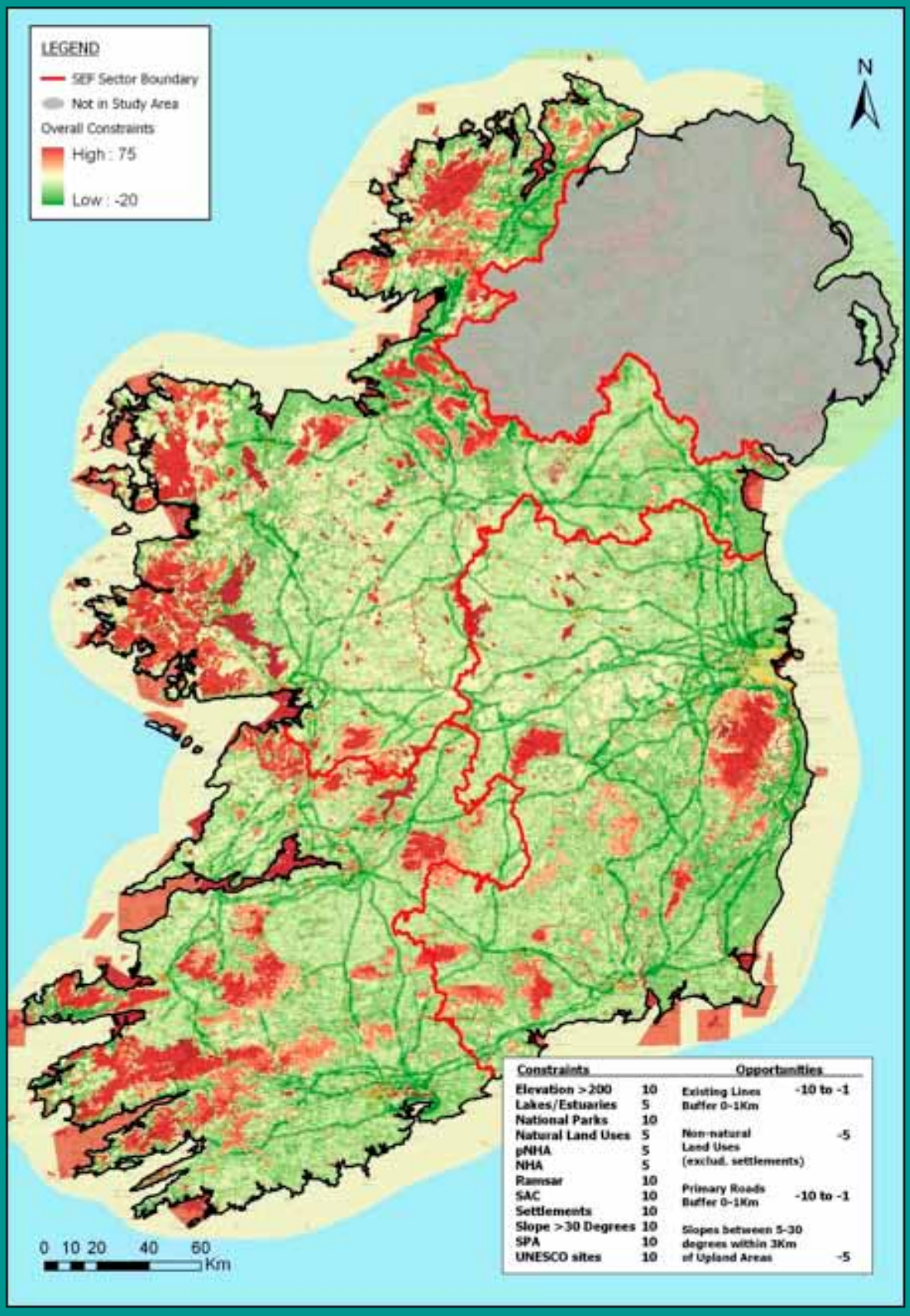


Figure 7.1
National Overall Development Potential Rating

Table 7.1

Criteria for appraising the effect of Alternatives and IP provisions on SEOs

Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	**No Likely** interaction with status of SEOs

Table 7.2

Strategic Environmental Objectives (SEOs)[71]

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 [72]
B3	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites [73]
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 [74]
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**

[71] Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international and national policies which generally govern environmental protection objectives and against which the environmental effects of the IP and the alternative scenarios can be tested. The SEOs are used as standards against which the provisions of the IP can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated against.

[72] 'Annexed habitats and species' refers to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

[73] See definition of 'Wildlife Sites' under Section 5.2.1.10

[74] The Landscape Constraints Rating mapping factors are:

- Elevation > 200m;
- Forestry Landcover Areas;
- Slope > 30 Degrees;
- Lakes and Estuaries; and,
- Other Natural Landcover Types.

7.3 Evaluation of Alternative Scenarios [75]

7.3.1 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.

7.3.2 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 7.1). 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.

7.3.3 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 7.1). 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 the National Spatial Strategy.

7.3.4 Evaluation against SEOs

Table 7.3 below provides an evaluation of each of the alternative development scenarios for the IP against the Strategic Environmental Objectives (SEOs).

75 Footnotes like this are used in this section in order to identify instances where interactions between the relevant Scenario and the relevant SEOs occur. The nature of these interactions is identified on Table 7.3

Table 7.3

Evaluation of Alternative Development Scenarios against SEOs

	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**		**C1** (would not be in compliance with energy or greenhouse gas objectives or with the National Development Plan or National Spatial Strategy) **L1** (unavoidable impacts upon the landscape, some of which would be mitigated	**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)		
Scenario 2: **Grid 25 (continuation of existing planning and economic development policy)**	**C1** (would be in compliance with energy and greenhouse gas objectives and with the National Development Plan and National Spatial Strategy)	**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)		**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)	**B1 B2 B3** (more potential conflict than with Scenario 3 as development would not avoid the greatest concentration of ecological sensitivities) **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)
Scenario 3: **Grid 25 (alteration of existing planning and economic policy)**	**C1** (would be in compliance with energy and greenhouse gas objectives and parts of the National Development Plan but not with National Spatial Strategy)	**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) **L1** (unavoidable impacts upon the landscape, some of which would be mitigated; less probable conflict than Scenario 2)		**B1 B2 B3** (less potential conflict than with Scenario 2 as development would avoid the greatest concentration of ecological sensitivities) **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) **HH1** (Need to avoid excessive proximity of development to concentrations of population – in particular, around the Dublin area)	

7.3.5 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 correct 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.

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

Section 8 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.

7.3.7 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 (see Section 2.7 and Section 9) and consideration of economic cost.

Section 8 - Evaluation of Implementation Programme Provisions

8.1 Methodology

This section evaluates the provisions of the Implementation Programme (IP). The description of the environmental baseline together with the maps provided in Section 4 of this report are used of this purpose. Strategic Environmental Objectives (SEOs) are also used as outlined in Section 7.2. The interactions between the SEOs and the provisions of the IP determine the likely significant effects of implementing the IP. These effects include

Table 8.1

Strategic Environmental Objectives (SEOs)[79]

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 [76]
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 [77]
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[78]
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**

[76] Annexed habitats and species' refers to those listed under Annex I, II & IV of the EU Habitats Directive and Annex I of the EU Birds Directive.

[77] See definition of 'Wildlife Sites' under Section 5.2.1.10

[78] The Landscape Constraints Rating mapping factors are:

- Elevation > 200m;
- Slope > 30 Degrees;
- Forestry Landcover Areas;
- Lakes and Estuaries; and,
- Other Natural Landcover Types.

[79] Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international, national and regional policies which generally govern environmental protection objectives and against which the environmental effects of the Implementation Programme can be tested. The SEOs are used as standards against which the objectives of Implementation Programme can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if not mitigated.

secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects. Table 8.1 brings together all the SEOs which have been developed from international and national policies which generally govern environmental protection objectives.

8.2 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.

Avoidance of conflict with SEOs and the environment is dependent upon compliance with the mitigation measures which have emerged through both the AA and SEA processes and which have been integrated into the IP.

8.3 Indirect and Cumulative Effects

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. Table 8.2 (overleaf) identifies the principle plans, policies and programmes that are likely to give rise to developments causing effects that could combine or interact with those of the IP for Grid 25.

The assessment of the likely combination of effects requires knowledge of the likely effects of all plans/developments under consideration. Table 8.2 describes the extent of knowledge of the likely environmental effects of the implementation of these plans, policies and programmes. This analysis shows that – 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.

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

Table 8.2

Knowledge of likely effects of other plans with potential to interact with IP effects

Policy, Plan, Programme or Projects	Spatially Specific?	SEA?	Environmental Effects Known?	Interactions resulting in Cumulative Impacts
National				
National Development Plan	No	No	No	Unknown; could result in impacts described under Sections 8.6.1 to 8.6.3 and 8.7 to 8.12
National Spatial Strategy	Yes	No	No	Unknown; could result in impacts described under Sections 8.6.1 to 8.6.3 and 8.7 to 8.12
National Renewable Energy Action Plan	No	No	No	Unknown; could result in impacts described under Sections 8.6.1 to 8.6.3 and 8.7 to 8.12
Offshore Renewable Energy Development Plan	Yes	Yes	Yes	None [80]
National Hazardous Waste Management Plan	No	Yes	Yes	None
Transport 21	Yes	No	No	Unknown; could result in impacts described under Sections 8.6.1 to 8.6.3 and 8.7 to 8.12
Government White Paper – Delivering a Sustainable Energy Future for Ireland	No	No	No	Grid25 to contribute towards objectives
National Climate Change Strategy 2007-2012	No	No	No	Grid25 to contribute towards objectives
Bionergy Action Plan for Ireland 2007-2020	No	No	No	None
Regional				
River Basin Management Plans	Yes	Yes	Yes	None [81]
Regional Planning Guidelines (including core strategies)	Yes	Yes	Yes	None [82]
Flood Risk Management Plans [83]	Yes	Yes	Yes	None [84]

[80] Impacts arising from interactions avoided by integration of mitigation measures into the IP listed under Section 9 of this report, including those under Section 9.8.
[81] Impacts arising from interactions avoided by integration of mitigation measures into the IP listed under Section 9 of this report, including those identified under Section 9.9.2.
[82] Impacts arising from interactions avoided by integration of mitigation measures into the IP listed under Section 9 of this report
[83] Note that the IP has addressed the issue flooding through Environmental Mitigation Measures EMM8B(iv), EMM8I(ii) and EMM8K.
[84] Impacts arising from interactions avoided by integration of mitigation measures into the IP listed under Section 9 of this report, including those identified under Section 9.9.2.4.

Table 8.2 Knowledge of likely Effects of Other Plans with potential to interact with IP effects *(continued)*

Regional Waste Management Plans	Yes	Yes	Yes	None [85]
Groundwater Protection Schemes	Yes	No	No	None [86]
Water Services Strategic Plans	Yes	No	No	None [87]
Country				
County and Town Development Plans	Yes	Yes	Yes	None [88]
County Wind Energy Strategies	Yes	Some	Yes (partial)	None [89]
County Renewable Energy Strategies	Yes	Some	Yes (partial)	None [90]
Biodiversity Action Plans	Yes (partial)	Yes	Yes	None
Heritage Plans	Yes (partial)	Yes	Yes	None
Projects included in the TDP	Yes	As part of this SEA	Yes	Detailed under Section 8.3 and relevant sub-sections under Section 8. Mitigation provided in Section 9
Interconnectors	Yes	As part of this SEA	Yes	Detailed under Section 8.3 and relevant sub-sections under Section 8. Mitigation provided in Section 9
Offshore energy generation projects	Yes	Not applicable for individual projects however SEA has been undertaken for overarching plan	Yes	None [91]
Onshore energy generation projects	Yes	Not applicable for individual projects however SEA has not been undertaken for overarching plan	Yes	None [92]
Economic development plans for rural areas e.g. housing and industry facilitated by improved electricity supply	No	No	No	None [93]
Economic development for urban areas e.g. housing and industry facilitated by improved electricity supply	Yes	Not applicable for individual projects however SEA has not been undertaken for overarching plan	Yes	None [94]

[85] Impacts arising from interactions avoided by integration of mitigation measures into the IP listed under Section 9 of this report, including those identified under Section 9.9.8.
[86] See Footnote 81
[87] See Footnote 81
[88] See Footnote 82
[89] See Footnote 82
[90] See Footnote 82
[91] See Footnote 82
[92] See Footnote 82
[93] See Footnote 82
[94] See Footnote 82

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.

The developments identified in each of the following sections – together with developments covered in EirGrid's Transmission Development Plan 2010 (see Appendix A of the IP), developments under SEAI's Offshore Renewable Energy Development Plan, and any developments arising from a high level plan for high level transmission requirements taking into account likely offshore and onshore constraints and corresponding opportunity areas (see mitigation measure no. 7 in Section 9.8) – will help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies – including the Kyoto Protocol and the National Renewable Energy Action Plan – (this relates to SEO C1) 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 with the protection of various environmental components including ecology, the landscape, cultural heritage, water resources and land resources (this relates to SEOs B1, B2, B3, L1, CH1, HH1, W1 and WS1). These potential conflicts will be mitigated by measures which have been integrated into the IP through the SEA (see Section 9) 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 and the reasons outlined previously in this subsection. The evaluations in the following sections principally and systematically focus on direct impacts. Indirect and cumulative effects are also considered as they arise throughout the assessment – on a case by case basis.

General situations in which cumulative effects could occur in instances including those where:

- There is a requirement to provide for new infrastructure under another strategic action (such as the National Spatial Strategy, Regional Planning Guidelines or County Development Plans);
- New or upgraded transport corridors are provided in line with new or upgraded transmission infrastructure;
- New waste infrastructure and new transmission infrastructure occur together within or in close proximity to environmental sensitivities;
- There is a requirement for connection between wind farms and the national grid;
- Housing and industry are facilitated by improved electricity supply provided by transmission infrastructure; and
- Offshore and on shore infrastructure interface in coastal areas.

Table 8.3 identifies the kind of potential cumulative effects that could generally occur with regard to the various environmental components.

Table 8.3

Potential Cumulative effects that could generally occur

Environmental Component	Potential Cumulative effects that could generally occur
Biodiversity and Flora and Fauna	• Habitat loss and disturbance including in all terrestrial based designated sites. Habitat loss will be greater where underground cables are installed. • Alterations to local hydrology which affects adjacent habitats (groundwater dependant habitats such as fens, turloughs and bogs are most likely to be affected). • Pollution of surface/ground waters with fuels, lubricants, concrete or sediments which affects water dependant habitats and species such as salmon, lamprey, white clawed crayfish and freshwater pearl mussel. • Disturbance of species during construction and maintenance activities. Species that may be affected include nesting and overwintering birds in coastal and freshwater SPAs; otters and kingfishers, where development occurs adjacent to or crossing watercourses; Bats, where development affects woodlands, hedgerows or roosting sites. • Risk of bird strike where overheard transmission cables are installed near SPAs or across bird flight lines.
Landscape	• Change in the visual appearance of the landscape will occur. • Areas where there are likely to be high levels of visual vulnerability include upland areas (areas greater than 200 metres OD), steep sided slopes (greater than 30 degrees), catchment boundaries coinciding with areas greater than 200 metres and areas with certain landcover characteristics[95]. These areas 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). • By facilitating the development of renewable energy infrastructure, which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans visual impacts could occur. • Underground cables can 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. On a long term basis impacts on the landscape would be reduced. • Interconnectors including the East-West Interconnector between Ireland and Wales and interconnectors between the Republic and Northern Ireland would have unavoidable effects on the landscape. The development of a marine interconnector could conflict with visual sensitivities especially in more vulnerable areas. • Intensification of existing crossing points along the Shannon system would be likely to change the visual appearance of the landscape in these locations however the impacts would be likely to be less than those of developing new crossing points. • Replacing of existing towers with taller, wider towers could have increased visual effects. • 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 and the development of 400 kV lines would be likely to give rise to marginal increases over 220kV in terms of visual effects.

[95] These include: Forests, Peat Bogs, Water Bodies, Natural Grasslands, Moors and Heathland, Intertidal Flats, Beaches, Dunes, Sand, Inland marshes, Stream Courses, Estuaries, Sparsely Vegetated Areas, Burnt Areas, Salt Marshes and Bare Rocks.

Environmental Component	Potential Cumulative effects that could generally occur
Archaeological and Architectural heritage	• Impacts could include interference with sites of archaeological significance during construction and impacts upon the context of archaeological and architectural heritage. • Construction of underground cables may involve significant direct impacts on archaeological heritage. • By facilitating the development of renewable energy infrastructure, which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans impacts could occur upon archaeology. • New or extended substations, cables or facilitated development could impact on any nearby built up areas including cultural heritage. • Impacts could occur upon protected structures and associated 18th and 19th century demesne landscapes
Air & Climatic factors	• The building of new transmission 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. • Interconnection 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; - Improve security of supply – by providing a dependable high capacity link between the transmission systems of Ireland and other countries.
Concentrations of population and human health	• Impacts could include those which are socio-economic, which relate to noise arising from predominantly construction but also operation or which are perceived, including those relating to extremely low frequency electromagnetic fields. • Provision of transmission infrastructure could interact with land use planning policies - including those from the NSS, NDP and lower tier Regional and County Plans - involving the direction of new populations and economic activities to certain areas. • High levels of rural dwellings in some areas may require sub-optimal proximity to some environmental sensitivities, such as cultural heritage. • Undergrounding cables could reduce actual and perceived effects on health. • Upgrading/rebuilding lines could involve the replacing of existing towers with taller, wider towers could potentially result in actual and perceived effects on health.
Water	• By facilitating the development of renewable energy infrastructure and the direction of new populations and economic activities to certain areas, impacts could occur upon surface waters (including river, lake, estuarine and coastal waters) and groundwater status. Wetland areas can also be affected. • Pollution of surface/ground waters with fuels, lubricants, concrete or sediments can occur and can affect the status of water bodies which are subject to the requirements of the Water Framework Directive. • Individual/multiple developments have the potential to affect the hydrology of waters and this can impact upon water resources such as those that are used for drinking water. • Undergrounding of cables can affect drainage patterns.
Land, Material Resources and Soil	• By facilitating the development of renewable energy infrastructure and the direction of new populations and economic activities to certain areas, impacts could occur upon soil. • Construction activities can result in soil compaction • Drainage can be impeded by works. • New structures can seal off soil resources below. • Undergrounding can, if unmitigated, change the soil structure and drainage patterns.

8.4 Interrelationship between Environmental Components

The SEA Directive requires the ER to include information on the likely significant effects on the environment, including on issues such as biodiversity, fauna, flora, population, human health, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors.

Likely significant effects on environmental components which are identified include those which are interrelated however implementation of the IP will not affect the interrelationships between these components. The presence of significant interrelationships between environmental components is identified on Table 8.4 below.

Table 8.4

Presence of Significant Interrelationships between Environmental Components

Component	Biodiversity, flora and fauna	Population and human health	Soil	Water	Air and Climatic factors	Material assets	Cultural heritage	Landscape
Biodiversity, flora and fauna		No	Yes	Yes	Yes	Yes	No	Yes
Population and human health			Yes	Yes	Yes	Yes	No	Yes
Soil				Yes	No	Yes	No	No
Water					No	Yes	No	No
Air and						Yes	No	No
Material assets							No	Yes
Cultural heritage								Yes
Landscape								

8.5 Strategic Transboundary Effects

By facilitating the development of renewable energy projects thereby enabling the generation – and export – of electricity with significantly less greenhouse gas emissions than traditional energy generation with fossil fuels, the IP will contribute to both Ireland's and the European Union's meeting of greenhouse gas emission reduction targets under European and global policy objectives. Export of electricity that is generated from renewable energy sources to the UK and European markets would reduce both the need for new energy generation projects in the UK and Europe and associated potential environmental effects.

Although interconnectors from Ireland would be likely to result in potential environmental effects in other countries, 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.

8.6 Summary of Potential General Environmental Impacts of Transmission Projects[96]

8.6.1 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).

8.6.2 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

[96] Source: EirGrid (2010) EirGrid Strategic Environmental Constraints Mapping Report

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.

8.6.3 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 maximised 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 substations are not located within the floodplain of major watercourses, which could impact on the access and functioning of the substation. It will also 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.

8.7 Strategic Objectives

	Likely to **Improve** status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
1. The Grid Development Strategy of Grid25 (pp 21-22) notes that, in consideration of line capacity of new transmission lines, there will be a positive presumption towards building new transmission lines at 400 kV and at 110 kV.	In General: C1 Building at 400 kV rather than 220 kV: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		In General: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1** Building at 400 kV rather than 220 kV: **B1 B2 B3 L1 CH1**	
The building of new transmission 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 (C1). The building of transmission lines potentially conflicts with the protection of various environmental components (ecology - **B1 B2 B3** -, the landscape - **L1** -, cultural heritage - **CH1** -, human health - **HH1** -, water resources - **W1 W2** - and land resources - **MS1**) however such conflicts would be mitigated by measures which have been integrated into the IP through the SEA (see Section 9). Note that while cutting and maintaining clearways through woodland habitats in particular, can adversely impact upon habitats, ecological connectivity and breeding birds it can also be beneficial for certain species through enhancing the edge effect and providing early successional habitats in the cleared space. 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 (**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**). The development of 400 kV lines gives rise to marginal increases over 220kV in visual effects and effects on flight paths (**B1 B2 B3 L1 CH1**)				
2. In the longer term, it may be appropriate to upgrade the 220 kV network to 400 kV, for similar reasons of efficiency and capacity. EirGrid will examine each case as the need to upgrade arises, and will consider the option of using a higher capacity conductor at 220 kV or rebuilding at 400 kV.	**C1** **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	
Utilising the existing network would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies (C1). Utilising the existing network would help prevent the unnecessary development of new lines and would contribute towards the protection of the environment by preventing associated impacts (**B1 B2 B3 L1 CH1 W1 W2 MS1**).				
3. By utilising the existing network where possible to avoid building new overhead circuits. In many cases re-utilising the existing network is more costly than building new circuits but results in less impact on the environment;	**C1** **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**			
Up-rating 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 (C1). Up-rating lines would help prevent the unnecessary development of new lines and would contribute towards the protection of the environment by preventing associated impacts (**B1 B2 B3 L1 CH1 W1 W2 MS1**).				
4. Seeking to up-rate existing lines by using a higher capacity conductor, where appropriate, to avoid the need for major structural changes and so to minimise security issues;	**C1** **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**			
Up-rating 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 (C1). Up-rating lines would help prevent the unnecessary development of new lines and would contribute towards the protection of the environment by preventing associated impacts (**B1 B2 B3 L1 CH1 W1 W2 MS1**).				
5. Where the required increase in capacity cannot be achieved through a new conductor, considering upgrading the circuit to a higher voltage;	**C1** **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**			
See comments under **4.** above.				

	Likely to **Improve** status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
6. Where appropriate, considering replacing an existing single-circuit line with a double circuit line to provide the required additional capacity; while this is a more costly option, and less reliable than having two separate lines, it avoids building a new line on a separate route;	**C1** **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**			
Providing additional capacity would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies (C1). Double circuit lines would help prevent the unnecessary development of an additional line and would contribute towards the protection of the environment by preventing associated impacts (**B1 B2 B3 L1 CH1 W1 W2 MS1**).				
7. In limited circumstances, putting certain 110 kV circuits underground to minimise the impact of new build in a region. This will be considered, for example, in areas where there is congestion of urban development, a multiplicity of overhead lines, a relatively wide expanse of water or an area of unique natural beauty;	**C1 B1 B2 B3 L1 HH1 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Transmission development would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies (C1). 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 (**L1 B1 B2 B3 CH1 W1 W2 HH1 MS1**) than over-grounding, some of these conflicts would be mitigated by measures which have been integrated into the IP through the SEA (see Section 9). Undergrounding cables would minimise effects upon flight paths for wild birds, 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 (**B1 B2 B3 L1 HH1**).				
8. Examining the potential for using HVDC technology for certain applications where appropriate, for example such as transporting high volumes of power over long distances;	**C1 L1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Transmission development would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies (C1). HVDC technology requires fewer conductors than AC technology and therefore its use would result in a reduced extent of visual effects (L1). Potential conflicts would be the same as with AC lines; with the protection of various environmental components (ecology - **B1 B2 B3** -, the landscape - **L1** -, cultural heritage - **CH1** -, human health - HH1 - water resources - **W1 W2** - and land resources - **MS1**); and, such conflicts would be mitigated by measures which have been integrated into the IP through the SEA (see Section 9).				
9. Considering the appropriateness of new tower designs and other mitigating measures outlined in the Government-sponsored report on "The Comparative Merits of Overhead Electricity Transmission Lines Versus Underground Cables" in order to minimise the landscape and visual impact of necessary infrastructure, and taking account of the National Landscape Strategy when published.	**C1 B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**			
The mitigation outlined in the cited document would contribute towards the protection of the various environmental components.				

8.8 Interconnection

	Likely to **Improve** status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
1. EirGrid is currently developing the 500MW East-West Interconnector between Ireland and Wales. This has a scheduled completion date of 2012. It is therefore assumed that the island of Ireland will have, as a minimum, some 900MW of interconnection with the United Kingdom.	Direct interaction **C1** By removing the need to develop an extent of power generation capacity **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	Unavoidable effects on the landscape	Direct interaction **B1 B2 B3 CH1 HH1 W1 W2 MS1** Indirectly, by facilitating the development of renewable energy infrastructure, which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans	
2. EirGrid and Northern Ireland Electricity (NIE) are currently progressing the planning of a second major interconnector between the Republic of Ireland and Northern Ireland.				

Background

In response to the Government White Paper "Delivering a Sustainable Energy Future for Ireland" 2007, EirGrid has carried out an assessment - the findings of which are presented in the Interconnection Economic Feasibility Report [97] - of the costs and benefits of additional interconnection between the island of Ireland and the UK and France (in addition to the existing Moyle Interconnector and the East-West Interconnector currently under construction by EirGrid between Ireland and Wales).

The Interconnection Economic Feasibility Report analyses the feasibility and requirement for additional interconnection from an economic perspective having regard to the environmental related criteria of achieving higher level international and European non-spatial, thematic requirements relating to energy supply and climate change which are the subject of the Governments White Paper, setting out a framework to deliver a sustainable energy future for Ireland.

In carrying out the assessment, EirGrid has examined a broad range of scenarios such as the likely required number of interconnectors, different fuel prices and different generation portfolios. The report concludes that enhanced interconnection between the all-island grid and other grids has the potential to deliver numerous benefits to the island of Ireland.

Key messages to emerge from the assessment in the Interconnection Economic Feasibility Report are:

a) The report reinforces the 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 AI 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.

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.

[97] Interconnection Economic Feasibility Report, EirGrid, November 2009, available at www.eirgrid.com

Likely Significant Effects

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;
- 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 (C1).

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 (ecology - **B1 B2 B3** -, cultural heritage - **CH1** -, human health - HH1 - water resources - **W1 W2** - and land resources - **MS1**) however such conflicts would be mitigated by measures which have been integrated into the IP through the SEA (see Section 9) e.g. the ongoing co-operation in preparation of Renewable Energy Generation Guidelines and Strategies (see mitigation measure no. 6 in Section 9.7) and the preparation of a high level plan for high level transmission requirements taking into account likely offshore and onshore constraints and corresponding opportunity areas (mitigation measure no. 7 in Section 9.8).

The SEA Directive requires the identification of a range of environmental effects including those which are indirect. The development of any marine interconnector will present a range of potential environmental conflicts; currently available offshore environmental data is not sufficiently complete to facilitate a comprehensive evaluation of likely impacts to the transition zone between terrestrial and marine environments. Mitigation measures contained in Section 9 of this Report provide for the integration of environmental considerations into the development of any marine interconnector in the future; the Environmental Appraisal Report which accompanies the next TDP shall take into account maritime mapping and issues as emerging from the Offshore Renewables SEA (Section 9.6); and, a high level plan shall be prepared for high level transmission requirements taking into account likely offshore and onshore constraints and corresponding opportunity areas (Section 9.8). In considering spatial strategies for connecting terrestrial and marine grids there should be consideration of the likely general compatibility between onshore and offshore environments. Figure 9.1 on Page 143 illustrates a qualitative indication of potential, general locations for land/sea connections where there are less sensitive onshore environments in the vicinity of coasts. This qualitative indication was determined by the sensitivity of onshore environments in the vicinity of coasts, as illustrated by the Overall Development Potential Rating mapping [98] for the various regions [99] to which Grid25 relates (see Figures 4.23 to 4.26) as well as relevant corresponding data - including that relating to landscape and ecological constraints - for Northern Ireland. It would be useful if offshore grids generally aimed to make landfall in these areas and it would be desirable for such decisions to consider comparable, equivalent on-shore and offshore data.

Any consideration of alternative routes/locations for land/sea connections will be required to consider spatial and environmental alternatives at the next level of environmental assessment - i.e. that of lower tier plans, multiple or individual projects - as is required by mitigation measure EMM4 under Section 9.5 which has been integrated into the IP.

Indirectly, the development of interconnectors would be likely to potentially conflict with the various environmental components (**B1 B2 B3 CH1 HH1 W1 W2 MS1**) as it would facilitate the development of renewable energy generation infrastructure, which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans. There would be unavoidable impacts upon the landscape (**L1**) some of which would be mitigated.

Also, the interconnectors identified under 1. and 2. above, and potential future additional interconnectors, could play a significant role in internationalising the Irish energy market, and in facilitating the anticipated high levels of renewable generation on the island, by providing a means to export excess generation when output from renewable generation is high, and to import power when it is low. By allowing the importing of power while renewable generation is low, interconnectors would remove the need to develop an extent of power generation capacity and would therefore prevent certain potential conflicts with various environmental components (**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**).

[98] The Overall Development Potential Rating combines mapping of environmental constraints associated with the development of the transmission system with opportunity areas which represent potential opportunities to develop transmission infrastructure with a reduced environmental impact.

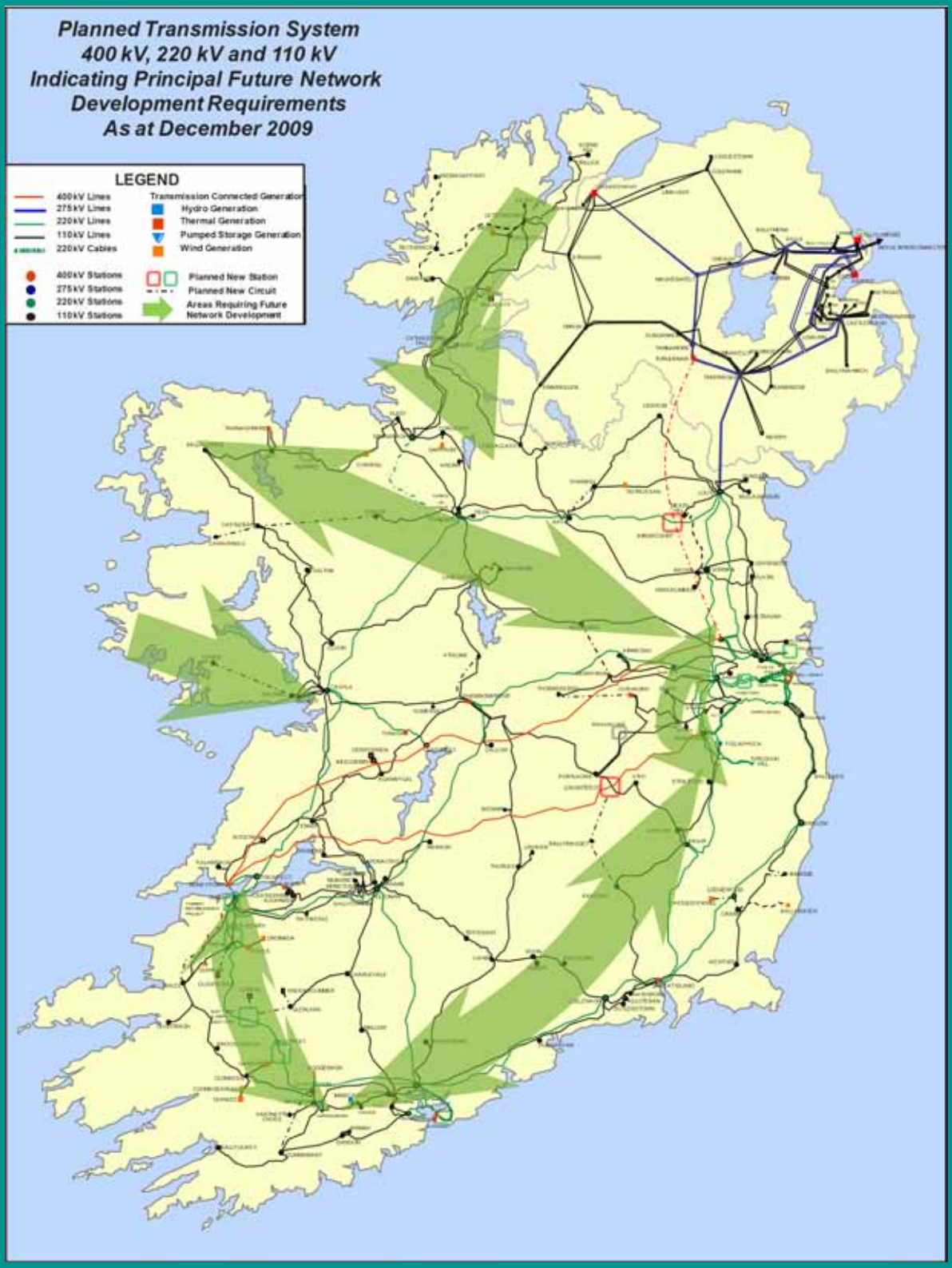
[99] The Border Region, the Midlands Region, the South-East Region, the West Region, the Mid West Region, the South-West Region and the Dublin and Mid-East Regions.

8.9 Infrastructure Required to strengthen the National Transmission Network

The estimates listed below have been made regarding the provision of infrastructure required to strengthen the National Transmission Network, in accordance with Grid25.

	Likely to **Improve** status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
1. Approximately 828 km of new circuits will be required between now and 2025 to meet the needs of consumers and generators. This represents an increase of about 14% on the total length of the existing network. Of this, 568 km will need to be at 400 kV, 92 km will need to be at 220 kV or higher; the remaining 150 km will be at 110 kV. In addition to these circuits, others will be needed to connect many of the new generators to the Grid	**C1**	**C1**	**B1 B2 B3 HH1 CH1 W1 W2 MS1**	
Overall evaluation The development of new circuits would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies (C1). The development of new circuits potentially conflicts with the protection of various environmental components (ecology - **B1 B2 B3** -, cultural heritage - **CH1** -, water resources - **W1 W2** - and land resources - **MS1**) however such conflicts would be mitigated by measures which have been integrated into the IP through the SEA (see Section 9). There would be unavoidable impacts upon the landscape (**L1**) some of which would be mitigated.				
2. 2,530 km of the existing transmission network will need to be upgraded between now and 2025 to provide greater capacity. This comprises 740 km, or 29%, of the existing 220 kV network, and 1,790 km of the 110 kV network.	**C1** **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	
Overall evaluation Upgrading 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 (C1). Upgrading lines would help prevent the unnecessary development of new lines and would contribute towards the protection of the environment by preventing associated impacts (**B1 B2 B3 HH1 L1 CH1 W1 W2 MS1**). Upgrading 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, actual and perceived effects on health (**B1 B2 B3 L1 CH1 HH1 W1 W2**). However, such conflicts would be mitigated by measures which have been integrated into the IP through the SEA (see Section 9).				

8.10 General Strategy [100]



[100] 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.

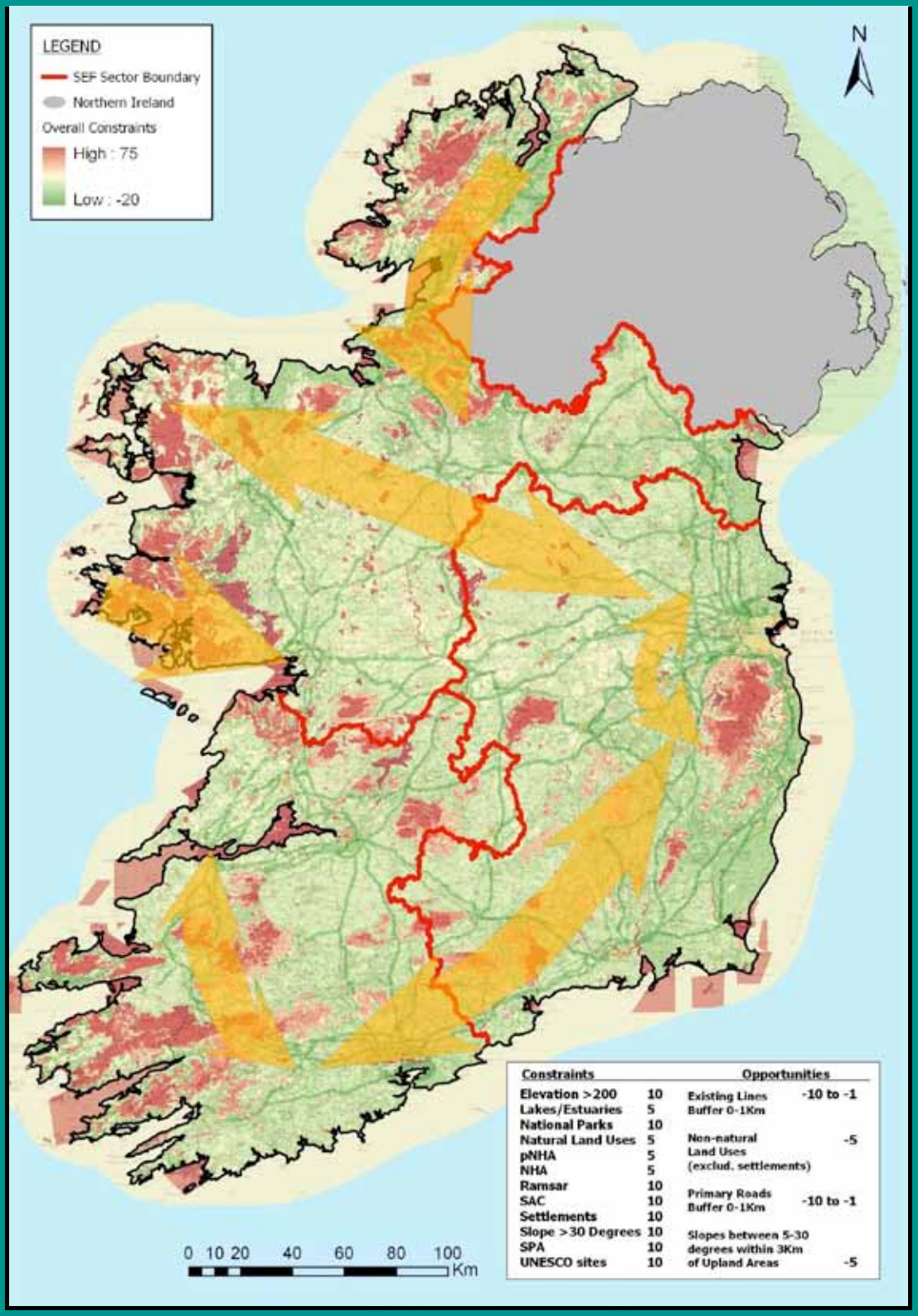


Figure 8.1 General Strategy for the future development of the grid (as per the provisions of Grid25) & Overlay of Strategy on National Overall Development Potential Rating Map

	Likely to Improve status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
Figure 8.1 provides a high-level indicative overview of the General Strategy for the future development of the grid, as per the provisions of Grid25 alongside the National Overall Development Potential Rating (see Section 4.15). The arrowed shapes coloured green on the General Strategy map, provide an indicative representation of the Strategy for transmission of the potential flow of electricity (between demand/load centres, generators and the system at large). It should be noted that these figures derive from an un-scaled map with indicative representation. As such, these arrows represent the overall intended development strategy, and do not purport to represent specific projects; nor is it intended to suggest that the eventual realisation of these projects will be contained within the area of these arrows.	As a result of the development of the Grid and the facilitation of new energy generation: **C1**	**L1**	Directly, as a result of the development of the Grid **B1 B2 B3 CH1 HH1 W1 W2 MS1** Indirectly, as a result of facilitating both new energy generation and inward investment **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	

The General Strategy for the future development of the grid - as per the provisions of Grid25 - (Figure 8.1) 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 (**C1**).

The Strategy potentially conflicts with the protection of various environmental components (ecology - **B1 B2 B3** -, cultural heritage - **CH1** -, human health - HH1 -, water resources - **W1 W2** - and land resources - **MS1**) however such conflicts would be mitigated by measures which have been integrated into the IP through the SEA (see Section 9). There would be unavoidable impacts upon the landscape (**L1**) 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.

8.11 Reinforcement of the Transmission System in the Regions

The key areas for planned, and longer-term, development as referenced in the IP and provided for by EirGrid's Grid25 Strategy/EirGrid's Transmission Development Plan are presented on a regional basis below. Although certain projects – such as interconnectors – 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.

8.11.1 Border Region

Sensitivities

The Border Region includes County Donegal and parts of counties Leitrim, Sligo, Cavan, Monaghan and Louth. County Donegal (together with other areas along the western coast of the country) contains some of Ireland's most important energy resources as well as high concentrations of environmental sensitivities (principally ecological and visual), many of international and national significance. Concentrations of sensitivities are also found in parts of counties Sligo and Leitrim however most other areas within the Region are robust.

Likely Issues Arising

Potential environmental conflicts could occur in the crossing of ecologically and scenically sensitive areas – principally located in bogs/uplands – but also in wetland (lake, and river) habitats. In County Donegal (and parts of counties Sligo and Leitrim) in particular, difficulties could emerge with regard to the meeting of the provisions of the Habitats Directive. Provisions of the Strategy for the Border Region facilitate developments in sensitive areas. Certain projects in the border region which are provided for by EirGrid's Grid25 Strategy/ EirGrid's Transmission Development Plan – such as interconnectors – 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.

	Likely to Improve status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
Border Region 1: **Upgrading Existing and Constructing New Transmission Infrastructure** A substantial number of new electricity generators are intending to locate in the Border Region each of which will require connection to the electricity transmission grid. The electricity transmission infrastructure will require to be significantly strengthened to facilitate such connection, which will result in the requirement both to upgrade existing infrastructure and to construct new high voltage electricity transmission infrastructure.	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2**	
The building of new transmission lines would help to facilitate the achievement of higher level targets contained in national and international energy and greenhouse gas emission policies. The building of transmission lines 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 (see Section 9). There would be unavoidable impacts upon the landscape (**L1**) some of which would be mitigated. Upgrading the existing network and reusing existing corridors would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies and would help prevent the unnecessary development of new lines and associated environmental impacts. Upgrading 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, actual and perceived effects on health. Note that while cutting and maintaining clearways through woodland habitats in particular, can adversely impact upon habitats, ecological connectivity and breeding birds it can also be beneficial for certain species through enhancing the edge effect and providing early successional habitats in the cleared space.				
Border Region 2: **Inter-Regional Reinforcement** The substantial number of new generation connections being sought in the West Region may also have an impact on the Border Region. Further inter-Regional transmission reinforcement will be required to ensure that this generation is adequately connected to the National network.	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2**	
See comments under Border Region 1.				

Border Region 3[101]: **Additional Interconnector** The planned additional major interconnector between the Republic and Northern Ireland is required to improve competition by reducing transmission constraints that are currently restricting the efficient performance of the all-island Single Electricity Market, to support the development of generation from renewable energy sources, and to improve security of supply on the island.	Direct interaction **C1** By allowing the importing of power while renewable generation is low, interconnectors would remove the need to develop an extent of power generation capacity; **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	**L1**	Direct interaction **B1 B2 B3 CH1 HH1 W1 W2 MS1** Indirectly, by facilitating the development of renewable energy infrastructure which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans **B1 B2 B3 CH1 HH1 W1 W2 MS1**	
See comments under Section 8.8 Interconnection.				
Border Region 4[102]: **Long Term Developments** Strengthening of circuits between the North-West and North-East Regions will be required in the longer-term to facilitate power flows, including; • Further integration of the Donegal and Northern Ireland networks; • Upgraded networks supplying Dundalk; • Upgrading some 490 km of the existing transmission network.	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	

[101] Note that 'Border Region 3' is being jointly developed by EirGrid and Northern Ireland Electricity.

[102] Note that long term developments referred to in 'Border Region 4' are part of the Renewables Integration Development Plan (RIDP) which is a joint exercise between EirGrid, Northern Ireland Electricity and System Operator for Northern Ireland (SONI) Ltd. The RIDP currently comprises a series of ongoing studies of potential options – there is no project as such, hence its designation in 'Border Region 4' as a long term development. As details of the RIDP as a project emerge at some future point in time the project will be included within a future Transmission Development Plan, which will be screened for need to undertake SEA, within an Environmental Appraisal Report, Although 'Border Region 4' does not refer to specific works that will occur south of Strabane it is noted that any future works south of Strabane are likely to cross ecologically and scenically sensitive areas - principally located on bog landscapes. Difficulties would be likely to arise with regard to meeting Habitat Directive Requirements.

Apart from areas at the coast, the area within and surrounding Dundalk is robust.

Also see comments under Border Region 1.

8.11.2 Midlands Region

Sensitivities

This Region's environmental sensitivities increase along a diagonal axis from a very robust south-east to an increasingly sensitive north-west. The latter arises because of the presence of the Shannon system of rivers, lakes and wetlands that are a nationally significant complex of ecological, scenic and cultural resources. Other large areas of peat and other wetlands create large areas of sparsely occupied uplands and lowlands.

The Region is transected by many kilometres of major and minor grid infrastructure as well as having a significant concentration of junctions and substations – many associated with existing or former power stations. These routes and sites offer strong precedent that should be re-used wherever possible in planning. It should not be assumed that large areas of cut-over peat lands will continue to be suitable low-resistance routing options. Many of these sites are nearing the end of production and most if not all will shortly be reinstated as bogs that are likely to be deemed to be sensitive – if not protected – habitats.

New major grid projects in this Region will be challenged when trying to identify optimum crossing points over the sensitive Shannon system. Existing crossing points should be re-used or intensified wherever possible. Such crossing points should be identified and secured in regional and county development plans as a matter of urgency - they are nationally significant economic assets.

Likely Issues Arising

Few potential environmental conflicts, principally arising from crossing ecologically and scenically sensitive areas along the Shannon in the west of the Region as well as bog areas, upland peat and forestry areas, lakes and wetland habitats. Difficulties could emerge in these areas with regard to the meeting of the provisions of the Habitats Directive.

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- unlikely to be mitigated	No Likely interaction with status of SEOs
Midlands Region 1: **New Transmission Infrastructure** Construction of new 110 kV circuits between Thornsberry and Cushaling, and the reinforcement of transmission infrastructure in the Mullingar area	**C1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2 MS1**	
New circuits between Thornsberry and Cushaling would pass through the eastern half of County Offaly which is covered in part by areas of peatlands, many of which have been cutover. The constraints posed by the Habitats Directive in relation to these lands will need to be carefully considered. Also see comments under Capital Project No. CP0596, National Reinforcement Projects (Section 8.12.2.1).				
Midlands Region 2: **Laois Substation** A 400/110 kV substation is required in the Laois area to support the 110 kV networks and provide the requisite level of security of supply in Laois, Carlow and Kilkenny	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
See comments under Capital Project CP0585, National Reinforcement Projects No. (Section 8.12.2.1).				
Midlands Region 3: **Longer Term Developments** Upgrading some 250 km of transmission network to facilitate power flows from both renewable and conventional sources and maximise the use of existing power corridors	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	
See comments under Border Region 1.				

8.11.3 South-East Region

Sensitivities

There are three distinct different types of sensitivities within this region;-

1. Upland areas contain ecological and scenic sensitivities;
2. River Valleys contain ecological, heritage and scenic sensitivities;
3. Coastal areas contain ecological and scenic sensitivities.

The environmental resources of this Region are some of the least known in Ireland. They include upland areas of east Waterford, deeply incised major river valleys, sheltered bays and estuaries and a wealth of historic and cultural sites – including many large demesne landscapes. These resources have ecological, scenic and cultural significance that may be vulnerable partly on account of being less familiar than similar, though larger scaled, equivalents in the west.

Lowland areas of long-established intense human occupation are located very close to areas with sensitive environmental characteristics.
The challenge for power planners will be to familiarise themselves with the transitions between these areas, to minimise encroachment on the latter.

This is a Region which also has long-established patterns of settlement and development in which the lowlands have a high capacity to sustainably absorb development. If previous patterns of grid development follow those already established then there is a low potential for direct or indirect effects to occur. Larger scale grid developments in this Region should parallel coastal plains and major river systems – ideally occupying the transitional foothills – without encroaching on either the more sensitive uplands or the immediate environs of rivers and coasts.

Likely Issues Arising

Most major routes within this region follow the transition between uplands and lowlands and cause little adverse environmental effect. If future development continues this general pattern there is a low potential for significant effects to arise.
The development of the transmission grid facilitates developments in sensitive upland and coastal areas. All counties in this region have mature wind energy strategies that protect sensitive environmental resources – so there is little likelihood of adverse effects.

Projects such as interconnectors which are provided for by EirGrid's Grid25 Strategy/EirGrid's Transmission Development Plan 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.

	Likely to Improve status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
South-East Region 1: **Transmission Infrastructure Reinforcement** In order to facilitate power flows between planned wind generation in the South, traversing through the South-East Region, transmission reinforcement will be required	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2 MS1**	
See comments under Border Region 1.				
South-East Region 2: **Marine Interconnection** There is a potential for further interconnection to be constructed between the Republic of Ireland and Great Britain and/or mainland Europe. Given its geographical location, the South-East Region is considered to constitute a likely area for termination of a future interconnector.	**Direct interaction** **C1** By allowing the importing of power while renewable generation is low, interconnectors would remove the need to develop an extent of power generation capacity; **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		Direct interaction **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1** Indirectly, by facilitating the development of renewable energy infrastructure, which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
The development of an interconnector would have to consider the environmental sensitivities described at the bottom of this table, in particular coastal ecological (there are a number of coastal cSACs and SPAs) and scenic sensitivities. Also see comments under Section 8.8 Interconnection.				
South-East Region 3: **Longer Term Developments** Include: • Strengthening of the 220 kV links to both Dublin and Cork to facilitate increased power flows; • Strengthening of the networks supplying major cities and towns in the South-East Region; • Reinforcement of current infrastructure while maximising the use of existing corridors where possible, through uprating approx. 480 km of existing 110 kV and 220 kV circuits.	**C1** **By strengthening/ uprating instead of building new lines:** **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
See comments under Border Region 1.				

8.11.4 West Region

Sensitivities

This Region contains some of Ireland's most important energy resources as well as some of the country's highest concentrations of environmental designations – many of international and national significance. In general, the sensitivities are greater in the west of the region. Areas protected under the Habitats Directive in this Region appear to have few published management plans or conservation objectives. Those that do, appear to envisage little improvement or development of the long-established patterns of human settlement that have created and now sustain many of these habitats.

Many areas are also undergoing significant change due to restructuring of agriculture and the emergence of larger-scale forestry activities. These can have significant and adverse effects for water quality and sensitive fisheries unless these is careful and forward-looking land-use planning.

Future planning and development for the grid improvement that is necessary to develop energy targets are likely to continually conflict with habitat protection policies unless management plans are prepared that include specific and proactive plans for human occupation, settlement and development. This is the region that has the least strategic environmental advantage for the realisation of the renewable energy objectives of Grid 25.

Likely Issues Arising

This region contains some of the country's highest concentrations of environmental designations – many of international and national significance. Potential environmental conflicts could occur in the crossing of ecologically and scenically sensitive areas – principally located on bog landscapes – but also in upland, lake, wetland and river habitats. In the west of the Region in particular, where sensitivities increase significantly, difficulties could emerge with regard to the meeting of the provisions of the Habitats Directive. Provisions of the Strategy for the West Region facilitate developments in sensitive areas.

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- unlikely to be mitigated	No Likely interaction with status of SEOs
West Region 1: **Building New Transmission Infrastructure** Location of new energy generators in the Region will result in the requirement to build new high voltage electricity transmission infrastructure in the region, which will have the benefit of strengthening the existing transmission infrastructure. The main new corridors in the West Region comprise:- • New electricity transmission infrastructure which will be required from the North Mayo area, initially towards existing grid infrastructure located in either the east or south part of the West Region. It is likely that such infrastructure will then continue to the key markets on the eastern side of the country. • New electricity transmission infrastructure which will also be required from west Co. Galway to Galway city and beyond.	**C1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2**	
Environmental sensitivities occur in greatest concentrations in the west of this Region. It is likely that the main new corridors will have to cross ecologically and scenically sensitive areas - principally located on bog landscapes - but also in upland, lake, wetland and river habitats. This will lead to difficulties in meeting the requirements of the Habitat Directive as well as potentially significant visual impacts.				
West Region 2: **Upgrading Existing Transmission Infrastructure** The connection of these new generators will also result in an associated requirement to upgrade many parts of the existing transmission network.	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	
See comments under Border Region 1.				
West Region 3: **Longer Term Developments** General longer-term forecasted demand growth in the region will also result in the requirement to upgrade the existing network, and to build new transmission lines. This includes:- • Major infrastructural development from Mayo to the main bulk transmission system in the eastern part of the region; • Upgrading about 365 km of the existing transmission network.	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	
Environmental sensitivities occur in greatest concentrations in the west of this Region; major infrastructural development to the west of the Moy will present most potential conflicts. Also see comments under Border Region 1.				

8.11.5 Mid-West Region

Sensitivities

This Region contains a number of very different, but sharply compartmentalised environmental sensitivities. The Burren and Galway Bay are the best known and most sensitive, though the less known Hills of Clare also contain extensive areas of sensitivity and significance. The Shannon Estuary and the Lower Shannon contain highly sensitive and significant ecological, cultural and scenic resources. Much of the west coast of this Region is significant – though in a markedly different way from most of the rest of the West Coast of Ireland – in not having bays and peninsulas that create enclosure. This is also an area of very ancient human occupation that contains many significant assemblies of sites as well as more recent large estates – both of which should be taken into account at an early stage of project planning. The interior of Clare, west Limerick and south east Galway by contrast are all more environmentally distinctive, yet robust.

This Region has the largest rural concentration of installed grid infrastructure, has the lowest concentration of environmental sensitivities on Ireland's west coast and has extensive areas with wind resources in excess of 7 m/s. Strategically this confers the area with the optimum set of environmental conditions in Ireland achieving the renewable objectives of Grid 25 at the least environmental cost (see Figure 8.1).

Major grid development works in this Region should re-use or closely follow established routings or areas with established precedent of large-scale infrastructural and industrial development. New works should parallel the coasts and rivers – which contain dense corridors of anciently established settlement – while avoiding more sensitive upland interiors. High levels of rural dwellings in some areas may require sub-optimal proximity to some environmental sensitivities, such as cultural heritage.

Likely Issues Arising

With the exception of coastal areas of Clare, parts of the Clare Uplands and parts of the Shannon Estuary this is the least environmentally sensitive part of Ireland's west coast. The Estuary has significant concentrations of ecological, scenic and archaeological sensitivity. Note that the whole of the water area of the Estuary itself is designated. There is considerable precedence for development and relatively fewer sensitivities only in the vicinity of Tarbert, Foynes and east of Bunratty.

Major new overhead transmission lines across the Estuary are likely to raise more issues and concerns in the west of the estuary than in the East. Cable crossings of the Estuary will need to take very early account of ecological designations.

	Likely to Improve status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
Mid-West Region 1: **Reinforcement of Transmission System** Reinforcement of the transmission system between Moneypoint and Tarbert, including the provision of a new substation to the west of the existing Tarbert substation, and the ongoing development of Moneypoint as a key transmission hub, is required to facilitate power flows in the mid-west and south-west of the country	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	
Reinforcement of the transmission system along the Estuary has the potential to conflict with ecological, scenic and archaeological sensitivities. Note that the whole of the water area of the Estuary itself is designated. There is considerable precedence for development and relatively less sensitivity only in the vicinity of Tarbert, Foynes and east of Bunratty. Also see comments under Capital Project No's. CP0399 and CP0647, Network Reinforcement Projects (Section 8.12.2.1)				
Mid-West Region 2: **Longer Term Developments** **Include:** • Strengthening the transmission capacity across the Shannon Estuary; • Upgraded networks supplying the urban centres of Ennis and Limerick; • Up-rating over 260 km of existing networks to facilitate higher capacity power flows, using existing corridors where possible.	**C1** By strengthening/ uprating instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2 MS1**	
Increasing the transmission system across the Estuary has the potential to conflict with ecological, scenic and archaeological sensitivities. Note that the whole of the water area of the Estuary itself is designated. There is considerable precedence for development and relatively less sensitivity only in the vicinity of Tarbert, Foynes and east of Bunratty. Upgrading the existing network and reusing existing corridors would help to facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies and would help prevent the unnecessary development of new lines and associated environmental impacts. Upgrading 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, actual and perceived effects on health.				

8.11.6 South-West Region

Sensitivities

This Region has a very wide range of environmental conditions and sensitivities. In general, sensitivity decreases in the east – except in the vicinity of the coast and major rivers. Outside of upland areas the centre of this region is environmentally robust. The boundaries of this region create very artificial environmental boundaries insofar as West Cork and Kerry have more in common with the sensitive West Coast while East Cork and East Kerry have much more in common with the environments of the more robust Southeast and South Midlands.

If new grid development continues patterns of following the strongly east-west trending river valleys there is a low potential for significant adverse effects on the environment. Major grid developments should be confined to the more environmentally robust centre and east of this region.

The development of new transmission lines between Moneypoint and Cork City (as indicated by the green arrow in the south western corner of the country on Figure 8.1) would need to carefully consider ecological and visual impact issues, especially in upland areas. Alternatives should consider the reuse of existing power and transport links.

Likely Issues Arising

The west and south-west of this region contains some of the country's highest concentrations of environmental designations – many of international and national significance. In general, sensitivity decreases in the east – except in the immediate vicinity of the coast and major rivers.

Potential environmental conflicts could occur in the crossing of ecologically and scenically sensitive areas – principally located on bog landscapes – but also in upland, lake, wetland and river habitats. In the west of the Region in particular, where sensitivities increase significantly, difficulties could emerge with regard to the meeting of the provisions of the Habitats Directive.

Provisions of the Strategy for the South-West Region facilitate developments in sensitive areas – though the likelihood of adverse effects is low because environmental sensitivities in this region are well protected in Development Plans.

	Likely to Improve status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
South-West Region 1: Transmission Infrastructure Reinforcement New high level power generation in the Region needs to connect to the network and this will result in the requirement to build significant new high voltage electricity transmission infrastructure in the region, connecting to key transmission hubs in Moneypoint and Cork. Growth in demand for electricity in the South-West region needs to be facilitated and this may lead to the requirement to construct new electricity transmission infrastructure.	**C1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2**	
The development of new transmission lines between Moneypoint and Cork City (as indicated by the green arrow in the south western corner of the country on Figure 7.1) would need to carefully consider ecological and visual impact issues, especially in upland areas. Alternatives should consider the reuse of existing power and transport links. Also see comments under Capital Project Numbers CP0399, CP0647, CP0500, CP0608, CP0650 and CP0651, Planned Network Developments (Section 8.12)				
South-West Region 2: Longer Term Developments Include: • Significant strengthening of capacity between the South-West and South-East regions to allow excess power to flow from both renewable and conventional sources to supply demand in other parts of the country; • Upgrading of approx 165 km of transmission network.	**C1** By strengthening/ uprating instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
See comments under South-West Region 1. above and under Border Region 1.				

8.11.7 Dublin & Mid-East Region

Sensitivities

This is a mixed region containing areas of environmental sensitivity and areas that contain high levels of urbanisation. It contains a significant portion of Ireland's population and associated economic activity.

There are extensive areas of industrial peatlands in the western parts of the Region, there are extensive upland areas of mountain bog and forestry in the south-east and the coast contains areas of ecological, scenic and cultural significance. Rural areas still contain numerous 18th and 19th century demesne landscapes and associated protected structures.

High levels of rural dwellings in some areas may require sub-optimal proximity to environmental sensitivities – such as cultural heritage. Urbanisation and consolidation of settlements in the Greater Dublin region is likely to continue in the north-eastern part of this region, along the coast and along two corridors – one into east Kildare and north Carlow and the other into south-east Meath. It would be very helpful to work with Development plans – both at Regional and County level – to identify infrastructure corridors – ideally paralleling the existing and emerging major road and rail corridors that will develop in this Region during the period to 2025. It would also be very helpful for working in existing and emerging urban and peri-urban areas to clearly identify criteria that would lead to deciding when and where to underground electricity infrastructure. Urban Areas should be encouraged to specifically zone land for sub-stations and overhead routes.

Likely Issues Arising

Main sensitivities which may be conflicted with include:

- Bog areas in East Offaly and Kildare;
- Upland peat and forestry areas in Wicklow;
- Archaeological, historic and cultural landscapes in Kildare, Dublin and Meath; and,
- Ecological and scenic resources along all coasts and major river valleys.

Few issues are likely to arise as environmental sensitivities in this Region are well protected in Development Plans.

	Likely to Improve status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- unlikely to be mitigated	**No Likely** interaction with status of SEOs
Transformer Capacity Planned development includes additional 220 kV bulk supply points at Finnstown (near Adamstown), and in the Dublin North City Fringe area. Other planned development includes increased transformer capacity at Carrickmines, Finglas and Inchicore stations. EirGrid and ESB Networks are working together to provide additional transformer capacity at Carrickmines and Inchicore 220 kV stations.	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	

Increasing transformer capacity would facilitate the achievement of higher level government targets contained in higher level national and international energy and greenhouse gas emission policies. It would also facilitate new energy generation infrastructure and other economic development which could potentially conflict with the protection of the environment.				
New Stations In relation to the Dublin networks, EirGrid (the Transmission Systems Operator –TSO) in conjunction with ESB networks (the Distribution System Operator- DSO) has identified the need for two new 220/110 kV in-feed stations in the north and west of Dublin. New stations are planned in the areas of Finnstown in the west city area and Balgriffin in the north city area, to accommodate demand growth, and to better manage existing demand levels.	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2**	
See comments under Capital Project Numbers CP0437a and CP0506, Distributions System Operator Projects (Section 8.12.2.2)				
Longer Term Development It is likely that some reconfiguration and/ or reinforcement of the 220 kV and the 110 kV networks will be required in the longer-term to meet DSO demands, and to avoid network constraints in the Dublin area. The 400 kV network provides a high capacity link between Moneypoint generation station and Galway on the west coast and Dublin on the east. EirGrid also has concept plans to expand its 400 kV network in the Greater Dublin Area. This could be by the alteration of existing routes or equipment or with entirely new overhead line or underground cable routes. Additional transformer capacity is planned at the two existing 400 kV stations: at Woodland near Dunshaughlin, Co. Meath and at Dunstown, Co. Kildare Longer-term development in the Region includes: • Strengthening of network into and out of the Region to allow the demand to be met by renewable generators located mainly in the west of the country; • Strengthening of network serving Dublin city load; • Development to allow north-south flows to by-pass the network serving the Dublin load; • Reinforcement of the network to cater for strong growth in Kildare and north Wicklow; • Upgrading some 515 km of the existing network.	**C1** By upgrading instead of building new lines: **B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2**	
See comments under Border Region 1.				

8.12 Planned Network Developments

8.12.1 Introduction

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. Potential conflicts will be mitigated by measures which have been integrated into the IP through the SEA (see Section 9).

8.12.2 Network Reinforcement Developments

These projects are driven by generic demand growth and reinforcements resulting from generator demand and interconnector connections.

8.12.2.1 Network Reinforcement Projects

Capital Project No.	**Project Title and Description**	**Estimated Completion Date**	**Phase**	Likely to **Improve** status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- likely to be mitigated	**No Likely** interaction with status of SEOs
CP0501	Clashavoon-Dunmanway 110kV New Line Construction of a new 110 kV line from Clashavoon to Dunmanway station and associated stations works.	Mar-14	Outline Design and EIA	**C1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2 MS1**	
The area between Clashavoon and Dunmanway includes a number of river catchment limits and areas of elevation which exceed 200 m so visual impacts would have to be considered carefully by lower tier Environmental Impact Assessment. It is noted that Bandon River to the west of Dunmanway is designated as a cSAC - the line will need to take into account this designation.							

CP0580	Carrickmines 220 kV GIS Development Replacement of existing air-insulated switchgear with gas-insulated switchgear (GIS); Installation of a new 4th 220/110 kV transformer.	Dec-12	Outline Design or EIA	C1		B1 B2 B3 CH1 HH1 W1 W2 MS1 L1	
The redevelopment of the switchgear and installation of a new transformer will be limited in extent however will have to take into account environmental considerations, as per measures outlined in Section 9 of this report.							
CP0585	Laois /Kilkenny Reinforcement New 400/110 kV transmission station in Co. Laois. The station will be looped into the existing Dunstown-Moneypoint 400 kV line and Carlow-Portlaoise 110 kV line. A new 110 kV circuit from the new station to Kilkenny using the existing Ballyragget-Kilkenny 38 kV line which is built to 110 kV standards. A new 110/38 kV station at Ballyragget to cater for loss of the Kilkenny-Ballyragget 38 kV line.	Dec-14	Outline Design or EIA	C1	L1	B1 B2 B3 CH1 HH1 W1 W2 MS1	
Alternatives for the new 400/110 kV transmission station in Co. Laois should first examine locations to the east of Portlaoise and to the north of the south Laois plateau - away from most of the County's ecological and landscape sensitivities. Looping the station into the existing Dunstown-Moneypoint 400 kV and Carlow-Portlaoise 110 kV lines is likely to involve crossing the River Barrow and River Nore cSAC; looping will need to take into account this designation and planning authorities should be consulted in order to facilitate the identification of crossing points in Development Plans as appropriate. Linking the station to the existing Ballyragget-Kilkenny line in order to link the station to Kilkenny is likely to involve crossing the Nore/Barrow catchment limit and would therefore need to consider, in particular, visual impacts and their mitigation.							
CP0596	New 110kV Circuit To Mullingar Construction of a new 110 kV circuit to Mullingar 110 kV station from either Kinnegad or Derryiron 110 kV stations.	Oct-14	Outline Design or EIA	C1	L1	B1 B2 B3 CH1 HH1 W1 W2 MS1	
In general, circuits from either of the two stations would pass through relatively robust routes. As with all other projects, potential conflicts would have to be mitigated by measures which have been integrated into the IP through the SEA (see Section 9). The area between the two stations and Mullingar is covered in part by areas of peatlands, many of which have been cutover. The constraints posed by the Habitats Directive in relation to these lands will need to be carefully considered.							

CP0597	Reinforcement of the Ardnacrusha & Ennis Area Uprating of the Moneypoint-Tullabrack-Booltiagh-Ennis 110 kV circuit to equivalent of 430mm2 ACSR @80 o C. Dependent on Moneypoint 400/220/110 kV GIS Development, see CP0688	Dec-14	Outline Design and EIA	**C1**		**B1 B2 B3 CH1 HH1 W1 W2 MS1 L1**	
This area is close to the Shannon Estuary which has significant concentrations of ecological, scenic and archaeological sensitivity. It is noted that the whole of the water area of the Estuary itself is designated as a candidate Special Area of Conservation (cSAC) which is protected under the Habitats Directive.							
CP0250	Castlebar-Tonroe 110 kV Line A new Castlebar-Tonroe line constructed at 220 kV and operated at 110 kV	On Hold	Outline Design and EIA	**C1**	**L1**	**B1 B2 B3 CH1 HH1 W1 W2 MS1**	
The area through which this line would be likely to pass through is generally robust with the exception of the need to cross the River Moy cSAC, most likely at multiple points. The Planning Authority should be consulted in order to facilitate the identification of crossing points of the Moy in the Development Plan. The N5 National Primary Road presents an existing infrastructure corridor and alternative routes should be first in the vicinity of this corridor, although there are pockets of visual sensitivity which will have to be considered.							
CP0699	Cathaleen's Fall - Srananagh 1 110kV Line Uprate Uprate line to equivalent of 430mm2 ACSR @ 80 o C	Oct-12	Outline Design and EIA	**C1**		**B1 B2 B3 CH1 HH1 W1 W2 MS1 L1**	
This route through County Sligo has concentrations of ecological, scenic and archaeological sensitivities. As is the case with other projects, this project will have to take into account environmental considerations, as per measures outlined in Section 9 of this report.							
CP0709	Dunmanway 110kV Station Upgrade	Dec-14	Outline Design and EIA	**C1**		**B1 B2 B3 CH1 HH1 W1 W2 MS1 L1**	
The upgrade of the Dunmanaway station will be limited in extent and will have to take into account environmental considerations, as per measures outlined in Section 9 of this report.							
CP0707	Barrymore 110kV station extension - Loop into Cahir - Knockraha 110kV line	Jun-13	Outline Design and EIA	**C1**		**B1 B2 B3 CH1 HH1 W1 W2 MS1 L1**	
This project potentially conflicts with a number of SEOs. These conflicts will be mitigated by adhering to the measures outlined in Section 9 of this report and integrated into the IP.							
CP0619	New Capacitors at Shankill Installation of 15 Mvar and 30 Mvar re-deployable capacitor units at Shankill 110 kV station	On Hold	Outline Design and EIA	**C1**		**B1 B2 B3 CH1 HH1 W1 W2 MS1 L1**	
The development of new capacitors at the Shankill station will be limited in extent and will have to take into account environmental considerations, as per measures outlined in Section 9 of this report.							

8.12.2.2 Distribution Systems Operator (DSO) Projects

Capital Project No.	Project Title and Description	Estimated Completion Date	Phase	Likely to **Improve** status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- likely to be mitigated	**No Likely** interaction with status of SEOs
CP0437	North Dublin 220kV Project - New 220kV Station A new 220 kV station in the Balgriffin area and associated networks. The development is part of a wider TSO/DSO agreed reinforcement strategy to enhance the network in the northern fringe of Dublin city. The station will be tail fed from Finglas 220 kV using cable and constructed with GIS. The process of acquisition of a new site for this project is currently underway.	Dec-14	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Away from areas immediate to the coast, the northern fringe of the City is generally robust. Site selection should consider proximity to the Finglas 220 kV, proximity to populations and existence of infrastructure corridors which may be needed for the tail feeding of the station. Constructing a Gas Insulated Station would help to minimise impacts arising from the development's footprint.							
CP0506	Finnstown 220kV Project (Adamstown) - New 220kV Station Finnstown 220 kV station, south of Lucan, a new 220 kV station looped into the Inchicore-Maynooth No. 1 and No.2 220 kV lines. The station will be initially a single transformer 220 kV station, but allow final development for a four transformer station. Due to space restrictions on potential sites an entirely GIS station is proposed.	Mar-14	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
The Finnstown/Adamstown area is generally robust. The Inchicore-Maynooth lines are located close to Finnstown and therefore the length of line required to loop into these lines is envisaged to be minimal. Constructing a Gas Insulated Station would help to minimise impacts arising from the development's footprint.							
CP0644	Bracklone 110 kV Station & Loop In New 110 kV station to be looped into Portlaoise-Newbridge 110 kV Line. Built on new site to replace existing Portarlington 38 kV station.	Dec-12	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Bracklone is generally robust except for the location of the River Barrow and Nore cSAC to the north. The Portlaoise-Newbridge line is located close to Bracklone and therefore the length of line required to loop into this line is envisaged to be minimal.							

CP0649	Drumline 110 kV Station Works Two 20 MVA Transformers supplying 12.2 MW New load and 11.4 MW transfered load from existing Drumline transformers.	Jun-13	Outline Design or EIA	C1		B1 B2 B3 L1 CH1 HH1 W1 W2 MS1	
The transformers at the existing station will be limited in extent however will have to take into account, as per measures outlined in Section 9 of this report, environmental considerations including those relating to the River Shannon catchment.							
CP0627	Bandon 110 kV Station New Transformer Bay	On Hold	Outline Design or EIA	C1		B1 B2 B3 L1 CH1 HH1 W1 W2 MS1	
The transformer bay at the existing station will be limited in extent however will have to take into account, as per measures outlined in Section 9 of this report, environmental considerations including those relating to the River Bandon catchment.							
CP0075	Ballycummin 110kV New Station New station looped into the Limerick-Moneteen 110 kV line.	On Hold	Outline Design or EIA	C1		B1 B2 B3 L1 CH1 HH1 W1 W2 MS1	
The Ballycummin area is generally robust. Proximity to populations should be considered. The Limerick-Moneteen line is located close to Ballycummin and therefore the length of line required to loop into this line is envisaged to be minimal.							

8.12.3 Generator Connection Projects

These projects relate directly to connection of generation to the transmission system or to changes in existing generation connection arrangements.

Capital Project No.	Project Title and Description	Estimated Completion Date	Phase	Likely to **Improve** status of SEOs	Probable **Conflict** with status of SEOs- unlikely to be mitigated	Potential **Conflict** with status of SEOs- likely to be mitigated	**No Likely** interaction with status of SEOs
CP0500	North Kerry Project A new 220 kV station looped into the existing Clashavoon-Tarbert 220 kV line. The work includes connection works for Athea, Dromada and Cloghboola windfarms	Apr-14	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
The main environmental sensitivities in the northern half of the County are found in coastal, estuarine and upland areas. The lowlands of the Feale catchment provide a relatively robust area in the most north western corner of the County. This area is covered by peatlands in places, many of which have been cutover. The constraints posed by the Habitats Directive in relation to these lands would need to be carefully considered in advance of any development. Development within or close to the Stack's to Mullaghareirk Mountains would be more likely to result in potential ecological and visual impacts than would development in the Feale lowlands.							
CP0603	IPP088 Mulreavy Connection Connection of a new 110 kV station for connection of a new windfarm	Jan-12	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Lough Mulreavy and part of the surrounding lands is located within the northern edge of the Dunragh Loughs/Pettigo Plateau cSAC. Landscape sensitivities including areas with elevation greater than 200 m OD and areas which have a slope greater than 30 degrees are found in close proximity. There may be opportunities to locate development, in particular, in areas which are within 3 km of Upland areas and which have slopes of between 5 and 30 degrees. Peat covers some of the upland areas. Landscape and ecological sensitivities would have be carefully considered in order mitigate effects arising from the connection and the enabled windfarm. The stability of the underlying ground should also be considered.							
CP0608	IPP119 Cloghboola Wind Farm Connection of new windfarm into existing Trien 110 kV station	Apr-14	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
The Cloghboola wind farm and the Trien station are located in the north east of County Kerry. The wind farm is located in a relatively sensitive area to the south east of Listowel in the Glanaruddery Mountains. Trien station is located in a relatively robust area to the east of Listowel on lowlands. Connection of the wind farm and station would require the development of transmission lines through a general area which includes ecological sensitivities and areas of visual vulnerability including the Stack's to Mullaghareirk Mountains cSAC, the River Feale (which is part of the Lower River Shannon cSAC), areas of peat and areas with elevation greater than 200 m OD. There may be opportunities to mitigate visual impacts by locating development in areas which are within 3 km of Upland areas and which have slopes of between 5 and 30 degrees.							

CP0615	Glenree 110kV Station Connection of a new 110 kV station, looped into the existing Cunghill-Moy 110 kV line. This station will facilitate the connection of new DSO windfarms.	Sep-11	Outline Design or EIA	C1		B1 B2 B3 L1 CH1 HH1 W1 W2 MS1	
Glenree is located in the north east of County Mayo close to the east of the Ox Mountains. The station would facilitate the development of wind farms which could potentially impact on the wider area which includes ecological sensitivities, including the Ox Mountains Bogs cSAC and areas of non-designated peatland, and landscape sensitivities, including areas with elevation greater than 200 m OD and the limits of river catchments. A number of rivers which eventually flow into the River Moy (cSAC) drain the wider area. The Cunghill-Moy 110 kV line into which the new station will be looped is located close to Glenree and therefore the length of line required to loop into this line is envisaged to be minimal. Development of station, looping into the existing line and any enabled windfarms would have to carefully consider potential ecological, visual and archaeological heritage impacts which could occur. Wind farms should also consider the stability of the underlying ground.							
CP0648	Garrow 110 kV Station Extension Works for a new 110 kV transformer bay for the provision of renewable energy.	Aug-11	Outline Design or EIA	C1		B1 B2 B3 L1 CH1 HH1 W1 W2 MS1	
There are no designated sites within the townland of Garrow Roscommon and extension works would not pose the same potential conflicts as a new station. Direct and indirect potential conflicts would still exist though. Potential conflicts will be mitigated by measures which have been integrated into the IP through the SEA (see Section 9).							
CP0650	Millstreet 220/110 kV station New 220/110 kV station looped into the existing Clashavoon-Tarbert line for the connection of wind farms	Aug-14	Outline Design or EIA	C1		B1 B2 B3 L1 CH1 HH1 W1 W2 MS1	
Millstreet is located in central to north western Cork on banks of the Finnow River, to the north of the Boggeragh Mountains. The Finnow River is designated as part of the River Blackwater cSAC. The wider region has a significant concentration of landscape sensitivities however the immediate area around the Town appears to be relatively robust. The Clashavoon-Tarbert 220 kV Line into which the new station will be looped is located close to Millstreet and therefore the length of line required to loop into this line is envisaged to be minimal.							

CP0651	East Kerry & North-West Cork reinforcement 220 kV Station A new 220 kV station looped into the existing Clashavoon-Tarbert 220 kV line for the connection of wind farms. Two new 110 kV lines will be constructed, one to Glenlaraand the other to the planned Cordal station in Co. Kerry. Knockacummer connection into Glenlara is also part of this project.	Jan-14	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Any connection from Glenara towards the existing Clashavoon-Tarbert 220 kV Line is likely to have to cross the Blackwater River cSAC. Cordal is located at the Stack's to Mullaghareirk Mountains SPA which may be required to be crossed in order to connect Cordal with the existing Clashavoon-Tarbert 220 kV Line. Landscape sensitivities including areas with elevation greater than 200 m OD and the limits of river catchments are found close to Glenara and Cordal.							
CP0602	IPP044 Keelderry Wind Farm Connection of a new windfarm to a new station, looped into the existing Agannygal-Derrybrien 110 kV line.	On Hold	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Keelderry is located in a relatively robust lowland area. The Agannygal-Derrybrien 110 kV line passes close to Keelderry so if the station is located in Keelderry then the length of line required to loop into this line is envisaged to be minimal.							
CP0641	IPP118 Nore Power Station Extension works in the existing Kilkenny station for the connection of a new OCGT.	On Hold	Outline Design or EIA	**C1**		**B1 B2 B3 L1 CH1 HH1 W1 W2 MS1**	
Extension works would not pose the same potential conflicts as a new station however direct and indirect potential conflicts - including those relating to the River Barrow/Nore SAC - would still exist. Potential conflicts will be mitigated by measures which have been integrated into the IP through the SEA (see Section 9).							

Section 9 Mitigation Measures

9.1 Introduction

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 and outlined in the subsequent sections of this chapter, which will be employed to identify and avoid environmental effects:

EMM 1. Full Integration of Planning and Environmental Considerations in Transmission System Planning [103];

EMM 2. Preparation of Strategic Environmental Constraints Mapping;

EMM 3. Preparation of Evidence-based Environmental Guidelines, consisting of:

- a. Environmental Benchmarking Studies;
- b. Evidence-Based Environmental Design Guidelines; and
- c. Guidelines on EIA for Transmission Projects in Ireland;

EMM 4. Consideration of the Broadest Possible Range of Alternatives in all future Energy Transmission Strategies;

EMM 5. Preparation of Transmission Development Plan Environmental Appraisal Report;

EMM 6. Ongoing Co-operation in preparation of Renewable Energy Generation Guidelines and Strategies; and,

EMM 7. Integrating Offshore Grid connectivity requirements and environmental considerations in EirGrid's Strategic Environmental Framework (SEF).

The second type of mitigation measures involves those that address the implementation of the IP. These are identified in Section 9.9 of this report and have been fully integrated into the IP. Project teams should refer to these interim general mitigation measures. These measures will be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Environmental Design Guidelines referred to above and outlined below. It is noted that there are linkages between various mitigation measures and that the mitigation of certain effects will be contributed towards by multiple measures. This is indicated on Table 11.1 whereby specific likely significant effects are linked to mitigation measures.

Additional, more detailed mitigation measures to those identified below would be likely to be required by lower tier, project specific, environmental assessments and would need to be integrated into relevant specific plans and projects. It should be noted that many of the identified lower tier mitigation measures are procedures and processes that will need to be adopted.

[103] Note EMM = Environmental Mitigation Measure

The mitigation measures set out under Sections 9.2 to 9.9 below 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.

The status of implementing all mitigation measures is detailed in Table 9.1.

Table 9.1

Status of Implementing Mitigation Measures

Mitigation Measure 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.
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

9.2 EMM1 Full Integration of Planning and Environmental Considerations in EirGrid's Transmission System Planning

Considerable changes of procedures and personnel have been put in place to ensure that environmental factors are considered at the earliest stage of EirGrid's Transmission Planning System – as a result of the parallel SEA process. These are preventative measures aimed at anticipating strategic decisions that would be likely to result in avoidable adverse environmental effects.

The Strategic Environmental Framework (SEF) changes have resulted in four major types of interventions;

1. The EirGrid Transmission System planning procedures have been strengthened to incorporate environmental considerations as an early determinant (see Section 2.7) and as a critical stage in the process of decision making (see Figure 2.3). These systems are now operational.
2. EirGrid has established an Environmental Management Team and new positions of responsibility within the organisation that provide senior planning and ecological advice to the Transmission System Planning team. Appointments have been made to these positions.
3. EirGrid is implementing Strategic Environmental Constraints Mapping that provides decision-makers and system planners with high-level environmental data that can be used for the conceptual development stage of Transmission Planning (see Section 9.3 below).
4. Procedures to be followed on a project-by-project basis for the detailed consideration, weighting and evaluation of likely environmental effects – including cumulative effects – having particular regard to the requirements of the Habitats Directive [104]. Such procedures include the need for timely consultation with relevant planning and environmental authorities such as the NPWS, the evaluation of up-to-date mapping, designations and development plans, policies, and a consideration of any relevant sectoral guidelines.

In addition, EirGrid will continue to work pro-actively with the Department of Arts, Heritage and the Gaeltacht (DAHG) and with local planning authorities and regional authorities to identify critical policies, objectives and constraints – e.g. critical river crossing points – in Development Plans and Regional Planning Guidelines, to ensure that the planning and development of national strategic transmission infrastructure occurs in the context of best environmental practice, and in accordance with the principles of proper planning and sustainable development.

EirGrid will also continue to work alongside ESB Networks, Bord Gais, the National Transport Authority, the National Road Authorities and other key strategic bodies in order to ensure that sustainable development, spatial planning and transport and Grid infrastructure are promoted in an integrated manner.

9.3 EMM2 Preparation of Strategic Environmental Constraints Mapping

The Scoping Report for the SEA identified the need to put Strategic Environmental Constraints Mapping in place in order to ensure that environmental considerations are included at the earliest stage of project inception and in the consideration of alternatives. A study was commissioned and completed while consultations were being undertaken for the SEA and the information contained in the Study informed numerous sections of this SEA Environmental Report.

The Strategic Environmental Constraints Mapping comprises (for more detail please see Appendix II of this Report) mapping of the environmental considerations – both constraints and opportunities

[104] Referenced statutory obligation

– that need to be incorporated into strategic decisions about projects and other developments likely to give rise to environmental effects. The mapping is of sufficient detail to provide an overview of the likelihood of encountering environmental challenges when planning routes though particular areas – at a regional level – and should assist in more detailed consideration of potential route corridors and in the selection of routing alternatives. The mapping should form a framework for more detailed mapping – on a project by project basis – of site specific sensitivities for ecology and cultural heritage and for local development plan designations of scenery and visual vulnerability.

The constraints mapping will become part of EirGrid's Standard Operational Procedure as part of the overall SEF to which designers are required to have regard. It is hoped that the constraints mapping can ultimately be updated to include Northern Ireland and will be updated periodically to ensure the use of the most up-to-date, relevant environmental baseline data.

9.4 EMM3 Preparation of Evidence-based Environmental Guidelines

Through the SEA scoping process the idea of a series of authoritative studies examining the actual effects of the construction and existence of power transmission projects in Ireland was recommended to be prepared and these are in the process of being commissioned.

These authoritative, *ex post* [105] studies will provide benchmarks to facilitate the preparation, presentation and defence of power projects that will be robust and will rigorously assess the impacts of transmission projects in Ireland. Details of the three types of studies that will mitigate impacts by anticipation and avoidance are as follows:

1. Environmental Benchmarking Studies

Studies will be carried out to determine the actual effect of the construction and existence of power projects in a representative range of typical Irish environmental conditions. The studies will focus on the principal topics of concern in environmental impact assessments – including ecology, visual impact, and impact upon human beings.

The study will examine the effect on a typical area, habitat or circumstance that is commonly encountered – such as pastures in the lowlands, blanket bogs or the environs of a village. It will examine the effects of the construction and existence of a range of power transmission projects – including substations and a range of sizes of transmission lines ranging from 110 – 400kV.

Studies will describe the effect of power projects on specific topics in specific environments – these will be compared to unaffected areas, on the one hand, and to non-standard and 'worst case' conditions on the other, in order to establish the full range of conditions that could arise, as follows.

Typical Conditions

In each case an area will be identified – and agreed with stakeholders – as being typical of the specific conditions where the transmission project has interacted with the environmental topic. The area of interaction will be scrutinised and compared with an unaffected control area to describe the nature, magnitude and significance of the effects that have occurred.

In addition to the Typical Condition there will also be an examination of two other conditions – Non-standard and Worst Case conditions – that can be used to determine the parameters within which the benchmarking of the environmental effects can be deemed to be reliably predicted.

[105] *Ex post* is the Latin for *"after the fact"*. In models where there is uncertainty that is resolved during the course of events, the *ex post* values (e.g. of expected gain) are those that are calculated after the uncertainty has been resolved.

Non-standard Conditions

Locations will be identified and agreed with key stakeholders which are typical of a landscape, habitat or landuse but which have objective circumstances or factors that increase the potential for environmental effect – such as steeper slope, greater age, different management regimes. These will be scrutinised and compared with both Typical Conditions and unaffected control area, in order to describe the nature, magnitude and significance of the effects that have occurred.

Worst Case Condition

Locations will be identified and agreed with stakeholders which are typical of a landscape, habitat or landuse in which there is objective evidence of adverse environmental effects due to the existence, construction or maintenance of the power project. The nature, magnitude and significance of the effects that have occurred will be described and evaluated to determine how such adverse effects occurred, and how they might be avoided in future.

Lessons Learned

Each section will include a summary of what project designers can learn from this analysis in terms of what practices appear to give rise to the least and the greatest environmental effect. This advice will be clearly differentiated into best practice to bring about 'Legal Compliance' as well as 'Best Practice'.

Summary Study

All studies for each section of the countryside will be summarised into an overall route selection and project design guide for each component of the Irish countryside. For instance, there will be a section entitled 'Power Projects in Wetlands'. This will provide authoritative design advice on all aspects of each step of a power project – from route selection through to project design and contract implementation. Using this, designers will be able to anticipate, avoid or ameliorate adverse effects on communities, flora, fauna, water, landscape or cultural heritage. This information will be compiled into Evidence-Based Design Guidelines for Power Projects in Ireland (see below).

On-going Studies

The studies are conceived as an on-going body of work that will be continuously updated and amended to take account of developments in understanding – arising from practice or research.

2. Evidence-Based Environmental Design Guidelines

The primary objective is that these Design Guidelines will provide practical guidance for how best to incorporate each type of power project into each part of the Irish environment in such a way as to anticipate and avoid adverse effects to the greatest extent possible.

The secondary objective is to establish an evidence based approach – accepted by stakeholders – that can be used to demonstrate that any residual effects are consistent with 'best practice'.

The Environmental Benchmarking Studies will identify evidence for the types of routes, designs, construction and maintenance methods that give rise to the least effect on the environment. This knowledge will be translated by project designers into Guidelines for route planners, project designers, managers and those responsible for construction and management of power assets.

The Design Guidelines will address the issues that arise at each of three stages of a project beginning at the Initiation stage where a project is first conceived, through the Planning Stage – where routes are selected – finishing with the Design Stage where detailed decisions are taken about how the project will be built. These issues are considered as follows:

- Project Initiation Issues
- Planning Issues
- Design Issues

The reports from the Environmental Benchmarking Studies will be examined to determine the routing, design and construction methods that produce the most environmentally suitable outcomes. These reports will also describe and detail evidence of environmental degradation that has occurred as highlighted in the 'worst case' evaluations. The advice from the Lessons Learned and the Summary Study sections of the Environmental Benchmarking Studies will be used as a basis for most of this material.

The emphasis throughout will be on providing concise, practical advice from practitioners to practitioners that will make the outcome of more detailed studies by specialists available in an immediately applicable way.

3. Guidelines on EIA for Transmission Projects in Ireland

The EIA Guidelines are meant to accompany the Evidence-Based Design Guidelines and are intended to provide an agreed and authoritative format for the preparation of EIA for power projects in Ireland.

The objective is to minimise challenges and disputes about the procedures and content of the coverage of EIAs for power projects. It will achieve this by identifying and agreeing appropriate scope, content and structure for power project EIAs with all relevant stakeholders – in advance of any specific project.

It is proposed that the structure and content will exactly match that employed in the EPA's Advice Notes on Current Practice in the Preparation of Environmental Impact Statements. It will, however provide considerably more detail on each section.

These Guidelines will draw heavily on both the Environmental Benchmarking Studies and the Evidence-Based Design Guidelines to provide the detail about the scope of environmental studies on the one hand and to describe how the projects should be described on the other. They will also take into account EirGrid's Ecology Guidelines for Electricity Transmission Projects which will be updated as appropriate following completion of the benchmarking studies. One of the most important components of the Guidelines will be a standardised Glossary of Impacts. This will collate a standardised and authoritative set of descriptions of levels of impact for power projects.

This is intended to remove uncertainty in the preparation of Environmental Impact Statements by facilitating rapid and consistent scoping and screening. It will also make key determinations more robust and protect their decisions against any threats and disputes about the sufficiency of the data or the appropriateness of the methods employed.

The benchmark studies will provide the factual basis for Evidence-Based Design Guidelines for Power Transmission Projects in Ireland. The benchmark studies and the design guidelines, in turn will provide the basis for specialist EIA Guidelines for this sector.

It is noted that projects will also have to be screened with respect to the Habitats Directive Assessment/ Appropriate Assessment as required by Article 6 of the Habitats Directive [106] – available DEHLG Guidance 'Appropriate Assessment of Plans and Projects in Ireland' (2009) should be considered as appropriate in this regard.

[106] Referenced statutory obligation

9.5 EMM4 Consideration of the Broadest Possible Range of Alternatives in all Future Energy Transmission Strategies

Alternative routes and regional grid development strategies will consider the broadest range possible of 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.

9.6 EMM5 Preparation of Transmission Development Plan Environmental Appraisal Report

EirGrid produces an annual rolling operational document, the Transmission Development Plan (TDP), as required by regulation 8(6) of SI 445/2000, and submitted for approval to the CER (Commission for Energy Regulation).

In compliance with SI 435 of 2004, TDPs will be screened for the need to undertake SEA and AA. Notwithstanding the outcome of screening, an Environmental Appraisal Report will be prepared to accompany each annual TDP which will describe any effects arising that will be significantly greater, different or more significant than those anticipated by the SEA or AA.

9.7 EMM6 Ongoing Co-operation in preparation of Renewable Energy Generation Guidelines and Strategies

Some parts of the country are better situated for generation of renewable supplies of energy than others. However, there is currently no governing terrestrial renewable energy strategy detailing where renewable energy generation should occur in Ireland. A number of policies and objectives exist in various County Development Plans and County Wind Energy Strategies which promote the development of renewable energy at appropriate locations in their jurisdictions.

There is clear merit in the preparation of Regional Renewable Energy Generation Guidelines, as renewable energy developments may often traverse county and regional boundaries. EirGrid will continue to support, co-operate and participate in the preparation of Regional Renewable Energy Generation Guidelines, Regional Renewable Energy Strategies, County Wind Energy Strategies and County Renewable Energy Strategies. Furthermore, EirGrid will continue to support the implementation of aspects of the National Renewable Energy Action Plan 2010 where applicable.

9.8 EMM7 Integrating Offshore Grid connectivity requirements and environmental considerations in EirGrid's Strategic Environmental Framework (SEF)

It is emerging that a number of scenarios for future electrical generation and distribution strategies in Ireland are likely to involve the development of offshore grid infrastructure. This has the potential to occur in areas off many parts of Ireland on account of various developments including the exploitation of offshore renewable resources (wind and wave), interconnectors with other EU Member States and the participation of Ireland in a pan-European offshore grid. All of these have significant implications for grid development and potential for significant interactions with inshore and terrestrial environments.

The SEA Directive [107] requires the identification of a range of environmental effects including those which are indirect. Interconnection across water (see Section 8.8) and renewable energy generation infrastructure enabled by the IP (see Section 8.3), for example, can cause potential indirect and cumulative effects on both the onshore and

[107] Referenced statutory obligation

offshore environments. Currently available offshore environmental data is not sufficiently complete to facilitate a comprehensive evaluation of likely impacts to the transition zone between terrestrial and marine environments. The OREDP will be reviewed and updated and integration will become more apparent with time. It is anticipated that improved offshore data will become available in the period following this SEA, particularly as a result of the SEA which is currently being undertaken for offshore renewable resources. This data will be taken into account in the Environmental Appraisal Report for forthcoming annual TDPs (Section 9.6) and in the SEAs of future iterations of the IP.

Figure 9.1 on Page 143 illustrates a qualitative indication of general, potential locations for land/sea connections where there are less sensitive onshore environments in the vicinity of coasts. This qualitative indication was determined by the sensitivity of onshore environments in the vicinity of coasts, as illustrated by the Overall Development Potential Rating mapping[108] for the various regions[109] to which Grid25 relates (see Figures 4.23 to 4.26) as well as relevant corresponding data – including that relating to landscape and ecological constraints - for Northern Ireland. It would be useful if offshore grids generally aimed to make landfall in these areas and it would be desirable for such decisions to consider comparable, equivalent on-shore and offshore data.

Any consideration of alternative routes/locations for land/sea connections will be required to consider spatial and environmental alternatives at the next level of environmental assessment – i.e. that of lower tier plans, multiple or individual projects – as is required by mitigation measure EMM4 under Section 9.5 which has been integrated into the IP.

9.9 EMM8 Other Measures Integrated into the IP

Mitigation measures described below have been worded to facilitate direct transcription and incorporation into the Implementation Programme.

Note that the following mitigation measures will be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Design Guidelines described above.

9.9.1 EMM8A Biodiversity and Flora and Fauna

9.9.1.1 EMM8A(i) Designated European and National Sites of Nature Conservation Interest

Every effort will be made to avoid designated sites of conservation importance. However, where this is not possible, routing will be selected to ensure no significant impacts on the integrity of the site. Restricted working areas will be imposed to ensure minimal disturbance to sensitive habitats.

Sensitive construction techniques will be used such as the use of bog mats for machinery access, particularly if underground cables are proposed or in remote bogland areas. Aerial access will be considered – for both materials and workforce – in exceptionally sensitive sites.

Ecological monitoring will be undertaken at sensitive sites during construction as appropriate. Such sites will be identified on a case by case basis.

9.9.1.2 EMM8A(ii) General Habitat Loss and Disturbance

- Where possible, direct habitat loss within designated sites will be avoided.
- When construction occurs within a designated site, sensitive construction techniques will be used such as the use of bog mats for machinery

[108] The Overall Development Potential Rating combines mapping of environmental constraints associated with the development of the transmission system with opportunity areas which represent potential opportunities to develop transmission infrastructure with a reduced environmental impact.

[109] The Border Region, the Midlands Region, the South-East Region, the West Region, the Mid West Region, the South-West Region and the Dublin and Mid-East Regions.

access, particularly if underground cables are proposed or in remote bogland areas. Aerial access will be considered – for both materials and workforce – in exceptionally sensitive sites.

- Use of bog-mats to minimise the impact of heavy machinery on vegetation and soils.
- Minimise extent of works areas.
- Re-distribute vegetation and soil stripped from the construction areas to provide a seedbank and do not re-seed with Perennial Ryegrass.
- Land within the working area will be reinstated as near as practical to its former condition.

9.9.1.3 EMM8A(iii) Bogs and Peatland areas

- Areas of deep and active peat shall be avoided.
- Detailed peat slip risk assessments should be carried out for all proposed developments in areas where peat substrates occur.
- Construction machinery should be restricted to site roads and designated access routes. Machinery should not be allowed to access, park or travel over areas outside development construction zones.
- Peat excavated during construction activity should not be stored (temporarily or otherwise) on areas of adjacent mire habitats or near flushes or drains. Temporary storage of spoil material excavated during the construction phase developments should be stored at suitable locations away from surface watercourses.
- All spoil material excavated during the construction phase should be reinstated following the completion of the construction phase of a proposed development.
- Where disturbance of peat soils cannot be avoided, there should be some consideration given to possible re-seeding with native species to stabilise the peat and accelerate recovery of the vegetation.

9.9.1.4 EMM8A(iv) Birds

- Where feasible, site clearance involving the cutting or destruction of vegetation and hedgerows shall not take place in the bird breeding season between March 1st and August 31st inclusive.
- On the advice of relevant ornithological experts and agencies bird warning devices shall be put in place where crossings of sensitive flight corridors cannot be avoided.

9.9.1.5 EMM8A(v) Bats

- The removal of bat commuting and foraging habitat shall be avoided where possible during the construction and operation phase of infrastructure.
- Where the removal of commuting or foraging habitat cannot be avoided alternative habitat should be established prior to such habitat removal.
- Trees scheduled for felling as part of site clearance shall be checked by a bat specialist for the presence of bats.
- Where bats are noted to be within a tree prior to felling operations, it will be necessary to postpone felling to create the opportunity for bats to cease usage. If bats do not leave a tree or building within a reasonable time frame, it may be possible for a bat specialist to seek to exclude the bats (or otherwise remove them to safety).
  This shall be carried out by a qualified bat specialist with written permission from the National Parks and Wildlife Section of the Department of Arts, Heritage and the Gaeltacht by way of a licence to derogate from the protection afforded bats by Irish and EU law. All licences shall be in place prior to felling procedures as to destroy a roost without a licence is an offence.

9.9.1.6 EMM8A(vi) Otters

- Destruction of active otter holts shall be avoided
- No works shall be undertaken within 150m of any holts at which breeding females or cubs are present.
- No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence.

9.9.1.7 EMM8A(vii) Other protected species

- The breeding and resting sites of protected species shall be avoided during the appropriate seasons.
- Heavy machinery shall not be used within 30m of an occupied badger sett.
- A derogation licence from the respective Wildlife Acts[110] shall be sought – and works shall not be commenced without such consent where it appears that protected flora and fauna species are likely to be unavoidably disturbed.

9.9.1.8 EMM8A(viii) Protected Surface Water or Riparian Habitats

In all cases where works have the potential to impact on protected surface water or riparian habitats, the Inland Fisheries Ireland document *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites* shall be adhered to. Development of transmission infrastructure adjacent to designated fisheries shall be carried out in consultation with Inland Fisheries Ireland to minimise the potential effects on designated surface waters.

9.9.1.9 EMM8A(ix) Freshwater Pearl Mussel Catchments

- Action measures as outlined in the Sub Basin Management Plans shall be taken into account where development is considered adjacent to areas associated with Freshwater Pearl Mussels.
- In the vicinity of waters that sustain populations of Freshwater Pearl Mussels the following additional mitigation measures shall be employed;-
  - There shall be no stream crossing by machinery.
  - Silty water will be collected in settlement ponds prior to discharge to watercourse.
  - Buffering strips will be provided near watercourses.

9.9.1.10 EMM8A(x) Fisheries

- All works adjacent to designated fisheries waters will be done in consultation with Inland Fisheries Ireland.
- All works involving open cut crossings shall be conducted during the period May to September to avoid interruption of salmonid spawning runs, spawning, incubation of eggs and the early developmental stages.

[110] Referenced statutory obligation

- Where appropriate and practical, bank vegetation and bed material which has been removed shall be stored to facilitate its replacement when channel works have been completed.
- Works in the vicinity of a watercourse shall be carried out with reference to a water quality protection plan for each site which shall ensure that;-
  - All necessary measures shall be taken to minimise the generation and release of sediments into all watercourses (See also 9.9.2).
  - Levels of suspended solids in the river shall be monitored during the course of the works.
  - Precautions shall be put in place to avoid spillages of diesel, oil or other polluting substances.

9.9.1.11 EMM8A(xi) Mature Trees

Where construction work is required close to trees, the National Joint Utilities Group 'Guidelines for the Planning Installation and Maintenance of Utility Services in Proximity to Trees' (NJUG 10) will be followed.

9.9.1.12 EMM8A(xii) Hedgerows

All disturbed hedgerows will be re-planted as soon as possible after construction, using Irish nursery stock and indigenous species. Planting will be maintained until vigorous re-growth has been established. Where hedges of particular value are encountered the extent and duration of the works shall be minimised. For species-rich banks, turf will be stripped and stored separately for replacement or re-instatement.

9.9.2 EMM8B Water Resources

9.9.2.1 EMM8B(i) Accidental spillage of fuel chemicals or sewage causing pollution to water or ground

- Develop, implement and enforce a Water Pollution Prevention and Environmental Emergency Response Plan for all work sites (See also 9.9.2.3). This should include good site practices as described in the Good Practice Guidance notes proposed by EA/SEPA/EHS.

9.9.2.2 EMM8B(ii) Suspended solids & sediment deposition

- Precautions shall be put in place to avoid or minimise the generation and release of sediments[111] into all watercourses.

9.9.2.3 EMM8B(iii) Physical Damage to watercourses

- Develop, implement and enforce a code of best practice for construction and reinstatement methods to be used for unavoidable construction works in the vicinity of watercourses.

9.9.2.4 EMM8B(iv) Flooding

- Within known floodplains measures shall be taken to avoid any potential impact of construction or existence of the works on the capacity for floodwater storage.
- Damage to any flood defence embankments shall be immediately repaired to a standard equal to or better than the existing embankments.
- EirGrid shall carefully examine development proposals to ensure consistency with the requirements of *The Planning System and Flood Risk Management: Guidelines for Planning Authorities* (DEHLG, 2009)[112].

[111] Sediments in this instance include all soils including peat.

[112] Referenced statutory obligation

- EirGrid shall engage with planning authorities at an early stage, utilising arrangements for pre-planning application consultation with regard to any flood risk assessment issues that may arise.
- EirGrid shall carry out a site-specific flood risk assessment, as appropriate, and comply with the terms and conditions of any grant of planning permission with regard to the minimisation of flood risk.

9.9.3 EMM8C Soils and Geology

9.9.3.1 EMM8C(i) Geological Features

- Site investigations shall be undertaken at intervals and specific locations along the power circuit route. This information shall be used to plan sitework operations to anticipate, avoid or minimise construction impacts arising from disturbance of sub-surface conditions.
- Cut and fill operations should be avoided unless absolutely necessary.
- Route selection and lower tier assessments should consult Geological Survey of Ireland as appropriate in relation to geological heritage sites either recommended for NHA or County Geological Site designation.

9.9.3.2 EMM8C(ii) Soil

- Height of stockpiles should be limited to less that 3 m and storage time will be minimised.
- Material handling and reinstatement operations should follow good practice to avoid inadequate or over compaction of the materials.
- Route selection and lower tier assessments for peatland areas should consider relevant government guidelines on development in these areas as well as relevant datasets including the Geological Survey of Ireland's landslide dataset and Teagasc's subsoils dataset.

9.9.3.3 EMM8C(iii) Mineral Resources

The power circuit shall be routed to avoid disturbance to existing or planned operations of areas of extraction and licensed mineral reserves.

9.9.3.4 EMM8C(iv) Contaminated Land

- A ground investigation may be undertaken to survey, analyse and assess the areas where there is a potential for this risk to arise.
- Following this, method statements shall be prepared to deal with any area of contaminated ground.

9.9.3.5 EMM8C(v) Bedrock

- Route selection and lower tier assessments should consider Geological Survey of Ireland's bedrock data as appropriate in order to anticipate engineering difficulties.
- Route selection and lower tier assessments should consider Irish National Seabed Survey data and INFOMAR survey data as appropriate to anticipate the nature and depth of stable substrate for offshore projects foundations and connection to onshore grid.

9.9.4 EMM8D Cultural Heritage

- Where the proposed route is in close proximity to archaeological sites the working area shall be kept to a minimum.
- Pre-construction works shall be carried out in those unrecorded areas identified as having archaeological potential.
- There will be full implementation of an Archaeological Plan including, pre-construction works, watching brief and excavation.
- Where previously unrecorded finds are uncovered during construction, adequate archaeological investigation and recording will be carried out before construction works in these areas are continued.

9.9.5 EMM8E Landscape and Visual

Routes shall be selected according to the following criteria;-

- Avoidance of areas designated as being of scenic sensitivity or significance.
- Avoidance of areas that would disproportionately impinge upon sensitive landscape features – such as prominent skyline ridges, shores, river crossings.
- Avoid areas that would disproportionately impinge upon sensitive areas or sites of cultural or historic significance – including monuments, listed and protected structures and their contexts and sites.
- Route selection and lower tier assessments should consider (as appropriate) data from the landscape character assessments contained in the development plans of local authorities.

9.9.6 EMM8F Noise

In relation to noise sensitive receptors, the constraints mapping identified areas of high building density and therefore any route corridors selected shall attempt to minimise impacts on built up areas.

9.9.7 EMM8G Liquid Effluent and Spillages

Portable toilets will be provided at the site offices. They will be emptied regularly by a specialist contractor as appropriate.

9.9.8 EMM8H Solid Wastes

Waste Management Plans will be prepared as part of the overall project design. This will identify likely waste arisings, approximate quantities and appropriate handling and disposal methods.

9.9.9 EMM8I Construction of New Substations and Extension of Existing Substations

EMM8I(i) 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 maximised and used wherever possible as this will provide the best opportunity for integrating the facility into the existing landscape.

EMM8I(ii) It will be important to ensure that substations are not located within the floodplain of major watercourses, which could impact on the access and functioning of the substation. It will also be important to ensure that new substation locations avoid designated conservation sites and sensitive habitats where possible.

EMM8I(iii) 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.

9.9.10 EMM8J Reinforcement of the Transmission System in the Regions

9.9.10.1 EMM8J(i) Midlands Region

The Midlands Region is transected by many kilometres of major and minor grid infrastructure as well as having a significant concentration of junctions and substations – many associated with existing or former power stations. These routes and sites offer strong precedent that should be re-used wherever possible. It should be recognised that large areas of cut-over peat lands may not be suitable low-resistance routing options as many of these sites are nearing the end of production and most if not all will shortly be reinstated as peat land sites that are likely to be deemed to be sensitive – if not protected – habitats.

New major grid projects in this Region will be challenged when trying to identify optimum crossing points over the sensitive Shannon system. Existing crossing points should be re-used or intensified wherever possible. Such crossing points should be identified and secured in regional and county development plans as a matter of urgency – they are nationally significant economic assets.

9.9.10.2 EMM8J(ii) South-East Region

Larger scale grid developments in the South East Region should parallel coastal plains and major river systems – ideally occupying the transitional foothills – without encroaching on either the more sensitive uplands or the immediate environs of rivers and coasts.

Most major routes within this region follow the transition between uplands and lowlands and cause little adverse environmental effect. If future development continues this general pattern there is a low potential for significant effects to arise.

9.9.10.3 EMM8J(iii) Mid-West Region

Major grid development works in the Mid-West Region should re-use or closely follow established routings or areas with established precedent of large-scale infrastructural and industrial development. New works should parallel the coasts and rivers – which contain dense corridors of anciently established settlement – while avoiding more sensitive upland interiors. High levels of rural dwellings in some areas may require sub-optimal proximity to some environmental sensitivities, such as cultural heritage.

9.9.10.4 EMM8J(iv) South-West Region

If new grid development continues patterns of following the strongly east-west trending river valleys in the South-West Region there is a low potential for significant adverse effects on the environment. Major grid developments should be confined to the more environmentally robust centre and east of this region.

The development of new transmission lines between Moneypoint and Cork City would need to carefully consider ecological and visual impact issues, especially in upland areas. Alternatives should consider the reuse of existing power and transport links.

9.9.10.5 EMM8J(v) Dublin & Mid-East Region

It would be useful to integrate with Development plans – both at Regional and County level – to identify infrastructure corridors – ideally paralleling the existing and emerging major road and rail corridors that will develop in the Dublin and Mid-East Region during the period to 2025. It would also be of merit, for working in existing and emerging urban and peri-urban areas, to clearly identify criteria that would lead to determining when and where to underground electricity infrastructure. Land Use Plans for Urban Areas should be encouraged to specifically zone land for sub-stations and to protect existing strategic corridors from inappropriate development.

9.9.11 EMM8K National and EU Legislation and Plans/Programmes

Where grid related development is proposed, EirGrid will seek to contribute towards the protection of environmental features, as relevant and appropriate to EirGrid's responsibilities and obligations under national and EU environmental legislation and including those which relate to specific regional/ national plans/programmes for particular aspects of the environment e.g. Catchment Flood Risk Assessment and Management Study Plans, River Basin District Management Plans and Fresh Water Pearl Mussel Sub Basin Management Plans [113].

[113] Referenced statutory obligation

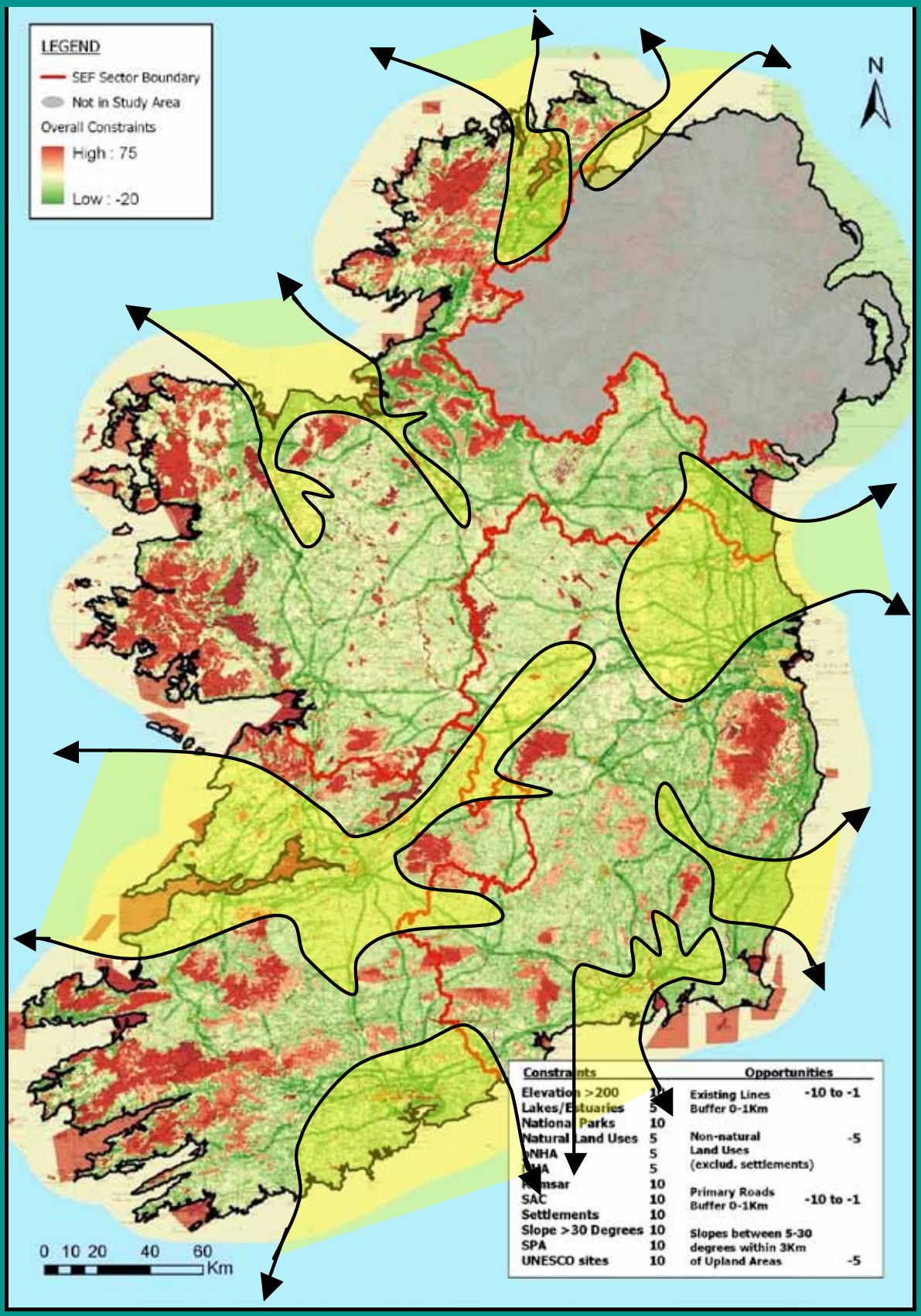


Figure 9.1
Less Sensitive[115] Areas for Land/Sea Connections (identified in yellow)

[115] Presence of less environmental sensitivities

Section 10 Monitoring Measures

10.1 Introduction

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. This Environmental Report puts forward proposals for monitoring the likely significant effects of implementing the IP.

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.

Note that the following monitoring measures will be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Design Guidelines described above.

10.2 Indicators and Targets

Monitoring is based on the indicators which were chosen earlier in the process. These indicators allow quantitative measures of trends and progress over time, relating to the Strategic Environmental Objectives, to be used in the evaluation. Focus is given to indicators which are relevant to the likely significant environmental effects of implementing the IP. Existing monitoring arrangements will be used in order to monitor the selected indicators. Each indicator to be monitored is accompanied by the target(s) which were identified for the relevant legislation (see Section 5).

Table 10.1 below shows the indicators and targets which have been selected for monitoring the likely significant environmental effects of implementing the IP.

The Monitoring Programme may be updated to deal with specific environmental issues – including unforeseen effects – as they arise. Such issues may be identified by EirGrid or identified to EirGrid by other agencies. EirGrid has responsibility for updating the ER.

10.3 Sources

Existing monitoring sources exist for each of the indicators and include those maintained by the relevant authorities e.g. the Environmental Protection Agency, the National Parks and Wildlife Service and the National Monuments Service.

Where significant adverse environmental effects – including positive, negative, cumulative and indirect – are likely to occur as a result of implementing relevant lower-tier plans and programmes such instances should be identified and recorded and should feed into the monitoring evaluation.

Consultations with the relevant authorities will also enable data to be sourced for certain indicators.

10.4 Implementation and Reporting Timeframes

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 Section 9.6).

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.

10.5 Cumulative/Indirect Effects

There are two types of cumulative/indirect effects arising from implementation of the Implementation Programme;

(1) Those directly attributable to the development of the grid – e.g. the cumulative impact on the landscape which could occur as a result of the addition of further lines, in an area that already contains transmission lines.

(2) Those attributable to the development of new energy generation infrastructure and other economic development which will be facilitated by the grid e.g. the development of settlements, wind farms, industry etc.

The monitoring of the effects of developments identified under (1) will refer to the indicators set out on the table overleaf. In addition, the undertaking of the studies which were recommended as mitigation measures (see Section 9 of this report) and integrated into the IP will provide further baseline against which effects of implementing the IP will be monitored.

Effects identified under (2) arise due to an interaction of a wider range of factors arising from national and sectoral policies. Such national effects identified under (2) are monitored by the EPA State of the Environment Report, the DAHG report of the implementation of the measures contained in the Habitats Directive – as required by Article 17 of the Directive – and other national monitoring programmes.

A high level / strategic indicator which will be used to examine the overall performance state of the IP monitoring indicators will be an increase in the reporting on the effects – including cumulative – arising from energy related plans and projects. This will be measured by identifying energy related plans and projects which have occurred over a period of time and examining whether either SEA, EIA, AA or a non-mandatory type of environmental assessment have been undertaken as appropriate.

10.6 Thresholds

Thresholds, at which corrective action will be considered, include:

- court cases taken by the DAHG regarding impacts upon archaeological heritage including entries to the Record of Monuments and Places; and,
- complaints received from statutory consultees regarding avoidable environmental impacts resulting from plans or projects which are prepared or undertaken under the IP.

Table 10.1

Selected Indicators, Targets and Monitoring Sources

Environmental Component	Selected Indicator(s)	Selected Target(s)	Source	Monitoring Frequency
Biodiversity, Flora and Fauna	**B1:** Conservation status of habitats and species as reported upon under Article 17 of the Habitats Directive	**B1:** Maintenance of favourable conservation status for all habitats and species protected under national and international legislation to be unaffected by implementation of the IP	a) DAHG report of the implementation of the measures contained in the Habitats Directive - as required by Article 17 of the Directive; b) Consultations with the NPWS; &, c) Monitoring of the effects of development required under separate processes	a) Every 6 years b) Annually, to inform Environmental Appraisal Report which will accompany annual TDPs c) Various - determined by monitoring programmes provided for by EIAs
	B2: Percentage loss of functional connectivity without remediation resulting from development provided for by the IP	**B2:** No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the IP	a) Consultations with the NPWS; &, b) Monitoring of the effects of development required under separate processes	a) Annually, to inform Environmental Appraisal Report which will accompany annual TDPs b) Various - determined by monitoring programmes provided for by EIAs
	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	**B3:** Avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites resulting from development provided for by the IP	a) Consultations with the NPWS; &, b) Monitoring of the effects of development required under separate processes	a) Annually, to inform Environmental Appraisal Report which will accompany annual TDPs b) Various - determined by monitoring programmes provided for by EIAs

[116] Except as provided for in Section 6(4) of the Habitats Directive, viz.There must be:
(a) no alternative solution available,
(b) imperative reasons of overriding public interest for the plan to proceed; and
(c) adequate compensatory measures in place.

Landscape	**L1:** Number of complaints received from statutory consultees regarding avoidable impacts on the landscape resulting from development provided for by the IP	**L1:** No avoidable impacts on the landscape resulting from development provided for by the IP	a) Complaints from statutory consultees; &, b) Monitoring of the effects of development required under separate processes	a) To be collated annually, to inform Environmental Appraisal Report which will accompany annual TDPs b) Various - determined by monitoring programmes provided for by EIAs
Cultural Heritage	**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	**CH1i:** No 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	a) Consultations with the DAHG; &, b) Monitoring of the effects of development required under separate processes	a) Annually, to inform Environmental Appraisal Report which will accompany annual TDPs b) Various - determined by monitoring programmes provided for by EIAs
	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	**CH1ii:** No 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	a) Consultations with the DAHG; &, b) Monitoring of the effects of development required under separate processes	a) Annually, to inform Environmental Appraisal Report which will accompany annual TDPs b) Various - determined by monitoring programmes provided for by EIAs
Climatic Factors	C1: Percentage electricity consumption from renewable energy	**C1:** Contribute towards an increase in electricity consumption from renewable energy (ultimately 40% by 2020)	Consultations with the Sustainable Energy Authority of Ireland	Annually, to inform Environmental Appraisal Report which will accompany annual TDPs

Population and Human Health	**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	**HH1i:** No spatial concentrations of health problems arising from environmental factors resulting from development provided for by the IP	a) Consultations with EPA and Health Service Executive; &, b) Monitoring of the effects of development required under separate processes	a) Annually, to inform Environmental Appraisal Report which will accompany annual TDPs; &, b) Various - determined by monitoring programmes provided for by EIAs
	HH1ii: Maximum noise level emanating from the installation at the façade of any near sited residential properties	**HH1ii:** Ensure that the maximum noise level emanating from the installation does not exceed 30 dB LAeq at the façade of any near sited residential properties, in line with the requirements of BS 4142 (1997), "Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas	Monitoring of the effects of development required under separate processes	Various - determined by monitoring programmes provided for by EIAs
	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	**HH1iii:** Ensure compliance of the standard route planning criteria adopted for the development of the Network with all authoritative international and national guidelines for ELF EMF exposure	Monitoring of the effects of development required under separate processes	Various - determined by monitoring programmes provided for by EIAs

Water	**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)	**W1i:** Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status' by 2015	a) Data issued under the Water Framework Directive Monitoring Programme for Ireland (EPA, 2006); &, b) Monitoring of the effects of development required under separate processes	a) Unknown b) Various - determined by monitoring programmes provided for by EIAs
	W1ii: Poor, Sufficient, Good and Excellent classifications of bathing water as set by Directive 2006/7/EC	**W1ii:** Not to cause deterioration in bathing waters or affect the ability of bathing waters to achieve - as a minimum - the 'Sufficient' classification as set by Directive 2006/7/EC, and where possible the 'Good' or 'Excellent' classifications	As above	a) Annually b) Various - determined by monitoring programmes provided for by EIAs
	W2: Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	**W2:** Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	As above	a) Unknown b) Various - determined by monitoring programmes provided for by EIAs
Material Assets and Soil	**MS1i:** The extent of greenfield areas sterilised by the development of new transmission lines and associated infrastructure	MS1i: To minimise the extent of greenfield areas sterilised by the development of new transmission lines and associated infrastructure	a) EirGrid assessment of projects undertaken; &, b) Monitoring of the effects of development required under separate processes	a) Annually, to inform Environmental Appraisal Report which will accompany annual TDPs; &, b) Various - determined by monitoring programmes provided for by EIAs
	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	**MS1ii:** To maximise the reinforcement of existing transmission lines and the integration of new transmission infrastructure in proximity (0-1km) to motorways and dualled national primary roads	As above	

Section 11 SEA Summary Table

Below 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 11.1

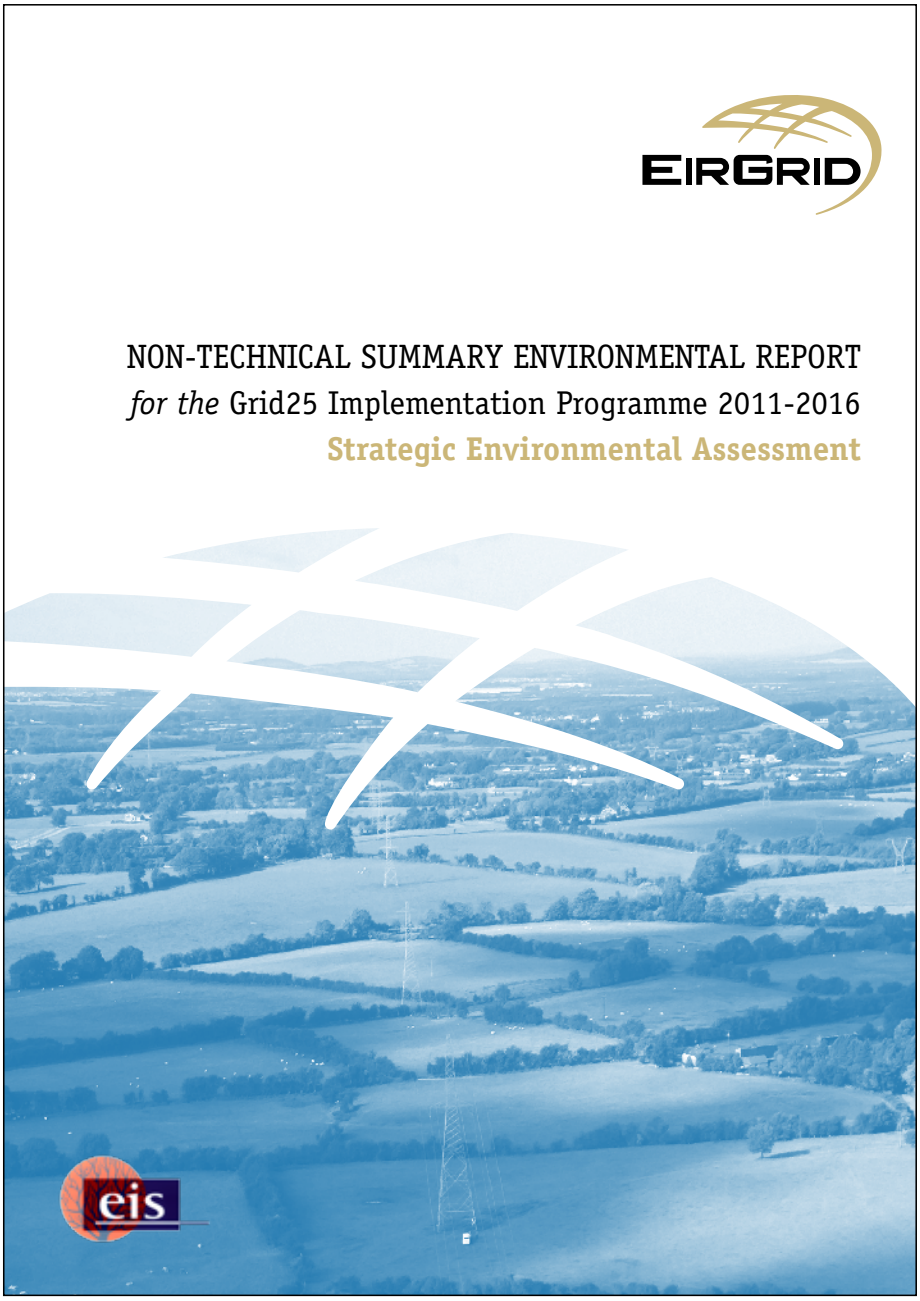
SEA Summary Table: Likely Significant Effects, Mitigation Measures and Indicators for Monitoring

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	**CH1i:** 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

Appendix I Non-Technical Summary

Appendix I Non-Technical Summary is separately bound and accompanies this main document.



Appendix II Strategic Environmental Constraints Mapping Study Summary

(Text extracted from EirGrid Strategic Environmental Constraints Mapping Project Report, prepared by RPS Group, February 2010)

Introduction and Purpose

The purpose of EirGrid's Strategic Environmental Constraints Mapping project is to provide a high level understanding of the likely environmental constraints affecting the development of Ireland's Electricity Transmission Grid. The Transmission Grid provides a vital link between all electricity generators and the users of electricity. Over the next 10 to 15 years, major changes will take place in Ireland's electricity needs. The (previous) Government (of the Republic of Ireland) set the current target of meeting 40% of electricity demand from renewable generation by 2020. The Government's White Paper on Delivering a Sustainable Energy Future for Ireland describes that wind energy will play a pivotal role in meeting this goal. To achieve this target, up to 5,515 MW of installed wind generation will be required by this date. In the long term, 2025 and beyond, this figure will increase. Ocean and biomass technologies are also expected to contribute. Significant strengthening of the grid will be required to enable these changes.

The GRID25 Strategy intends delivering an efficient transmission network for Ireland's continued social and economic development. In order to ensure that the environment is taken into consideration during the future development of the transmission system, this high level constraints mapping has been prepared on behalf of EirGrid to assist in the identification of major environmental constraints which may impact on transmission circuit routing and development projects.

For the purpose of this report the country has been divided into 3 Sectors (see Figure 1) taking into consideration combinations of the regions defined in the National Spatial Strategy (NSS):-

- Sector 1 - The Border and West Regions
- Sector 2 - The Midland, Mid East, South East and Greater Dublin Regions
- Sector 3 - The Mid West and South West Regions

Sector 1: The Border and West Regions

A significant amount of wind generation is expected to connect in this sector. As there is limited demand for this generation in this area, there will be a need to transport this electricity to areas of higher demand, to the Border, Midland or Mid-East Regions.

Sector 2: The Midland, Mid East, South East and Greater Dublin Regions

The Midland, Mid East, South East and Greater Dublin Region developments are primarily associated with the transmission reinforcements required to link the large amounts of new generation in the South West of the Republic of Ireland (that is predominantly wind related), to:

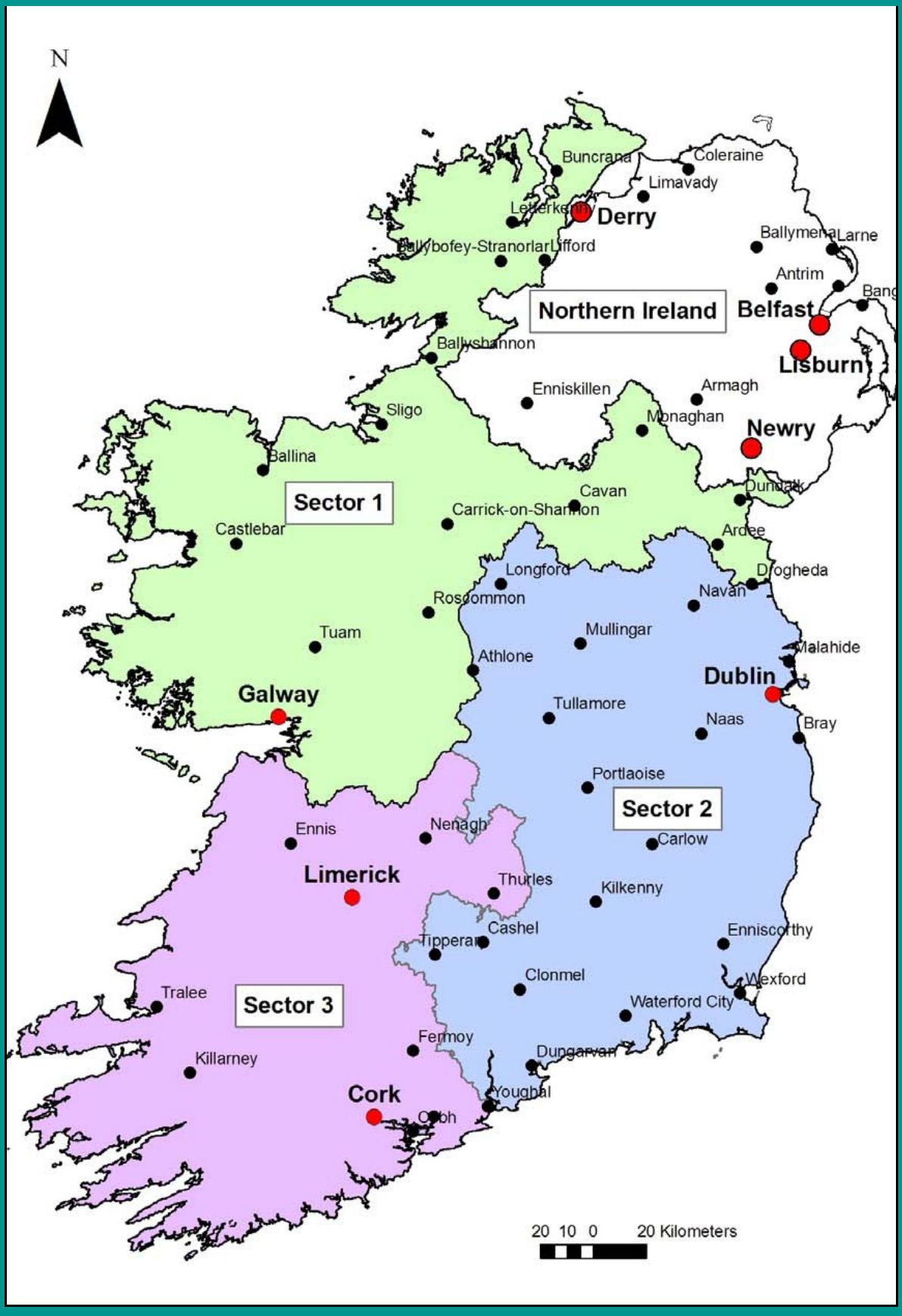
a) The largest load centre in Ireland, namely Dublin; and

b) Provide an adequate electrical connection to the East-West interconnector to support the possibility of exporting surplus wind generation to the United Kingdom.

Sector 3: The Mid–West and South–West

A significant amount of renewable generation, mostly on-shore wind, is expected to connect in the Mid-West and South West Regions. The transmission reinforcement required to cater for this renewable generation will involve the construction of new transmission circuits. These new circuits will connect to the existing electricity infrastructure.

This environmental sensitivity study is being undertaken in order to provide relevant information so that the environment can be taken into



Sector Map for EirGrid Strategic Environmental Constraints Mapping

consideration from the earliest possible stages of strategic transmission reinforcement.

EirGrid, in conjunction with its consultants, CAAS (Environmental Services) have embarked on a Strategic Environmental Assessment (SEA) for an Implementation Programme for GRID25. It is intended that this EirGrid Strategic Environmental Constraints Mapping will form an integral part of the Implementation Programme for GRID25. The EirGrid Strategic Environmental Constraints Mapping will ensure that environmental considerations are included at the earliest possible stage of the transmission system planning process and during the consideration of alternatives. It will be a useful tool to assist the high level decision making process on suitable routing of new transmission circuits whilst having due regard for environmental considerations.

The main deliverable from this study is the preparation of mapping datasets at a national, regional and more localised scale. The mapping identifies constraints including ecological, landscape and topographical constraints that should be incorporated into strategic decisions on projects likely to give rise to environmental effects during the implementation of GRID25.

This framework will assist EirGrid in determining:

- environmental constraints at a strategic level;
- suitable corridors for transmission infrastructure development;
- particularly sensitive areas that should be avoided, if possible;
- the next step in the planning and development of transmission infrastructure from an environmental perspective, e.g. the consideration of environmental constraints in more detail and the requirement for environmental reports and impact assessments prepared in conjunction with detailed routing designs.

Use of Project Data

The level of environmental detail provided as part of this constraints mapping is intended to be regarded as high-level and should be used as an overview document to assist in making strategic/ preliminary routing decisions. Once an area has been identified for further consideration for the development of the transmission infrastructure, the EirGrid project team, having considered the high level environmental information presented in this report, should commission a more detailed environmental assessment suitable for the level of detail appropriate to the project.

The mapping included in this document should form an initial high level assessment for more detailed mapping which will be required on a project by project basis; for example, of site specific sensitivities for ecology and cultural heritage and for local development plan designations of scenery and visual vulnerability.

The ultimate purpose of this report is to provide a high level assessment of the major environmental constraints which will inform strategic decisions to be made in relation to the development of the transmission system. This will facilitate an All-Island grid capable of integrating projected levels of renewable energy generation and the on-going development of the transmission grid in respect to normal transmission infrastructure planning.

Procedures for Use of Mapping and Report

The mitigation measures that have emerged from the SEA scoping report for the Implementation Programme for GRID25 include the EirGrid Strategic Environmental Constraints Mapping to ensure that environmental considerations are included at the earliest possible stage and are part of all project and development activities.

As identified in the SEA Scoping report the EirGrid Strategic Environmental Constraints Mapping has two components, as follows:-

- Mapping of the environmental considerations – both constraints and opportunities – that need to be incorporated into strategic decisions about projects and other developments likely to give rise to environmental effects. The mapping would be of sufficient detail to provide an overview of the likelihood of encountering environmental challenges when planning routes though particular areas – at a regional level. Such mapping should form a framework for more detailed mapping – on a project by project basis – of site specific sensitivities for ecology and cultural heritage and for local development plan designations of scenery and visual vulnerability;
- Procedures to be followed on a project-by-project basis for the detailed consideration, weighting and evaluation of likely environmental effects – having particular regard to the provisions and procedures of the Habitats Directive. Such procedures would include the need for timely consultation with relevant planning and environmental authorities, the evaluation of up-to-date mapping, designations and development plans and a consideration of any relevant sectoral guidelines.

Mapping of the Environmental Considerations

The environmental and spatial datasets have been integrated in GIS to help provide a better visualisation and understanding of cumulative environmental sensitivities. Additionally it highlights an enhanced understanding of the spatial distribution of environmental aspects and the implications this has for the implementation strategy for GRID25 in relation to the environmental sensitivities. This high level assessment will ensure

strategic decisions have due regard to the likely environmental effects.

In a similar manner to the scoping stage of the Strategic Environmental Assessment, basic data display and mapping operations have been applied for the preparation of maps that illustrate the status of environmental parameters. Layer (i.e. dataset) properties have been manipulated to enhance information display including raster conversion, a technique used in this study for the development of the constraints rating mapping.

The mapping is produced at national (1:420,000, Volume 2), regional (1:300,000, Volume 2) and a more localised level (1:200,000, Volume 1) (Section 4 provides a description of the datasets used and the different types of mapping produced). It is also intended that the project GIS will be handed over to EirGrid for use within their own internal GIS. Internal protocols should be developed to ensure that the mapping and GIS are used as decision making tools at all stages of potential large scale development but in particular when considering strategic and routeing alternatives.

The national and regional mapping should be used at the initial stages of all project and development phases. In particular the overall constraints rating will provide an indication of the cumulative environmental sensitivities relating to ecological, landscape and topography but will also assist in the identification of opportunity areas that should be utilised as they offer better integration of the type of infrastructure associated with the development of the transmission system.

The overall constraints rating is based on a scoring mechanism and rates the sensitivity of the area based on the cumulative sensitivities of the overlay datasets. The output from the constraints model indicates the relative environmental rating across the study area and whilst there are no specific details in relation to the nature of the designations encountered it is immediately obvious where the areas of high vulnerability and environmental sensitivity are located. This overall environmental constraints mapping has adequate detail to allow high level, strategic decisions to be made with regard to transmission system planning.

The ecological and landscape constraints rating will provide more specific information in relation to these sensitivities. In particular where the ecological rating is showing high scores/rating then this is indicative of the presence of a Natura 2000 site or combination of sites. The higher the score, the greater the ecological sensitivity which will indicate to the route planner that further detailed assessment will be required.

A further level of detail is provided in the more localised mapping which is plotted at 1:200,000 scale on A3 mapping (Volume 1). This mapping provides information on the nature of the constraint, e.g. in the ecological constraints mapping SACs, SPAs, Ramsar sites are illustrated as well as NHA and annexed habitat. The landscape mapping identifies forestry and sensitive land use types such as natural grasslands and peatlands whilst the topography mapping identifies upland areas, major watersheds and steep side slopes. The level of detail included in this mapping should assist in more detailed consideration of potential route corridors and should assist in the selection of routing alternatives.

Conclusions

The main output from the study is the preparation of detailed constraints mapping and a GIS model of the constraints rating based on a cumulative weighting of all the constraints applicable to the study area. This model will assist in the high level route selection process by guiding the selection of potential route corridors for the transmission lines away from environmentally sensitive areas.

The report has also identified the main impacts associated with a development of this nature based on the different methods of construction, i.e. overhead lines or underground cables, and has made some generic recommendations as to the possible mitigation measures that can be employed to address the impact from the proposal. In terms of a comparison of the methods there are different impacts associated with each method of construction and depending on the environmental receptor certain construction methodologies will offer clear advantages over the other. For example where sensitive habitats are encountered underground cables may have a greater impact as the footprint during construction will require the removal of greater areas of habitat. Conversely where there are sensitive landscapes and areas of high scenic amenity the imposition of vertical tower structures on the landscape will have a greater and more long lasting effect than the installation of underground cables whose impact should be negligible after reinstatement has had time to establish.

The report has also identified the need to consider the requirements of the Habitats Directive and in particular Article 6 where Natura 2000 sites may be within the route selection study area. This will allow a screening to be carried out at the early stages of design to establish if avoidance is the most appropriate mitigation measures and whether other more sustainable routes are available.

The constraints mapping and model will facilitate this assessment. The need for Environmental Impact Assessment is also discussed and the relevant thresholds and guidelines to take into consideration when carrying out the route selection process which will form an integral part of any EIS under the consideration of alternatives.

RESPONSES TO SUBMISSIONS & PROPOSED AMENDMENTS ARISING

with regard to the Grid25 Implementation Programme 2011-2016

and accompanying **Strategic Environmental Assessment & Natura Impact Statement**

GRID25

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RESPONSES TO SUBMISSIONS & PROPOSED AMENDMENTS ARISING

with regard to the

Grid25 Implementation Programme 2011-2016

and accompanying **Strategic Environmental Assessment & Natura Impact Statement**

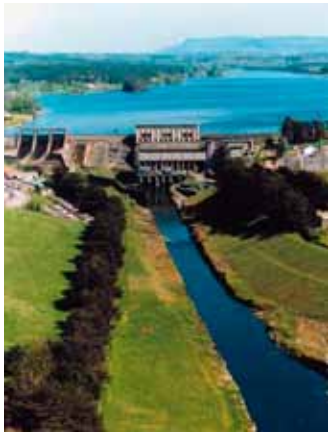

Table of Contents

Section 1 - Introduction

1 Introduction

This document responds to submissions (see Table 1.1) which were made during the period of public display of the Draft Grid25 Implementation Programme (IP) and accompanying Strategic Environmental Assessment (SEA) Environmental Report (ER) and Draft Natura Impact Statement (NIS). Proposed amendments to the Draft Grid25 IP and accompanying SEA ER and Draft NIS arising from the submissions are also identified.

It is noted that consequent changes are not made to the Draft Grid25 IP, SEA ER or Draft NIS at this stage; this document forms part of the documentation of the ongoing IP-making, SEA and NIS processes. It supplements and should be read in conjunction with the original documents.

This document is accompanied by a report detailing the consequences of proposed amendments to the Draft Grid25 IP with regard to the SEA ER and Draft NIS. Both documents will inform the selection of amendments to the Draft Grid25 IP and will be used to update the original Draft Grid25 IP, SEA ER and Draft NIS. An SEA Statement detailing how environmental considerations have been integrated into the IP will be prepared and issued at the end of the process.

Table 1.1

Submissions Received

Submission No.	Submission Body/Person
1	Office of Minister for Agriculture, Fisheries and Food
2	Monaghan County Council
3	National Roads Authority
4	Pat Swords
5	Dublin and mid-East Regional Authorities
6	Geological Survey of Ireland Submission I
7	Inland Fisheries Ireland
8	Heritage Council
9	Geological Survey of Ireland Submission II
10	Magahy Broderick Associates (on behalf of landowners on Innishowen Peninsula, Donegal)
11	Development Application Unit, Heritage Policy and Architectural Protection, Department of Environment, Heritage and Local Government
12	South-East Regional Authority
13	ESB
14	Endessa Ireland
15	ESB Wind Generation
16	Foreshore Unit, Department of Environment, Heritage and Local Government
17	ERMS Planning and Development Consultants on behalf of Natural Hydro Energy/ Spirit of Ireland
18	Natural Hydro Energy/Spirit of Ireland
19	County Monaghan Anti-Pylon Committee
20	SIAC Holdings Ireland
21	Environmental Protection Agency
22	Co-ordination Unit, Department of Communications, Energy and Natural Resources
23	Department of Environment, Northern Ireland
24	Irish Landscape Institute

Section 2 - Responses to Submissions and Proposed Amendments Arising

2.1 Submission No. 1: Office of Minister for Agriculture, Fisheries and Food

Acknowledgement received. No comments made.

Response:
Acknowledgement noted.

Proposed Amendments Arising:
None

2.2 Submission No. 2: Monaghan County Council

Monaghan County Council requested that the consultation period be extended to a maximum of three months to allow members of the public sufficient time to make a submission.

Response:
The consultation period was not extended however submissions were accepted beyond the date.

Proposed Amendments Arising:
None

2.3 Submission No. 3: National Roads Authority

NRA welcomed consultation on the Implementation Plan. The NRA identified the interface with national road schemes: Section 53 of Roads Act in relation to crossing motor way routes. Identify methods/ techniques proposed for any works traversing national road network at earliest stages of consultation.

Response:
Comments are noted.

Proposed Amendments Arising:
None

2.4 Submission No. 4: Pat Swords

There has been no environmental assessment complete for the Government's renewable energy programme. Secondly public participation procedures, which are legally binding, have been by-passed. Thirdly the SEA Environmental Report does not quantify the environmental objectives of the Grid 25 programme, in particular the proposed greenhouse gas savings of the wind energy it is designed to facilitate and the alternatives considered to reach those greenhouse gas savings. Finally further details about the illegalities of this renewable energy programme can be found at the N Aarhus Convention Compliance Committee website at: http://www.unece.org/lenv/ppLcompliance/Compliance%20Committee/54TableEU.htm

Response:
Comments on the undertaking of environmental assessment or otherwise of other policies, plans, programmes or projects is not within the scope of this report.

The purpose of the ER for the Grid25 draft IP – which has been prepared as part of the SEA – is to provide a clear understanding of the likely environmental consequences of decisions arising from the draft IP. The preparation of the draft IP and accompanying SEA have complied with all legislative provisions. The information contained in the ER complies with the requirements as detailed under Annex I (Information referred to in Article 5(1)) of the SEA Directive.

The type and extent of future renewable energy projects is unknown therefore it is not realistic to quantify impacts upon greenhouse gas emissions; however reference can be made to target emissions in the 2007 White Paper on Energy; qualitative consideration relating to such is given through the application of Strategic Environmental Objective C1[1] throughout the assessment.

[1]SEO C1: To help to facilitate the achievement of higher level targets contained in the Government's Energy White Paper Delivering a Sustainable Energy Future for Ireland - the Energy Policy Framework 2007-2020 and targets relating to the Kyoto Protocol

Proposed Amendments Arising:

The EU has set a legally binding target that greenhouse gases across the EU must be reduced by at least 20% by 2020, compared with 1990 levels. There exist two carbon emission reduction methods at the EU level to achieve this. One method is applied through the Emissions Trading Scheme (ETS), while a second emission reduction target is applied in the non-ETS sector. Taken together, the combined ETS and non-ETS EU-wide reductions will result in an overall EU-wide reduction of 14% compared to 2005, which is equivalent to a reduction of 20% compared to 1990.

Any generation plants greater than 50MW fall under the EU Large Combustion Plant directive (2001/80/EC). This directive was transposed into Irish law by the Large Combustion Plant Regulations 2003 (S.I. No. 644 of 2003) and limits the emissions of certain pollutants into the air from large combustion plants. There are also some combustion plants associated with other facilities (i.e. where energy production is not the main activity) which are also licensed under the directive. The EPA is charged with ensuring that generation plants meet their requirements under these directives. There are a number of other EU Directives and national policy initiatives that apply restrictions to emissions from generation units.

2.5 Submission No. 5: Dublin and Mid-East Regional Authorities

The Dublin and Mid East Regional Authorities welcome the draft publication and highlight that the Regional Planning Guidelines contain a number of strategic policies and recommendations that support the principles of Gird 25 at a local and regional level. They support shorter lead in times for projects from inception to operation. The Implementation Programme should take account of National Landscape strategy and the report "The Comparative Merits of Overhead Electricity Transmissions Lines Versus Underground Cables". They suggest reference to some of the strategic projects within the relevant sections of the programme document relating to individual regions contained in Chapter 2 of the Implementation Programme.

Response:

Comment noted and there is a section in the IP concerning this.

Proposed Amendments Arising:

None

2.6 Submission No. 6: Geological Survey of Ireland

Datasets and databases detailed for information. No specific comments made.

Response:
Information sources noted.

Proposed Amendments Arising:
None

2.7 Submission No. 7: Inland Fisheries Ireland

(i) IFI Ballina should be contacted at the planning stage of works to be carried out in its area.

(ii) The construction phase of Grid infrastructure has the potential to cause significant water pollution. In addition to the mitigation measures outlined in Appendix B of the Draft Grid25 Implementation Plan, additional mitigation measures should be included where construction materials such as cement and concrete are to be used as these materials are toxic to fish. No washings from cement mixers or lorries should be permitted to flow into watercourses. No stockpiling of materials or soils should be carried out close to a watercourse. Where temporary watercourse crossings are considered to access work sites IFI Ballina should be notified prior to the access route being selected. An Emergency Response Plan should also be produced, in the event of a major spill or other significant discharge of polluting matter to surface waters. This should include immediate notification to IFI Ballina of any such event. No instream works should be carried out between 1 October and 1 May because of the negative impact that such activity could have on spawning and juvenile salmonids. lnstream work should be confined to dry weather periods during the summer months.

Response:

(i) EirGrid will engage with the IFI (and all other key stakeholders) where relevant during development of all its projects, including those occurring in the Moy catchment. Such consultation will occur in accordance with the EirGrid Project Development Roadmap, which is a fundamental tool of the SEF.

(ii) The potential to cause water pollution is acknowledged however measures have been integrated into the draft IP which will ensure the appropriate mitigation of such potential (see Section 9 of the SEA ER). All of the suggested measures in the submission either directly or indirectly relate to the measures that have been integrated into the draft IP. In addition to the mitigation measures included in the draft IP, more detailed measures would be likely to be required by lower tier environmental assessments and would need to be integrated into relevant specific plans and projects.

Proposed Amendments Arising:

To expand on SEF, including insertion and explanation of Project Development Roadmap.

2.8 Submission No. 8: Heritage Council

2.8.1 Energy conservation

The Heritage Council holds the view that grid upgrading needs to be considered alongside a national policy for energy conservation, and robust technical and economic analyses of proposals for renewable energy generation before plans to expand the transmission infrastructure are carried out.

Response:
It is the case that, where a need for transmission infrastructure development is identified, all options for such development are considered, including the upgrading of existing infrastructure (reference G25). However, it is the case that much of the transmission development required to facilitate connection of renewable to the grid occurs in areas where there is currently little or no existing high voltage transmission infrastructure.

Proposed Amendments Arising:
None.

2.8.2 Appropriate Assessment

With regard to the assessment of cumulative impacts of this and other plans and projects, such as the two planned interconnectors, the Appropriate Assessment states on page 4: "Both of these projects are subject to individual environmental impacts assessment procedures and thus their impacts are not further considered in this assessment". This fails to udertake any assessment of the cumulative impacts of the Implementation Programme and other known plans and projects which is one of the objectives of an appropriate assessment, and yet this is not being "further considered", thus undermining the conclusion that the programme, in combination with other projects, and with the included mitigation measures, will not have a significant impact on Natura 2000 sites.

The Heritage Council recognises that such assessments are challenging at the strategic level – however, we consider it unsatisfactory that the Natura Statement does not attempt this with known projects, of which there are several.

Response:
To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

Proposed Amendments Arising:
To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

2.8.3 Landscape

(i) For example, in relation to the potential development of offshore energy generation the Heritage Council is concerned about the cumulative effects on the landscape of the construction for wind farms off-shore and on land, and the necessary grid/ transmission systems.

(ii) The Council recommends that landscape assessments be carried out at regional level to overcome this. A similar recommendation has been made to the draft Off-shore Renewable Energy Development Plan. The Council would be happy to advise if required.

Response:

(i) Potential significant environmental effects of implementing the IP including cumulative and in-combination effects upon the landscape are considered by the evaluation of Draft Implementation Programme provisions contained in Section 8 of the SEA ER. See in particular the text under Section 8.3 'Indirect and Cumulative Effects' and text throughout Section 8 relating to Strategic Environmental Objective L1[2]. See also Proposed Amendment Arising.

[2] SEO 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

(ii) Potential impacts upon the landscape will be mitigated by measures that have been integrated into the draft IP (see Section 9 of the SEA ER). In addition, future revisions to the IP and accompanying SEAs will take account as appropriate new and updated environmental baseline data including that which may relate to National or Regional landscape assessments.

Proposed Amendments Arising:
To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

2.9 Submission No. 9: Geographical Survey of Ireland Submission II

2.9.1 Draft Grid 25 Implementation Programme

Appendix B: Interim Indicative Mitigation Measures

Water resources:

(i) P74, Suspended solids & sediment deposition: Precautions shall be put in place to avoid or minimise the generation and release of sediments and/or peat into all watercourses.

(ii) P75, Flooding: Whenever possible, Eirgrid should avoid building (vital) infrastructure in flood plains; Whenever possible, elevated areas should be given priority for infrastructure; The cost of maintenance and difficulty of access in case of flooding should be considered, since flooding events are likely to increase with climate change.

Soils and Geology (p75):

(iii) Bedrock: Taking GSI's bedrock data into consideration to anticipate engineering difficulties (rock hardness, karst features, stability, infiltration…); Consult data from the Irish National Seabed Survey (offshore data) and INFOMAR survey; (transition from offshore to onshore) to be consulted and get interpretation when available to anticipate nature and depth of stable substrate for offshore projects foundations and connection to onshore grid.

(iv) Geological features: Consult with GSI in relation to geological heritage sites either recommended for NHA or County Geological Site designation.

(v) Soil: Working in peat and blanket bog environment should follow Wind Energy Development Guidelines DOEHLG along with the recommendations from the upcoming "Power Projects in Peatlands"; GSI's landslide database should be consulted; Teagasc subsoils dataset should be consulted.

Response:

(i) Sediments in this instance include peat. See Proposed Amendment Arising.

(ii) The following measure which has been integrated into the draft IP will ensure that the cited issues are considered: 'EirGrid shall carefully examine development proposals to ensure consistency with the requirements of The Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG, 2009).'

(iii) Such issues should also be considered by lower tier assessments and design. See Proposed Amendment Arising.

(iv) Such issues should also be considered by lower tier assessments and design. See Proposed Amendment Arising.

(v) Such issues should also be considered by lower tier assessments and design. See Proposed Amendment Arising.

Proposed Amendments Arising:

(i) To update the cited measure as follows:

Suspended solids & sediment deposition

Precautions shall be put in place to avoid or minimise the generation and release of sediments[3] into all watercourses.

(ii) None

(iii) To add the following measures to those for 'Soil and Geology':

Bedrock
Route selection and lower tier assessments should consider Geological Survey of Ireland's bedrock data as appropriate in order to anticipate engineering difficulties.

Route selection and lower tier assessments should consider Irish National Seabed Survey data and INFOMAR survey data as appropriate to anticipate the nature and depth of stable substrate for offshore projects foundations and connection to onshore grid.

(iv) To add the following measure to those for 'Geological Features' under 'Soil and Geology':

Route selection and lower tier assessments should consult Geological Survey of Ireland as appropriate in relation to geological heritage sites either recommended for NHA or County Geological Site designation:

(v) To add the following measure to those for 'Soil' under 'Soil and Geology':

Route selection and lower tier assessments for peatland areas should consider relevant government guidelines on development in development in these areas as well as relevant datasets including the Geological Survey of Ireland's landslide dataset and Teagasc's subsoils dataset.

2.9.2 SEA Environmental Report

(i) Section 4 – Environmental Baseline

4.11. Water – Potential for the implementation of the IP to impact on water

[3]Sediments in this instance include all soils including peat.

in general (surface and/or groundwater) linked to sudden or ongoing input of sediments and/or organic material and/or chemicals during the construction phase and later maintenance.

4.11.5.5. Groundwater quality – Potential for the implementation of the IP to impact on groundwater to do with fuel, chemicals, sewage leakages/spillage on working sites during construction phase. Consult Groundwater vulnerability and bedrock maps to be aware of where most vulnerable areas are. Have an emergency response plan in place before works start.

4.13.2. Peat Soils – Potential for the implementation of the IP to impact on peat stability.

4.13.3. Geological Features – Bedrock – Bedrock is the main component of the Earth's crust. Bedrock is the underlying rock: the solid rock beneath a layer of soil, rock fragments, or gravel. Bedrock will generally provide the most amount of physical support for the routing of and construction of, transmission structure. Therefore bedrock should always be sought for foundations works. Knowledge and understanding of bedrock information will help to anticipate engineering and geotechnical difficulties. Potential for the implementation of the IP to impact on ground stability (limestone/karstic areas) and groundwater (ct. 4.11 .5.5.).

4.13.3. Geological Features – Geological Heritage – Consultation with the GSI will inform on the presence of important geological heritage features and possible mitigation measures if required. There might not be any comprehensive nationally published database yet but information is gradually published at county level and accessible on GSI website.

4.13.4. Sealing of mineral resources – In terms of the potential to develop natural resources such as mines, consult with the Exploration and Mining Division (EMD) of DCENR. Any reason why quarries are not considered at that level? Aggregate Potential Mapping programme is currently carried out by GSI, data will start to be available online by end of spring 2011 .

(ii) Section 5 – Strategic Environmental Objectives

5.8. Material Assets and Soil – Geological Heritage Sites – The Wildlife Act 1976 and Wildlife (Amendment) Act 2000 also sets out the protection of geological and geomorphological NHAs and pNHAs. Sites have not been statutorily proposed or designated yet but GSI can inform on sites recommended for designation. The National Heritage Plan for Ireland 2002 sets out to protect Ireland's heritage, including County Geological Sites (CGS) to be integrated in County Development Plans. The process is ongoing, consult GSI for details.

SEO GH 1: To avoid unauthorised impacts upon geological heritage sites either recommended for NHA or CGS designation.

Response:

(i) Section 4 of the SEA ER 'Environmental Baseline' describes the existing environment to which the IP relates and does not focus on potential impacts on the environment arising from implementation of the IP. Potential significant environmental effects of implementing the

IP appropriate to this strategic level of plan making have been addressed in Section 8. Lower tier assessments and design will take into account relevant potential environmental effects as required by the measures which have been integrated into the draft IP under 'Soils and Geology' as amended by 'Proposed Amendments Arising' under Section 2.9.1 of this Addendum.

(ii) The relevant legislative provisions relating to NHAs are detailed under Section 5.2.1.8 of the SEA ER. Provisions concerning consultation with GSI and GSI data have been integrated into the IP under 'Soils and Geology' as amended by 'Proposed Amendments Arising' under Section 2.9.1 of this Addendum. With regard to the suggested SEO, the SEA Directive requires that the evaluation of the draft IP be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected. In compliance with this requirement the SEA focuses upon the most relevant aspects of the environmental characteristics. NHAs and proposed NHAs are covered under the term Wildlife Sites in SEO B3[4].

Proposed Amendments Arising:
None.

2.10 Submission No. 10: Magahy Broderick Associates (on behalf of landowners on Innishowen Peninsula, Donegal)

Landowners on Innishowen Peninsula who want to develop wind generated power (100-500MW) ask that consideration be given to installation of new 110kV (or 220kV) cable closing loop from Sorne Hill via West coast of the Peninsula reconnecting to the main grid at Coolkeeragh power station. Recommendation for cable to be laid in Foyle estuary. No specific comment on SEA/IP.

Response:
Comments are noted.

Proposed Amendments Arising:
None.

2.11 Submission No. 11: Development Application Unit, Department of Environment and Local Government

2.11.1 Archaeology

The Environmental report includes satisfactory objectives and mitigation proposals for protection of archaeological heritage. However it should be made clear when referring to the underground cabling option that this would have significantly greater impacts on archaeological heritage than overhead lines.

[4]SEO B3: To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites.

Response:
Section 8.7 'Strategic Objectives' states that '....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 -....'. See also Proposed Amendment below.

Proposed Amendments Arising:
To add the following sentence to Section 8.6.2 of the SEA ER 'Underground Power Lines':

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

2.11.2 Nature Conservation

(i) In terms of development, the two main elements of the Implementation Programme are the upgrading of existing circuits and the creation of new circuits. Both are required to transport power across a meshed network between generator locations and demand centres, and both are responding to, and will determine the locations of renewable energy projects, particularly, at present, wind energy projects in onshore locations. In this regard, the Natura Impact Statement and SEA Environmental Report both fail to address and assess the wider likely significant effects at a strategic level.

(ii) While there is no national onshore renewable energy or wind energy strategy at present, there are many county-level strategies which have been adopted or are close to adoption. Prior to the finalisation or adoption of the Implementation Programme, there should be further integration of the Implementation Programme with these strategies, together with further consideration of cumulative or in combination effects, particularly for birds and their habitats and flightlines, bats, peatlands, and sensitive surface waters.

(iii) Two main maps are included in the Implementation Programme. One shows planned upgrades to the electricity transmission network and, in a broad-brush approach (i.e. the wide green arrows), indicates the 'areas of principal future network development requirements' (as of 2009). The other map (Fig. 4.1) shows the 'potential areas for land/sea connections' for offshore renewables. At a minimum, it is recommended that these maps, or their key components, are superimposed on maps of Natura 2000 sites and Freshwater Pearl Mussel catchments/ sub-basins (where Freshwater Pearl Mussel is a qualifying interest of the SAC), in the case of appropriate assessment, and maps of all nature conservation sites (Natura 2000 sites, NHAs, proposed NHAs, National Parks, Nature Reserves, Wildfowl Sanctuaries), in the case of SEA, to highlight areas of potential conflict that require further attention at a strategic level. The above will highlight areas of concern in relation to the potential land/ sea connections and major ecological constraints. The potential for significant effects on Natura 2000 sites with coastal qualifying features is noted and this requires further attention in the current Grid25 strategy and Implementation Programme, or as part of the Offshore Renewable Energy Development Plan, and their environmental assessments.

Response:
(i) Both the NIS and SEA ER have assessed the likely significant environmental effects – including secondary, cumulative,

synergistic, short, medium and long-term permanent and temporary, positive and negative effects – of implementing the IP as appropriate to this level of strategic planning. The findings of the assessments are contained in both reports. See also Proposed Amendment below.

(ii) A measure concerning EirGrid's co-operation in the preparation of renewable energy generation guidelines and strategies[5] has been integrated into the draft IP. County-level strategies have been taken into account by both the AA and SEA during the assessment of all in-combination environmental effects. The IP complies with the Habitats Directive and all other environmental protection legislation and measures have been integrated into the IP to ensure such compliance for lower tier plans and projects.

(iii) Figure 2.2 of the draft IP shows an indicative representation of Strategic Transmission Potential in Ireland while Figure 4.1 shows indicative potential areas for land/sea connections in Ireland. As detailed in the draft IP, the IP forms part of a strategic action hierarchy. At this IP level of strategic planning it is not possible to represent specific projects in more detail. At Technical Planning Level, a range of alternative approaches will be considered – these include grid configuration and management, and re-use of existing assets, technical and routing options. These are subjected to environmental assessment as appropriate. At Project Level, once the need and technical configuration has been determined, further alternatives are considered, using a formal consideration of all alternatives – using SEA and EIA techniques. This stage involves extensive pre-application consultation and scoping. At Permitting Level the application for consent is subject to formal EIA or environmental studies, as appropriate, and there is formal public and agency consultation. In the SEA ER, Figure 2.2 of the IP has been overlain by the National Overall Development Potential Rating layer of data (SEA ER Figure 8.1) and Figure 4.1 in the draft IP is overlain by the same data. EirGrid could consider overlaying the National Overall Development Potential Rating layer of data onto IP Figure 2.2, however: to overlay individual environmental constraints on national or regional maps included in the IP would not aid the assessment – due to the indicative nature of the IP provisions – and could misleadingly suggest that provisions of the IP are more defined than is the case. The IP complies with the Habitats Directive and all

[5] **Co-operation in preparation of Renewable Energy Generation Guidelines and Strategies**

Some parts of the country are better situated for generation of renewable supplies of energy than others. However, there is currently no governing terrestrial renewable energy strategy detailing where renewable energy generation should occur in Ireland. A number of policies and objectives exist in various County Development Plans and County Wind Energy Strategies which promote the development of renewable energy at appropriate locations in their jurisdictions.

There is clear merit in the preparation of Regional Renewable Energy Generation Guidelines, as renewable energy developments may often traverse county and regional boundaries. EirGrid will continue to support, co-operate and participate in the preparation of Regional Renewable Energy Generation Guidelines, Regional Renewable Energy Strategies, County Wind Energy Strategies and County Renewable Energy Strategies. Furthermore, EirGrid will continue to support the implementation of aspects of the National Renewable Energy Action Plan 2010 where applicable.

other environmental protection legislation and measures have been integrated into the IP to ensure such compliance for lower tier plans and projects. Also See Proposed Amendment below.

Proposed Amendments Arising:

(i) To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

(ii) None.

(iii) To insert Figure 8.1 of the SEA ER into the IP and NIS.

Also to rename Figure 9.1 and corresponding Figure 4.1 in the SEA ER as follows:

Less Sensitive Areas for Land/Sea Connections (identified in yellow).

2.11.3 Draft Implementation Programme

(i) Pages 73 – 76 contain a list of mitigation measures for the implementation programme (IP) which, it is stated, will be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Guidelines as described in the Plan. While the mitigation measures are welcome they have omitted some important species. Our recommendations are as below. It is recommended that the mitigation measures be extended to include mitigation for bat species, otters, lamprey species and kingfishers.

(ii) Hedgerows are important biodiversity corridors as envisaged under Article 10 of the Habitats Directive (Council Directive 92/43/EEC) and can also act as pathways for bat species to navigate along from roost sites to feeding areas. It is recommended therefore that it should be stated in the IP that the preferred option is that pylons should not be sited in hedgerows.

(iii) Point 4.9 of the Implementation Programme states that, "EirGrid will continue to work pro-actively with the Department of the Environment, Heritage and Local

Government (DEHLG) to ensure that management plans and conservation objectives for Natura 2000 Sites include criteria and methods to accommodate grid developments." It is not appropriate, in general terms, for management plans and conservation objectives for Natura 2000 Sites to include criteria and methods to accommodate grid developments. This sentence should be omitted.

Response:

(i) Acknowledged.

(ii) Acknowledged.

(iii) This sentence has been reworded.

Proposed Amendments Arising:

(i) To insert mitigation into the NIS, SEA ER and IP providing for the protection of certain protected species, based on available guidance.

(ii) To insert the following as a mitigation measure into the NIS, SEA ER and IP: Where hedges of particular value are encountered the extent and duration of the works shall be minimised.

(iii) Sentence reworded to 'EirGrid will continue to work pro-actively with the Department of Arts, Heritage and the Gaeltacht (DAHG)'.

2.11.4 Appropriate Assessment

(i) The comments re: the need for mitigation measures mentioned above also apply to the AA.

(ii) The issue of cumulative impact has been mentioned in section 3.3 but has only considered some other plans and has not considered projects.

Response:

(i) Acknowledged.

(ii) The AA has considered potential significant cumulative impacts arising from both plans and projects and Section 3.3 of the NIS refers to projects as follows:

'....The principal cumulative effect is that Grid25 will facilitate the development of energy projects – particularly wind – in peripheral areas that contain the highest national concentrations of environmental sensitivities....'

'The development of new energy generation infrastructure and other economic development will potentially lead to habitat and/or species loss, species/population fragmentation and changes in water quality. These potential conflicts will be mitigated by measures outlined in Section 4 of this appropriate assessment and they will be addressed by lower tier environmental assessment, as appropriate.'

See also Proposed Amendment below.

Proposed Amendments Arising:

(i) To insert mitigation into the NIS, SEA ER and IP providing for the protection of certain protected species, based on available guidance.

(ii) To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

2.11.5 SEA

Species are protected under the Wildlife Acts of 1976 and 2000 and also under Annex IV of the Habitats Directive (Council Directive 92/43/EEC). SEO B3 appears to be trying to avoid significant impacts on such species and also of relevant habitats. However this SEO needs to be clarified as such species and habitats can occur anywhere. SEO B3 contains the term "wildlife sites" so it is not clear if the species and habitats are being protected by this SEO in the wider countryside or only in a "wildlife site".

Response:
SEO B3 currently only relates to Wildlife Sites however SEO B1 relates to, inter alia, Annex IV of the Habitats Directive. There is no need to make additional reference to Annex IV of the Habitats Directive in SEO B3.

Proposed Amendments Arising:
To update SEO B3 as follows:

> SEO B3: To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites[6].

2.12 Submission No. 12: South-East Regional Authority

2.12.1 Comments on the SEA and NIS

It is observed that the Environmental Report was prepared with some inputs from the Environmental Protection Agency and the National Parks and Wildlife Section of the Department of the Environment, Heritage and Local Government. Specifically, the SEA was based on an iterative process wherein a significant number of the recommendations relate to how the decision-making process could be modified, such that many of the proposed mitigation measures had already been incorporated into the Implementation Plan. This approach differs from the conventional approach wherein mitigation measures are implemented when the project commences. In this case, some of the potential impacts are addressed at the planning stage rather than at implementation stage. It is considered that this approach reduces the likely impacts of the Plan on the environment and is thus welcomed.

A Natura Impact Statement was also prepared in accordance with the requirements of Article 6(3) of the EU Habitats Directive, in support of the Appropriate Assessment of the Implementation Plan. Based on the precautionary principle, the NIS screened in all Natura 2000 sites in certain counties for Appropriate Assessment. These counties include South Tipperary, Kilkenny and Carlow in the South-East. The NIS considered the likely direct, indirect and secondary impacts of the Implementation Plan on the Natura 2000 sites. The Appropriate Assessment indicates that there are likely significant impacts on the integrity of the Natura sites and, accordingly, avoidance and mitigation measures were put forward. The NIS process and recommended mitigation measures are considered acceptable.

Response:
These comments are noted.

Proposed Amendments Arising:
None.

[6] See definition of 'Wildlife Sites' under Section 5.2.1.10

2.12.2 Landscape

It was observed that the SEA noted that there was no national landscape mapping for the country and, as a result, the impact of the Implementation Plan on landscapes was based on a landscape constraints and opportunities rating mapping prepared as part of the Strategic Environmental Constraints Mapping. It is considered that landscape character assessments contained in the relevant development plans of local authorities within the region will provide more accurate information/ guidance regarding the sensitivity of the region's landscapes to the proposed plan. The Development Plans will also provide more location-specific criteria for the assessment of impacts on these landscapes. Accordingly, while the Regional Authority submits that more grid-related investment is needed in the South-East Region, and it is important that the Grid25 strategy emphasises the need to have more regard to the provisions on landscape impact assessment as contained in the relevant development plans in the region in the provision of this additional infrastructure.

Response:
Landscape character assessment data has not been included in Section 4 'Environmental Baseline' of the SEA ER due to the extent of variability between landscape character assessments across the country, however: it is acknowledged that landscape character assessments contained in the development plans of local authorities will contain additional information on landscape sensitivity which will be taken into account as appropriate through route selection and lower tier assessments. See Proposed Amendment below.

Proposed Amendments Arising:

To add the following measure to those for 'Landscape and Visual':

Route selection and lower tier assessments should consider (as appropriate) data from the landscape character assessments contained in the development plans of local authorities.

2.13 Submission No. 13: ESB (Dr. Owen Wilson, Manager Group Health, Safety and Environment)

The approach adopted by the assessment is comprehensive, rigorous and well structured and meets all legal requirements.

Response:
Comment is noted.

Proposed Amendments Arising:
None

2.14 Submission No. 14: Endesa Ireland (Marian Troy)

Request that the IP include a schedule detailing when further info on Grid25 projects be released. They commented that some of the projects listed in Appendix A have been completed and that a list should be posted on the website with project details and status updated regularly. Greater detail on planned projects should be included in the IP. Report should indicate impact of the planned transmission works on generator availability. Endesa are supportive of EirGrid's plans to explore environmental issues involved in constructing Grid25 projects and hopes this will provide a valuable body of information to aid the planning process.

Response:
This is a strategic document and is not project specific. The TDP details the projects and is updated annually. In Section 2.3.2 the relationship between the generators and the transmission grid is addressed. The cumulative impact of the transmission grid development will be assessed in the ER and NIS.

Proposed Amendments Arising:
None.

2.15 Submission No. 15: ESB Wind Generation (Aine Dorran)

Comments relate to listing and timing of projects with relation to grid connections for developers. Welcome environmental studies and mitigation measures. Suggest public forum would have been beneficial. ESBWG recognise efforts and advances EirGrid has made in development of environmental and mitigation measures as outlined in SEA and IP. It is important that resources are provided to ensure these are implemented.

Response:
Comments are noted.

Proposed Amendments Arising:
None

2.16 Submission No. 16: Foreshore Unit (Bernie Kiely Assistant Principal) Department of Environment, Heritage and Local Government)

Contents on reports noted. Request to be included amongst stakeholders for consultations regarding future development of Grid25.

Response:
EirGrid will include the Foreshore Unit amongst stakeholders.

Proposed Amendments Arising:
None

2.17 Submission No. 17: ERMS Planning and Development Consultants (Louis Wildenboer) on behalf of Natural Hydro Energy/ Spirit of Ireland

It is important to note that Natural Hydro Energy Ltd's energy export strategy and future power stations will fit into the overall policy and environmental framework as outlined in the reports. There are synergies between Grid25 IP, SEA, ER and NIS with Natural Hydro Energy Ltd.'s proposed energy export strategy. Benefits of Natural Energy Power Stations (pumped storage) to overall energy supply and security is highlighted.

Response:
Comments are noted.

Proposed Amendments Arising:
None

2.18 Submission No. 18: Natural Hydro Energy/Spirit of Ireland (Pat O'Donoghue, Director)

Background on Natural Hydro Energy Ltd. Proposals in relation to pumped storage and interconnection. Submission does not refer specifically to SEA process rather how the two companies could work together on various energy projects.

Response:
Comments are noted.

Proposed Amendments Arising:
None

2.19 Submission No. 19: County Monaghan Anti-Pylon Committee

2.19.1 Consultation Period

Concerns regarding the defined time limits for making a public submission.

Response:

The time line provided for public submissions is in accordance with governing legislation, however, as stated on the EirGrid website, EirGrid made a provision to consider comments / observations which arrived after this date.

Proposed Amendments Arising:
None

2.19.2 Difficulties Encountered

No published landscape mapping for Ireland.

(i) It is our understanding that every County Council has, at this stage, prepared a Landscape Character Assessment. Certainly, the County Monaghan Landscape Assessment is readily available on the Monaghan County Council website, and in our opinion should have been consulted.

(ii) EirGrid relied on a marking system that, amongst others, gave a weight of minus 5 to areas of land under 200 metres elevation and with a slope of between 5 degrees and 30 degrees, including non natural land uses to give a landscape constraints rating map. What is the genesis of this rating system? Is it an accepted international method under SEA guidelines?

(iii) This system is not robust in that it does not take into account a complexity and multiplicity of landscape features, such as are found in a drumlin belt. We acknowledge that the Irish drumlin belt extends from County Down right across to Fermanagh, but within this belt the tightly packed "egg basket" of County Monaghan is generally recognised as the prime example of a unique drumlin landscape, not just in Ireland but throughout the world. But yet, due to the landscape rating system employed, it gets the same constraints rating as the featureless central plain. We consider the Landscape Constraints Rating Map (Fig. 3.2) to be fundamentally flawed due to the imprecise criteria on which it is predicated.

Response:

(i) Landscape character assessment data was consulted during the SEA process however such data has not been included in Section 4 'Environmental Baseline' of the SEA ER due to the extent of variability between landscape character assessments across the country, however: it is acknowledged that landscape character assessments contained in the development plans of local authorities will contain additional information on landscape sensitivity which will be taken into account as appropriate through route selection and lower tier assessments. See 'Proposed Amendments Arising' detailed under Section 2.12.2.

(ii) This rating system was developed by experts as part of the Preparation of Strategic Environmental Constraints Mapping. Neither the SEA Directive nor the DEHLG SEA Guidelines consider

such methods however the mapping is consistent with and facilitates compliance with the provisions of the Directive and Guidelines.

(iii) It is noted that the mapping does not identify certain micro landscape features, such as drumlins and steep sided stream valleys, at a regional level. Such features will be taken into account as appropriate through route selection and lower tier assessments (see Proposed Amendment below, Response under (i) above and 'Proposed Amendments Arising' detailed under Section 2.12.2).

Proposed Amendments Arising:

(i) See 'Proposed Amendments Arising' detailed under Section 2.12.2.

(ii) None.

(iii) To insert the following sentence into Section 3.10.1 of the SEA ER, 'Difficulties Encountered':

The Landscape Constraints Rating mapping does not identify certain micro landscape features, such as drumlins and steep sided stream valleys, at a regional level. Such features will be taken into account as appropriate through route selection and lower tier assessments (EIS and Environmental Reports).

2.19.3 The Grid25 Strategy

The need for an SEA arises from the EU SEA Directive 2001/42/EC as transposed into Irish Law (SI 435 and SI 436 of 2004). The European Commission website states: An SEA is mandatory for plans/programmes which are:

- are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town & country planning or land use and which set the framework for future development consent of projects listed in the EIA Directive.

OR

- have been determined to require an assessment under the Habitats Directive. http://ec.europa.eu/environment/eia/sea-legalcontext.htm

Our research shows that a prime purpose of an SEA is to cascade down and inform the preparation of EIA/EIS in a tiered structure.

UNEP(2000) states, "The premise of SEA can be simply stated: EIA on its own is not enough."

http://www.unep.ch/etu/publications/EIA_2ed/EIA_E_top14_body.PDF

It is clear that the SEA process cannot be used as a bolt-on to underpin and justify decisions that have already been taken, but rather it is a tool that must be used to influence the decision making process.

Response:
The objective or purpose of the SEA Directive is to (Annex I) '...provide for a high level of protection of 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, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.'

The SEA has been undertaken for the Grid25 Implementation Programme and complies with the SEA Directive. The SEA has extensively influenced both the Implementation Programme and wider practices and procedures within EirGrid. This influence is detailed under Section '2.7 Planning, Environmental and Community Considerations' and Section 9 'Mitigation Measures' of the SEA ER.

Proposed Amendments Arising:
None.

2.19.4 Cultural Heritage

Grid25 SEA only acknowledges our tangible cultural heritage. While we appreciate that while there is no mapping of intangible cultural heritage an effort could have been made to include some obvious ones such as historical country fairs, long established sporting activities such as road bowling and traditional country pursuits.

Grid25 SEA fails to acknowledge the importance of our intangible cultural heritage.

Response:
The SEA Directive requires that the evaluation of the draft IP be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected. In compliance with this requirement the SEA focuses upon the more high-level aspects of the environmental characteristics. More local cultural heritage features such as identified in this submission will be addressed in lower-tier project-specific environmental assessment.

Proposed Amendments Arising:
None.

2.19.5 Planning, Environmental and Community Considerations

We generally welcome the aspirations in this section and in particular the statement that EirGrid will in future put planning, environmental and community considerations at the heart of EirGrid's Transmission System Planning. However, we consider these aspirations to be very vague. The europa.eu website states "The SEA should focus on impacts that are identified as priority concerns by the population concerned."

EirGrid, through ABP North-South Interconnector Oral Hearing, already has a comprehensive knowledge of what the impacts and priority concerns are in relation to grid development. EirGrid has

not taken the opportunity in Grid25 SEA to directly address the primary issues as expressed time and time again at the Oral Hearing.

An SEA is an iterative process and should have been reviewed to take account of the evidence based concerns as articulated by the population at the Oral Hearing.

In this respect Grid25 SEA is a failed process.

Response:
The SEA has been undertaken for the National-scale Grid25 Implementation Programme and complies with the SEA Directive. The SEA has extensively influenced both the Implementation Programme and wider practices and procedures within EirGrid. This influence is detailed under Section '2.7 Planning, Environmental and Community Considerations' and Section 9 'Mitigation Measures' of the SEA ER.

Proposed Amendments Arising:
None.

2.19.6 Electromagnetic Fields

(i) We agree with the statement that "No conclusive evidence has been found to prove that EMFs are harmful." However, a considerable body of evidence has shown an association between EMFs at very low levels and a risk to health, particularly in relation to childhood leukaemia. In 2002, the International Agency for Research on Cancer (IARC) classified (ELF EMF) as a possible or Class 2B carcinogen. In 2007 the World Health Organisation (WHO) in their Environmental Health Criteria 238 (EHC238) on ELF EMF called for open communication and the suggestion for precaution in the following statement: "When constructing new facilities and designing new equipment, including appliances, low-cost ways of reducing exposures may be explored. Appropriate exposure-reduction measures will vary from one country to another." EirGrid still persist with the well worn statement: "The standard route planning criteria adopted for the development of the All-Island network complies with all authoritative international and national guidelines for ELF/EMF."

(ii) We contend that are no authoritative international or national guidelines for ELF/EMF exposure. There is no specific Irish Government policy with regard to EMF exposure and different guidelines have been adopted by various European countries and regions.

(iii) The standard route planning criteria aspires to keep a set back distance of 50 metres from the centre line to a dwelling house,

if possible. (source: Eirgrid's evidence at ABP Oral Hearing) The 1927 Electricity Supply Act only requires a minimum 25 yard (23 metre) set back.

(iv) Grid25 SEA reserves the option to site very high voltage power lines within the 50 to 23 metres distance from dwellings, obviously in order to overcome routing pinch points.

(v) We are very disappointed that EirGrid has not committed to adopting the Principle of Precaution with regard to exploring no cost / low cost ways of reducing exposures and adopt a maximum threshold limit of 0.4 micro tesla, above which epidemiological studies have shown an association with childhood leukaemia. This would require at least a 60 metre set back with regard to a 220kV double circuit line and a 100 metre set back with regard to a 400kV single circuit line. (source: www.revolt.co.uk) On 2nd April 2009 the European Parliament passed a resolution on health concerns associated with electromagnetic fields (2008/2211 (INI)). I whereas the EU has laid down exposure limits to protect workers from the effects of EMFs; whereas on the basis of the precautionary principle such measures should also be taken for the sections of population concerned, such as residents and consumers,

(vi) Grid25 SEA totally fails to address the genuinely held evidence based health concerns of the population with regard to involuntary constant exposure to low level ELF/EMF.

Response:

(i) As detailed in Section 4.10.3 'Electromagnetic Fields' the SEA ER:

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.

(ii) EirGrid will continue to comply with governing guidelines.

(iii) This SEA does not address specific matters of project design and siting.

(iv) This SEA does not address specific matters of project design and siting.

(v) Our strategy will comply with Target HH1iii set out in Section 5.6.2 of the SEA ER which sets a target to ensure compliance with governing guidelines.

(vi) The Grid25 SEA addresses Electromagnetic Fields as a topic under the environmental component of Population and Human Health. The SEA includes a specific Strategic Environmental Objective[7] and accompanying indicators and targets

[7] SEO HH1: Minimise proximity of development to concentrations of population in order to reduce actual and perceived environmental effects

addressing the concerns cited. A mitigation measures (Preparation of Evidence-Based Environmental Guidelines) has been integrated into the draft IP and is currently being progressed which will focus on, inter alia, the effect of the construction and existence of power projects on human beings.

Proposed Amendments Arising:
None.

2.19.7 Alternative Scenarios

Grid25 SEA considers 3 alternative development scenarios.

1. Business as usual: This option is the usual stocking filler.
2. Grid25 (continuation of existing): This is EirGrid's proposed option
3. Grid25 (alteration of existing): This is the proposal put forward by the Irish Academy of Engineering (IAE)

CMAPC prefers scenario 3 as it obviates the need for very high voltage power lines, whether overhead or underground, to cross the country, from west to east, to transport intermittent onshore wind energy.

We are totally unsurprised that scenario 2 (continuation of existing plan) was selected.

We submit that Grid25 SEA fails to attempt to properly consider alternative scenarios due to endogenous thinking.

Response:
Each of the 3 alternative development scenarios have been evaluated for environmental effects and the findings of this assessment have been presented in Section 7 of the SEA ER. 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.

Proposed Amendments Arising:
None.

2.19.8 Environmental Assessment of IP Provisions

(i) We are of the opinion that the Assessment of Underground and Overhead options is generally a fair assessment of short term environmental impacts arising from the construction stage. The impact of underground is only short term and all negative impacts can be successfully mitigated in the long term. Gas mains have been successfully laid for long distances cross country and the only remaining environmental trace, after a couple of years, are marker posts in hedges at roads and other crossing points.

(ii) Section 5.7 contains this statement: "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." We simply do not understand how massive tower structures constructed with latticed steel, and a large footprint, can in any way equate with the visual impact of a wooden pole or even a twin pole set. A 40 metre high electricity pylon can never be described as potentially significant, it is, especially in a drumlin setting, actually very significant no matter where it is sited. A telescope will definitely not be required to discern a 40 metre

pylon in Co. Monaghan. It is our opinion that underground is environmentally sustainable in the long term when compared to the unsustainable visual impact of massive steel tower structures and overhead very high voltage conductors that cannot be mitigated, unless by avoidance.

Response:

(i) Sections 8.6.1 'Overhead Power Lines' and Section 8.6.2 'Underground Power Lines' of the SEA ER provide commentary on the impacts of transmission lines as does some of the commentary provided on the evaluation of IP provisions against Strategic Environmental Objectives (Section 8.7 to 8.12). Potential long term environmental effects of underground cabling include those relating to archaeological heritage and biodiversity and flora and fauna (e.g. sensitive habitat).

(ii) The cited sentence is correct and relates to tower structures and poles. The visibility of the structure is not the same as it being visually injurious, as it will always relate to the context of its receiving environment – this equally applies to all forms of structures.

Proposed Amendments Arising:

(i) None.

(ii) None.

2.19.9 Mitigation and Monitoring Measures

We have little idea of the importance of this section. EPA Guidelines state that the Non-Technical Summary should be readily understood by the public. The Grid25 SEA Non-Technical Summary generally makes for difficult and often incomprehensible reading, as it is mostly selected cut and paste from the main technical documents.

In this respect Grid25 SEA Non-Technical Summary is jargon based and completely fails to communicate to the general public in a non-technical way that is easily and readily understood.

Response:
Section 6 of the Non-Technical Summary summarises Sections 9 and 10 of the Environmental Report. It is considered that this section and the rest of the report summarises the findings of the SEA in a non-technical way.

Proposed Amendments Arising:
None.

2.19.10 Draft Environmental Report

Finally, with regard to the proposed *ex post* evidence based studies on historic transmission lines and substations – this is not a specific requirement of an SEA and the need to spend taxpayer's money on studies conducted by consultants, appointed and briefed by EirGrid, advertised to last up to 18 months and probably costing many hundreds of thousands and perhaps millions of euro cannot be justified by an "idea". We should, at the very least, be informed of who or what body came up with the "idea" to recommend these studies?

We consider that there is little or no vindication for this expenditure of taxpayer's money in the context of Grid25 SEA, especially in light of our current dire economic circumstances.

We look forward to the final Environmental Report and SEA Statement in respect as to how our submission/observations must be addressed.

Response:
The SEA process which is being conducted by EirGrid and their consultants, and which has included the ongoing input by experts in the

EPA and NPWS, recommended the undertaking of these studies which will contribute to the mitigation of actual environmental effects arising from implementation of the IP, and which will serve to distinguish actual effects from perceived or predicted effects.

Proposed Amendments Arising:
None.

2.20 Submission No. 20: SIAC Holdings Ireland (Stephen Larrissy)

Submission relates mainly to integration of pumped hydro electric storage (PHES) in Ireland and propose suitable location for this would be on west coast with connection to Moneypoint. Suggestion made that granting of planning permission (for generators) rather than grid connection offers that will determine the eventual location and size of generators in Ireland. The IP should include a review of the potential for large scale PHES scheme to be connected to grid.

Response:
The IP is concerned with transmission rather than generation. The development of the grid is in response to demand including demand from generators.

Proposed Amendments Arising:
None.

2.21 Submission No. 21: Environmental Protection Agency

Relevant points made in cover letter are repeated in main submission document and so are not considered here. Main submission document is considered below.

Key suggestions made: title should reflect time line. Section 2.3.5 should be a separate chapter. Figure 2.1 should include SEF, monitoring, review of programme. Fig 2.2 should include regional breakdown of transmission network. Potential significant impacts identified for each region should be reflected where appropriate in plan. Cumulative impacts should be further described. commitment to monitoring, guidelines on EIA for transmission lines in Ireland should include ref to ecological guidelines (draft). Mitigation measures set out in section 4 should be linked where possible with specific likely side effects. Differentiate between specific and strategic mitigation measures. Statutory obligations under EIA and Habitat Directive are not considered as mitigation measures. Considerable detail on how mitigation should be amended.

2.21.1 Section 1: Integration of Environmental Considerations in the Land Use Plans

2.21.1.1 Introduction

(i) The Grid25 Implementation Programme (the Programme) should be set in the context of the planning hierarchy and a clear statement should be provided as to the function of the Plan and what the Plan can and cannot do. Where other Plans/ Programmes/Strategies are responsible for implementing relevant policies / objectives / initiatives, these should be acknowledged and fully referenced in the Programme.

(ii) The comments below relate to the integration of the environmental considerations and recommendations that have been set out in the Environmental Report(ER), as well as the additional information highlighted by the EPA, within the Programme. Suggestions are put forward for consideration with a view to addressing the integration of a number of key environmental considerations within the Programme.

(iii) The EPA is a statutory Environmental Authority under the SEA Regulations. The EPA's role in SEA focuses on promoting full integration of the findings of the Environmental Assessment into the Programme. It is not the function of the EPA to either approve or enforce the Programme.

Response:

(i) This has been set in context of the planning hierarchy and a statement has been included in the IP.

The strategic context for energy infrastructure is set-out in the :

- Irish Government's Energy White Paper "Delivering a Sustainable Energy Future for Ireland" (March, 2007)
- National Development Plan 2007–2013,
- National Spatial Strategy 2002–2020,
- Regional Planning Guidelines 2010–2022,
- County Development Plan and relevant Local Area Plans.

Electricity infrastructure is vital for County, Regional and National Development. Each Planning Authority is required to provide as an objective within its Development Plan for the provision/facilitation of infrastructure including energy.

(ii) This is noted.

(iii) This is noted.

Proposed Amendments Arising:

(i) To include planning hierarchy and statement as detailed above.

(ii) None.

(iii) None.

2.21.1.2 Key Suggestions/Recommendations

(i) The title of the Programme should reflect the timescale for which the IP will operate e.g. 2011–2016. This will provide a commitment to reviewing both the IP and the SEA and the Appropriate Assessment (AA) which should be reflected in the text of the Programme.

(ii) Section 2.3.5 of the Programme merits a separate Chapter and consideration should be given to changing the title of this section to Strategic Environmental Framework (SEF). This section should highlight the extent to which the SEA and the AA, has informed the ongoing development of this Framework.

(iii) The title of Figure 2.1 should also include SEF. A section on Monitoring should also be added to Figure 2.1. The requirement for review of the Programme and the associated requirement for SEA and

Appropriate Assessment – AA should also be reflected in Figure 2.1. The outputs of Programme implementation and SEA/AA related monitoring which should inform subsequent Programme updates and associated assessment should also be incorporated into Figure 2.1.

(iv) The detailed Master Plan or series of Master Plans referred to in the Programme should be screened for both SEA and AA and this requirement should be reflected in Section 2.5 –Grid Development Strategy.

(v) Figure 2.2 should include an outline of the regional breakdown of the transmission network as reflected in the Programme and the SEA ER and AA.

(vi) The scope of the AA should reflect the same grid development categories which have been assessed in Section 8 of the SEA ER.

(vii) The potential significant effects identified and the associated recommendations/ mitigation measures put forward under each Region in both the SEA ER – Evaluation of Draft IP Provisions and the Appropriate Assessment – Potential Significant Effects to mitigate likely significant effects and Probable and Potential Conflicts (SEA ER - Section 8) identified should be reflected where relevant and appropriate in the Programme. For instance in NIS under Northwest region – "Major Grid developments should avoid areas west of the Moy and south of Strabane" And for Midlands Region "Existing crossing points should be reused or intensified wherever possible. Such crossing points should be identified and secured in regional and county development plans as a matter of urgency – they are national economic assets".

(viii) The reference in the SEA ER (Section 8.3) to "…although significant cumulative effects are likely to occur…" and also in the AA to "…. the Grid25 IP have the potential to create cumulative impacts on the Natura 200 network", should be further described and explained in both instances. The potential nature extent and combined sources of these effects should be described in more detail.

(ix) The reference in relation to Monitoring Measures in Section 10.5 Cumulative/ Indirect Effects to the "Indicator which will be used to examine the state of monitoring indicators will be an increase in the reporting on the effects – including cumulative – arising from energy related plans and projects" should be further described along with responsibility and reporting frequency. There should be a commitment included in the Programme to reporting on the IP implementation and associated SEA and AA monitoring during the lifetime of the Programme. A suitable timescale might be every 2–3 years which could coincide with mid Programme review. The timescale should reflect the time period over which the Programme will operate e.g. 2011–2016.

(x) The strategic level environmental constraints highlighted in the SEA Environmental Report should be reflected in the relevant Regional Strategic Transmission Potential Figures as presented in Section 2 of the Programme. This is reflected for Potential Areas for Land/ Sea Connections in Figure 4.1 of the Programme.

(xi) Section 4.4.3 – Guidelines on EIA for Transmission Projects in Ireland should include reference to relevant EIRGRID Guidelines e.g. Ecological Impact Assessment Guidelines. These should also be reflected as appropriate in the Strategic Environmental Framework. The NIS should also refer to these Guidelines.

(xii) The Environmental Mitigation Measures set out in Section 4 of the Programme should be linked where possible with specific identified likely significant effects. The Mitigation Measures included Appendix B, while it is noted that these will be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence- Based Design Guidelines, these should, where possible, be integrated in the main body of the text of the Programme.

(xiii) Where Mitigation Measures (MM) proposed are not linked to specific identified significant effects they should be categorised as either Strategic level Recommendations or Procedures to be adopted as part of an overall Environmental System within the overall Grid Environmental Management, Planning and Implementation Procedures e.g. the Strategic Environmental Framework (SEF). Statutory obligations required under EIA and Habitats Directives should not be considered as Mitigation Measures.

(xiv) It is considered the Mitigation Measures set out in the Natura Impact Statement – Section 4 – Mitigation Measures should be reviewed and made specific to potential impacts on Natura 2000 sites.

(xv) There would be merits in assigning specific coded references to the individual Mitigation Measures proposed and the relevant sub measures related to each of the 8 specific Mitigation Measures e.g. - EMM01 /EMM01.1.

(xvi) There would be merits in having a single overarching Strategic Mitigation Measure which reflects the ongoing development and implementation of the Strategic Environmental Framework (SEF) which has been informed by the SEA process.

(xvii) It is considered the wording of the 8 MMs could be improved and strengthened. A number of suggestions are made below for consideration. Mitigation Measures which are linked should be combined where possible e.g. EMM01 and EMM04, EMM02 and EMM05.

(xviii) Mitigation Measure 1 - EMM01- Involvement of Planning and Environmental Considerations... – this MM may be better reflected as Full integration of...

(xix) Mitigation Measure 2 – Strategic Environmental Constraints Mapping EMM02. The wording of this MM should reflect the availability of this mapping through GIS. There would be merits in EIRGRID providing a commitment in the Programme to making this mapping system available as a desk based "Integrated Interactive GIS Grid Planning Tool" which is fully integrated in the overall Strategic Environmental Framework. Provisions should be made to ensure the system is maintained with up to date spatial data and related information.

(xx) Mitigation Measure 3 – evidence – based Environmental Guidelines – reference should be made in the descriptive text in

Section 4.4 to existing EIRGRID Guidance e.g. Ecological Impact Guidelines etc, and the need for these to be updated following completion of the associated studies. The text under Section 4.4.3 should highlight that projects would also be required to be screened with respect to the requirement for Habitats Directive Assessment/Appropriate Assessment as required by Article 6 of the Habitats Directive. The recently published DoEHLG guidance available in relation to Appropriate Assessment "Appropriate Assessment of Plans and Projects in Ireland" (DoEHLG, 2009) should also be referenced here. See: http://www.npws.ie/en/media/NPWS/Publications/CodesofPractice/AA%20Guidance.pdf

(xxi) Mitigation Measure 4 – Consideration of the Broadest Possible Range of Alternatives – Should the emphasis of this MM be on energy transmission strategies rather than energy generation strategies?

(xxii) Mitigation Measure 5 – Preparation of Transmission Development Plan Environmental Memoranda – the use of the term Environmental Appraisal Report could be considered.

(xxiii) Mitigation Measure 6 – Co-operation in the preparation of Renewable Energy Generation Guidelines and Strategies – the inclusion of "Ongoing" co-operation/consultation/participation could be considered.

(xxiv) Mitigation Measure 7 – Taking offshore data into account – this may read better as Integrating Offshore Grid connectivity requirements and environmental effects in EIRGRID's Strategic Environmental Framework (SEF).

(xxv) Mitigation Measure 8 – Consultation with DEHLG and Planning authorities – this MM could also be incorporated as part of the overall Strategic Environmental Framework (SEF).

(xxvi) The text in Para 1 of Section 4.9 should be reviewed. The emphasis may need to be reversed in that grid developments will need to ensure the integrity of Natura 2000 sites are not compromised. The outputs of MM3 should ensure this.

(xxvii) The Environmental Monitoring programme proposed in Section 10 – Environmental Monitoring should be linked with a Monitoring Programme for implementation of the Programme.

Response:

(i) The timeframe 2011–2016 is to be included.

(ii) This is noted; a separate chapter will be included for this subsection.

(iii) As set out in Section 10 of the ER, preliminary data on monitoring the likely significant environmental effects of implementing the IP will be used to inform the Environmental Appraisal Report of the Transmission Development Plans (see Section 9.6 of the SEA ER) and a 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.

(iv) To update Figure 2.1 of the IP to refer to masterplans and to reference screening.

(v) Figures 2.3-2.7 illustrate the regional breakdown of the transmission network.

(vi) The scope of the NIS included the assessment of the same grid development categories as the ER i.e. Overhead and underground powerlines, construction of new substations and extension of existing substations, as well as impacts from specific projects and impacts from the Reinforcement of the Transmission System in the Regions. Redrafting the NIS to reflect the layout of the ER is therefore unnecessary. In addition, National Parks and Wildlife Service, as the lead authority in implementing the Habitats Directive, did not require the layout of the NIS to reflect that of the SEA ER.

(vii) It is acknowledged that the narratives of the evaluations in the ER and NIS include statements which could be integrated into the IP as measures/text to accompany the description of the development within the various regions. These statements have been compiled and will be integrated into the IP.

(viii) To expand Section 8.3 of the SEA ER and 3.3 of the NIS – see attached document on cumulative effects.

(ix) To describe the cited indicator in the ER in more detail and to insert a commitment into the IP stating that EirGrid will report on the IP implementation and associated SEA and AA monitoring during the lifetime of the programme.

(x) The National Overall Development Potential Rating mapping is to be inserted into Chapter 4 of the IP. Note that to overlay this data on the regional maps would not aid the assessment – due to the indicative nature of the IP provisions – and could misleadingly suggest that provisions of the IP are more defined than is the case.

(xi) Reference to Ecology Guidelines for Transmission Powerlines (EirGrid, in-Draft) is to be made in the IP, SEA ER and AA documents by updating the mitigation measure entitled Preparation of Evidence-Based Environmental Guidelines' in Section 9–4 of the SEA ER.

(xii) 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 in Table 11.1 of Section 11 of the SEA ER. The information on this table is to be integrated into the IP.

(xiii) All mitigation measures have been linked to likely significant effects (if unmitigated) on Table 11.1. An error on this table was noticed while compiling this response and

will be rectified. Measures under Section 9.10.2 'Water Resources' should be added to the mitigation measures for 'Adverse impacts upon the status of water bodies'. Compliance with statutory obligations, including those as required under EIA and Habitats Directives, will mitigate the potential effects of development arising as a result of implementation of the IP. Measures included as 'mitigation measures' in Section 9 of the SEA ER which are statutory obligations will be identified as such by way of footnotes. See also response under point (xii) in this subsection.

(xiv) Acknowledged.

(xv) Acknowledged.

(xvi) The SEF will continue to be developed to reflect ongoing development which has been informed by the SEA.

(xvii) This point is acknowledged; there are a number of linkages between some of the mitigation measures.

(xviii) Acknowledged.

(xix) Acknowledged.

(xx) Acknowledged.

(xxi) Acknowledged.

(xxii) Acknowledged.

(xxiii) Acknowledged.

(xxiv) Acknowledged.

(xxv) Acknowledged.

(xxvi) Arising from NPWS submission this paragraph is recommended to be updated (see 'Proposed Amendments Arising' under Section 2.11.3).

(xxvii) Acknowledged.

Proposed Amendments Arising:

(i) The title of the IP is to include the timeframe 2011–2016. The SEA ER and NIS will be updated accordingly.

(ii) To include a separate chapter in the IP document for subsection 2.3.5.

(iii) Figure 2.1 of the IP is to be updated to include SEF.

(iv) Reference to masterplans and screening to be included in Figure 2.1 of the IP.

(v) None

(vi) Scope of NIS to include same categories as ER

(vii) To include the following as mitigation measures under 'Section 9.10 Other measures integrated into the IP'.

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 substations are not located within the floodplain of major watercourses, which could impact on the access and functioning of the substation. Also, it will be important to ensure that new substation locations avoid designated conservation sites and sensitive habitats where possible.

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.

Reinforcement of the Transmission System in the Regions

Midlands Region

The Midlands Region is transected by many kilometres of major and minor grid infrastructure as well as having a significant concentration of junctions and substations – many associated with existing or former power stations. These routes and sites offer strong precedent that should be re-used wherever possible. It should be recognised that large areas of cut-over peat lands may not be suitable low-resistance routing options as many of these sites are nearing the end of production and most if not all will shortly be reinstated as peat land sites thate are likely to be deemed to be sensitive – if not protected – habitats.

New major grid projects in this Region will all be challenged when trying to identify optimum crossing points over the sensitive Shannon system. Existing crossing points should be re-used or intensified wherever possible. Such crossing points should be identified and secured in regional and county development plans as a matter of urgency – they are nationally significant economic assets.

South-East Region

Larger scale grid developments in the South East Region should parallel coastal plains and major river systems – ideally occupying the transitional foothills – without encroaching on either the more sensitive uplands or the immediate environs of rivers and coasts.

Most major routes within this region follow the transition between uplands and lowlands and cause little adverse environmental effect. If future development continues this general pattern there is a low potential for significant effects to arise.

Mid-West Region

Major grid development works in the Mid-West Region should re-use or closely follow established routings or areas with established precedent of large-scale infrastructural and industrial development. New works should parallel the coasts and rivers – which contain dense corridors of anciently established settlement – while avoiding more sensitive upland interiors. High levels of rural dwellings in some areas may require sub-optimal proximity to some environmental sensitivities, such as cultural heritage.

South-West Region

If new grid development continues patterns of following the strongly east-west trending river valleys in the South-West Region there is a low potential for significant adverse effects on the environment. Major grid developments should be confined to the more environmentally robust centre and east of this region.

The development of new transmission lines between Moneypoint and Cork City would need to carefully consider ecological and visual impact issues, especially in upland areas. Alternatives should consider the reuse of existing power and transport links.

Dublin & Mid-East Region

It would be useful to integrate with Development plans – both at Regional and County level - to identify infrastructure corridors – ideally paralleling the existing and emerging major road and rail corridors that will develop in the Dublin and Mid-East Region during the period to 2025. It would also be of merit, for working in existing and emerging urban and peri-urban areas, to clearly identify

criteria that would lead to determining when and where to underground electricity infrastructure. Land Use Plans for Urban Areas should be encouraged to specifically zone land for sub-stations and overhead routes.

(viii) To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

(ix) To update Section 10.5 of the SEA ER as follows:

.... A high level / strategic indicator which will be used to examine the overall performance state of the IP monitoring indicators will be an increase in the reporting on the effects – including cumulative – arising from energy related plans and projects. This will be measured by identifying energy related plans and projects which have occurred over a period of time and examining whether either SEA, EIA or a non-mandatory type of environmental assessment have been undertaken as appropriate.

To update Section 10.4 of the SEA ER to include the following text:

It is intended that following adoption, the IP and associated SEA will have a 5-year lifespan, with the review and drafting process for the subsequent IP and SEA commencing within the final year of that lifespan. However, the context of these documents will be subject to ongoing review and update over the period of Grid25, in the context of the EirGrid Transmission Development Plan which is updated annually. An Environmental Appraisal Report (EAR) will be produced to accompany each annual TDP, to demonstrate how the TDP is in accordance with the provisions of the IP and SEA, or to identify any updates to those documents. Ongoing monitoring measures as set out in the SEA will also be addressed in each annual EAR.

(x) To insert the National Overall Development Potential Rating from the SEA ER into Chapter 4 of the IP.

(xi) To update the mitigation measure entitled 'Preparation of Evidence-based Environmental Guidelines' in Section 9.4 of the SEA ER as follows:

3. Guidelines on EIA for Transmission Projects in Ireland

.... These Guidelines will draw heavily on both the Environmental Benchmarking Studies and the Evidence-Based Design Guidelines to provide the detail about the scope of environmental studies on the one hand and to describe how the projects should be described on the other. They will also take into account EirGrid's Ecology Guidelines for Transmission Powerlines (currently in-Draft) which will be updated as appropriate following completion of the benchmarking studies. One of the most important components of the Guidelines will be a standardised Glossary of Impacts. This will collate a standardised and authoritative set of descriptions of levels of impact for power projects....

This is intended to remove uncertainty in the preparation of Environmental Impact Statements by facilitating systematic and consistent scoping and screening. It will also make key determinations more robust and protect their decisions against any threats and disputes about the sufficiency of the data or the appropriateness of the methods employed.

The benchmark studies will provide the factual basis for Evidence-Based Design Guidelines for Power Transmission Projects in Ireland. The benchmark studies and the design guidelines, in turn will provide the basis for specialist EIA Guidelines for this sector.

It is noted that projects will also have to be screened with respect to the Habitats Directive Assessment/Appropriate Assessment as required by Article 6 of the Habitats Directive – available DEHLG Guidance 'Appropriate Assessment of Plans and Projects in Ireland' (2009) should be considered as appropriate in this regard.

(xii) To integrate the information on Table 11.1 of the SEA ER into the IP and to note that the SEF will continue to evolve in reference to the SEA primarily in managing/coordinating grid development projects.

(xiii) To add measures under Section 9.10.2 'Water Resources' to the mitigation measures for 'Adverse impacts upon the status of water bodies' on Table 11.1. To identify measures which are statutory obligations included as 'mitigation measures' in Section 9 of the SEA ER as statutory obligations by way of footnotes. See also response under point (xii) in this subsection.

(xiv) To insert mitigation into the NIS, SEA ER and IP providing for the protection of certain protected species, based on available guidance.

(xv) Codes to be assigned to each mitigation measure.

(xvi) None

(xvii) To update subsection 9.1 'Introduction' in Section 9 'Mitigation Measures' as follows:

These measures will be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Environmental Design Guidelines referred to above and outlined below. It is noted that there are linkages between various mitigation measures and that the mitigation of certain effects will be contributed towards by multiple measures. This is indicated on Table 11.1 whereby specific likely significant effects are linked to mitigation measures.

(xviii) To update wording of this mitigation measure as follows: Full Integration of Planning and Environmental Considerations in Transmission System Planning.

(xix) It is noted that EirGrid is in the process of procuring a GIS system and will consider access to the grid planning tool when it becomes available.

(xx) See update identified under point (xi) above.

(xxi) Reword cited mitigation measure as follows '4. Consideration of the Broadest Possible Range of Alternatives in all future Energy Transmission Strategies'.

(xxii) To update wording of this mitigation measure as follows: Preparation of Transmission Development Plan Environmental Appraisal Report.

(xxiii) To update wording of this mitigation measure as follows: Ongoing Co-operation in preparation of Renewable Energy Generation Guidelines and Strategies.

(xxiv) To update wording of this mitigation measure as follows: Integrating Offshore Grid connectivity requirements and environmental considerations in EirGrid's Strategic Environmental Framework (SEF).

(xxv) To merge the mitigation measure entitled 'Consultations with DEHLG and Planning Authorities' into the measure entitled 'Involvement of Planning and Environmental Considerations in EirGrid's Transmission System Planning'.

(xxvi) See 'Proposed Amendments Arising' under Section 2.11.3.

(xxvii) To insert the following commitment into the IP:

It is intended that following adoption, the IP and associated SEA will have a 5-year lifespan, with the review and drafting process for the subsequent IP and SEA commencing within the final year of that lifespan. However, the context of these documents will be subject to ongoing review and update over the period of Grid25, in the context of the EirGrid Transmission Development Plan which is updated annually. An Environmental Appraisal Report (EAR) will be produced to accompany each annual TDP, to demonstrate how the TDP is in accordance with the provisions of the IP and SEA, or to identify any updates to those documents. Ongoing monitoring measures as set out in the SEA will also be addressed in each annual EAR.

2.21.1.3 Generic Integration Comments

This section of the EPA submission "suggests generic aspects which the Programme could include to strengthen the integration of environmental considerations in the implementation of the Programme. The implementation of the Strategic Environmental Framework (SEF) has the potential to be a significant driver in ensuring full integration of environmental considerations at all stages in grid planning, design, environmental assessment and development and maintenance."

Response:

The Generic Measures suggested in this section are either directly or indirectly addressed by existing mitigation measures or other IP provisions, are the responsibility of other authorities or are more appropriately considered at other tiers of decision making. The key headings detailed in this section of the submission and the SEA ER measures that address them (which have been integrated into the IP) are detailed in Table 1.

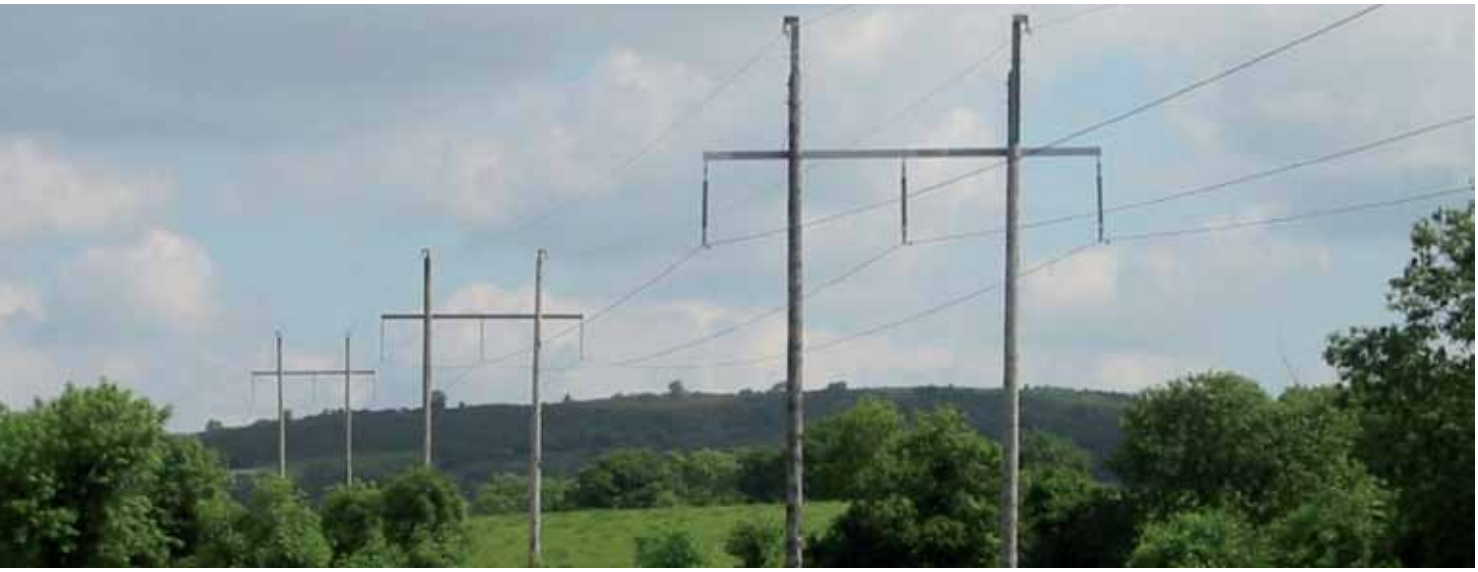

Table 1

Details of SEA ER Measures in response to EPA's Generic Integration Comments

Heading from 'Generic Integration Comments' from the EPA submission	Reference(s) from SEA ER Section 9 'Mitigation Measure' or Other IP Provisions
Water	SEA ER Section 9.2 to 9.9, Section 9.10.7.
Biodiversity	SEA ER Section 9.2 to 9.9, Section 9.10.1
Air, Noise and Climate Factors	SEA ER Section 9.10.6 Other IP provisions: Strategic Objectives, Interconnection, Infrastructure Required to strengthen the National Transmission Network, General Strategy, Reinforcement of the Transmission System in the Regions, Planned Network Developments & Generator Connection Projects
Landscape Character Assessment	SEA ER Section 9.2 to 9.9, Section 9.10.5.
Waste Management	SEA ER Section 9.10.8 Solid Wastes
Strategic Environmental Assessment	SEA ER Section 9.1, 9.2, 9.5, 9.6 and 9.8
Obligations with respect to national plans and policies and EU environmental legislation	See new commitment under Proposed Amendment Arising under Section 2.21.2.1

Proposed Amendments Arising:

None.

2.21.2 Section 3: Development Plan

2.21.2.1 Introduction

The Programme provides for a clear description envisaged for upgrading the national Grid over the Programme period. The intention to work closely with Regional Planning Authorities and Local Planning Authorities is noted and welcomed. The intention to work closely with bodies such as the Regional Planning Authorities, National Transport Authority, and National Roads Authority is also welcomed and acknowledged. It should be ensured that the Programme promotes sustainable development.

Consideration should be given to including a specific commitment to protecting environmental vulnerabilities in line with specific Regional / National Plans / Programmes responsible for particular aspects of the Environment (such as CFRAMS , River Basin District Management Plans, Fresh Water Pearl Mussel Sub Basin Management Plans etc) where grid related development is proposed for particular areas.

Response:

(i) Acknowledged. The IP will contribute towards environmental protection.

(ii) Measures have been integrated into the IP that will contribute towards the protection of the environment as appropriate therefore a commitment as suggested is to be inserted into the IP as detailed below.

Proposed Amendments Arising:

To insert the following measure into SEA ER Section 9.9.11 'Other measures integrated into the IP':

Where grid related development is proposed, EirGrid will seek to contribute towards the protection of environmental features, as relevant and appropriate to EirGrid's responsibilities and obligations under national and EU environmental legislation and including those which relates to specific regional/national plans/programmes for particular aspects of the environment e.g. Catchment Flood Risk Assessment and Management Study Plans, River Basin District Management Plans and Fresh Water Pearl Mussel Sub Basin Management Plans.

2.21.2.2 Section 1 Introduction and Context

(i) The Vision as outlined in Section 1.2 should set the development of the National Grid in the context of the National Spatial Strategy and Regional Planning Guidelines outlining population predictions envisaged and the need to upgrade the grid where appropriate.

(ii) There would also be merits in highlighting any transboundary consultations carried out in relation to the Programme SEA and AA, in the context of the intention to develop new interconnectors between Ireland, Northern Ireland, the UK and France. The outcome of transboundary consultation should be summarised in the Programme and where relevant in the SEA and AA.

Response:

(i) Text to be incorporated into the IP.

(ii) Informal transboundary consultation was carried out, refer to Section 2.23

Proposed Amendments Arising:

(i) Some 58% of current demand for electricity is in gateway cities and towns, as identified

in the National Spatial Strategy (NSS). The NSS defines gateways as having a strategic location, nationally and relative to their surrounding areas and providing national-scale social and economic infrastructure and support services. The Grid25 strategy endorses the NSS goal of developing gateways and achieving balanced regional development.

EirGrid publish a Transmission Forecast Statement annually which highlights opportunities for the connection of demand at 31 points on the grid. The document presents the opportunities for generator connections identified through the Gate 3 process and outlines the generation opportunities arising from EirGrid's grid development strategy, GRID25.

The current Transmission Forecast Statement 2011–2017 includes a comprehensive set of maps, diagrams and data describing the technical and topological characteristics of the existing high voltage power system and describes how the power system will be developed over the seven year period covered by the statement.

Section 10 (1B) of the Planning and Development Acts 2000-2010 requires that all planning authorities shall, within one year after making Regional Planning Guidelines , prepare a Core Strategy. The Core Strategy must show that development plan objectives, are consistent with national and regional development objectives in the National Spatial Strategy and Regional Planning Guidelines.

The core strategy must, amongst other aspects:

- Detail and take account of existing/ proposed transmission infrastructure in a county.
- Provide the framework for deciding on the scale, phasing and location of new development, having regard to existing serviced and planned investment over the coming years.

  Consequently, key electricity projects which are critical to the future development of a county and region can be prioritised.

(ii) None

2.21.2.3 Section 2 The Grid Development Strategy

(i) There would be merits in Figure 2.1 Strategic Decision Making Process showing the relevant links with equivalent Local Authority planning authorisations.

(ii) Section 2.5.4 Reinforcement of the transmission system in the West Region: It is noted that "... a substantial number of new electricity generators are proposing to locate in the West Region..." It should be ensured that the potential for cumulative effects are taken into consideration and appropriate mitigation measures established to ensure any potential for cumulative adverse effects on environmental vulnerabilities is minimised.

Response:

(i) Links with equivalent planning authorisations will be made.

(ii) Cumulative effects have been taken into account by the SEA and AA. Measures have been integrated into the IP in order to ensure the appropriate protection of environmental vulnerabilities. Also see Proposed Amendment below

Proposed Amendments Arising:

(i) Linkages to planning authorisations to be illustrated in Figure 2.1.

(ii) To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

2.21.2.4 Section 3 Planned Network Developments

(i) There would be merits in describing how the 105 projects currently ongoing, associated with the Draft Transmission Development Plan (TDP) 2010, are taken into account in the Programme and associated SEA /AA. This is of particular relevance in the context of cumulative/ in-combination effects. To what extent will the Programme/SEF influence the development of these Projects?

(ii) Table 3.2 Network Reinforcement Projects is noted. There would be merits however, is highlighting which projects have been subject to Appropriate Assessment. Similar Tables as shown in successive subsections should also be updated to reflect status regarding AA requirements as relevant.

Response:

(i) Cumulative and in-combination effects arising from projects contained in the IP are assessed by both the SEA and AA. Various Plans and projects – including all projects contained in the 2010 TDP – have been considered in this assessment. See also Proposed Amendment below.

(ii) All projects listed in 3.2 have been or will be subject to AA screening as a minimum.

Proposed Amendments Arising:

(i) To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

(ii) The following text is to be added into Section 3.1 of IP:

All projects listed in Section 3.2 have been or will be subject to AA screening as a minimum.

2.21.2.5 Section 4 Environmental Mitigation Measures

(i) Consideration should be given to inclusion of a requirement to integrate the SEA, EIA and Habitats Directives as appropriate for Plans/Programmes/Strategies/Projects which may arise as a result of implementing the Programme.

(ii) Section 4.2 Involvement of the Planning and Environmental Considerations in EIRGRID's Transmission System Planning – Consideration should be given to providing a stronger reference in Bullet Point 4 to refer to the "requirements" of the Habitats Directive, rather than the "provisions and procedures" of the Habitats Directive.

(iii) The intention in Section 4.6 Preparation of Transmission Development Plan Environmental Memoranda to carry out SEA and AA Screening is noted and acknowledged. Additionally, the intention to support, co-operate and participate in the preparation of Regional Renewable Energy Generation Guidelines, Renewable Energy Strategies etc is welcomed.

(iv) 4.9 Consultations with DEHLG and Planning Authorities – The intention in the second paragraph to work with local planning authorities and regional authorities to identify critical policies, objectives and constraints is welcomed.

Response:

(i) Mitigation measure 'Preparation of Transmission Development Plan Environmental Memoranda' already states that: In compliance with SI 435 of 2004, TDPs will be screened for the need to undertake SEA and AA. It is envisaged that full SEA will not be required; however, an Environmental Appraisal Report will be prepared to accompany each annual TDP which will describe any effects arising that will be significantly greater, different or more significant than those anticipated by the SEA or AA. This will be noted in the updated Section 2.3.5 of the IP.

(ii) Acknowledged.

(iii) Acknowledged.

(iv) Acknowledged.

Proposed Amendments Arising:

(i) To state the following in the updated section 2.3.5 'Strategic Environmental Framework' of the SEF.

In compliance with SI 200 of 2011, TDPs will be screened for the need to undertake SEA and AA. Notwithstanding the outcome of the screening, an Environmental Appraisal Report will be prepared to accompany each annual TDP which will describe any effects arising that will be significantly greater, different or more significant than those anticipated by the SEA or AA.

(ii) To update mitigation measure entitled 'Involvement of Planning and Environmental Considerations in EirGrid's Transmission System Planning':

Procedures to be followed on a project-by-project basis for the detailed consideration, weighting and evaluation of likely environmental effects – including cumulative effects – having particular regard to the requirements provisions and procedures of the Habitats Directive. Such procedures include the need for timely consultation with relevant planning and environmental authorities, the evaluation of up-to-date mapping, designations and development plans, policies, and a consideration of any relevant sectoral guidelines.

(iii) None.

(iv) None.

2.21.2.6 Appendix A

The inclusion of a column in each table showing the current "Phase" of each project is noted. Consideration however should be given to also noting which projects will involve EIA / AA.

Response:

Within Appendix A, for projects which are complete or at the detailed design and construction stage, these projects have been approved through planning. For those projects under the Public Planning Process, it will be noted which projects involve EIA / AA. Projects at the Outline Design / EIA are subject to the EIA / AA process.

Proposed Amendments Arising:

Insert detail on which projects under 'Public Planning Process' will involve EIA / AA in Appendix A.

2.21.3 Section 2: Environmental Report

2.21.3.1 Introduction

(i) The Agency acknowledges and welcomes the inclusion of many issues raised during the Agency's previous scoping submission. The Environmental Report puts forward a comprehensive method of assessing the likely significant effects of implementing the Programme. Additionally, the inclusion of numerous figures and maps highlighting particular sensitivities are also welcomed.

(ii) It should be clarified how existing County Heritage, Biodiversity Action Plans and County Landscape Character Areas have been incorporated into the assessment to ensure there is a clear integration of aspects of spatial planning and infrastructure development.

(iii) Consideration should be given to inclusion of a specific coded objective to promote a close working relationship with the National Transport Authority, National Road Authorities and other key strategic bodies. There would be merits in establishing a steering group to ensure a consistent approach is taken for Plans / Programmes / Strategies falling within the remit of the above stakeholders, to ensure sustainable development, spatial planning and transport and Grid infrastructure are promoted in an integrated manner. Mitigation Measure 8 could be expanded to reflect this.

Response:

(i) Acknowledged.

(ii) Acknowledged.

(iii) Mitigation 8 to be expanded to include key statutory and non-statutory consultees.

Proposed Amendments Arising:

(i) None.

(ii) To insert the following text into Section 2 of the SEA ER as subsection 2.5.8 '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 (see Section 8.3) – including cumulative and in-combination effects. Information is not included on this data in Section 4 'Environmental Baseline' of this report 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.

(iii) Mitigation 8 to be expanded as EirGrid will also continue to work alongside ESB Networks, Bord Gáis, The National Transport Authority, The National Roads Authorities and other key strategic bodies in order to ensure that sustainable development, spatial planning and transport and grid infrastructure are protected in an integrated manner.

2.21.3.2 Consultation

Confirm and describe the nature and extent of any consultation that was carried out during the SEA process, including with the public, relevant local organizations and Regional / Local Authorities. The extent of transboundary consultation should also be provided.

Response:

Consultation has been undertaken in compliance with the relevant requirements detailed under SI No. 200 of 2011, the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2011. Details on this are provided in Sections 1.4 'Legal Framework for the Grid25 Implementation Programme SEA' and 3.4 'Scoping' of the SEA ER.

None, however; how consultations were taken into account will be detailed in the SEA Statement which will be produced on adoption of the IP.

2.21.3.3 Section 2 Context for the Implementation Programme

(i) 2.3 Network Reinforcement Developments contained in the IP – It is noted that a "Transmission Development Plan 2010" is currently in draft form for public consultation. SEA and Habitats Directives screening should be undertaken for all future TDPs.

(ii) It is further noted that in the last paragraph, that a number of transmission projects in draft form are currently involved in the planning process are not included in the scope of this Programme. Consideration should be given however to ensuring the full range of effects as described in Schedule 2(f) of S.I. No. 435 of 2004, in particular cumulative effects, are taken into consideration in the Programme.

(iii) 2.5 Relationship with other relevant Plans and Programmes – Reference should be made to County level Biodiversity Action Plans, Heritage Plans and Landscape Character Assessments and how these have been taken into account. The SEF should ensure these Plans etc. are integrated in

the overall SEF. In addition, consideration should be given to providing a subsection on the Regional Planning Guidelines and the role of the Regional Planning Authority in the context of the implementation of the Programme.

Response:

(i) Mitigation measure 'Preparation of Transmission Development Plan Environmental Memoranda' already states that: In compliance with SI 435 of 2004, TDPs will be screened for the need to undertake SEA and AA. It is envisaged that full SEA will not be required; however, an Environmental Memorandum will be prepared to accompany each annual TDP which will describe any effects arising that will be significantly greater, different or more significant than those anticipated by the SEA or AA. This will be noted in the updated Section 2.3.5 of the IP.

(ii) Cumulative and in-combination effects arising from projects contained in the IP are assessed by both the SEA and AA. Various Plans and projects – including all projects contained in the 2010 TDP – have been considered in this assessment. See also Proposed Amendment below.

(iii) See 'Response' under Section 2.21.3.1 (ii). Also provide a subsection 2.5.6 on the relationship between Regional Planning Guidelines and the IP.

Proposed Amendments Arising:

(i) To state the following in the updated section 2.3.5 'Strategic Environmental Framework' of the SEF. In compliance with SI 435 of 2004, TDPs will be screened for the need to undertake SEA and AA. It is envisaged that full SEA will not be required; however, an Environmental Appraisal Report will be prepared to accompany each annual TDP which will describe any effects arising that will be significantly greater, different or more significant than those anticipated by the SEA or AA.

(ii) To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

(iii) To insert the following text into Section 2 of the SEA ER as subsection 2.5.8 '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 (see Section 8.3) – including cumulative and in-combination effects. Information is not included on this data in Section 4 'Environmental Baseline' of this report 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.

Also provide a subsection 2.5.6 on the relationship between Regional Planning Guidelines and the IP.

2.21.3.4 Section 3 SEA Methodology

(i) 3.10.1 Mapping of Landscape Constraints – The method for developing the landscape constraints rating map is noted, however it is unclear how Regional and County

landscape character areas have influenced the final map. It should be ensured that regional, county and local areas of significant landscape character are taken into consideration in consultation with each Local and Regional Planning Authority to ensure conflicts are identified at an early stage prior to implementation of the Programme, to ensure significant areas are adequately protected.

(ii) 3.10.2 Mapping of Cultural Heritage – Clarify the extent to which County Heritage Plans have been taken into consideration.

(iii) 3.10.3 Mapping of Development Opportunities and 3.10.4 Mapping of Development Potential – The role of the Regional Planning Authority should be summarised and a commitment given to work closely with the Regional Authorities be given in relation to development of Grid25.

Response:

(i) Acknowledged

(ii) Acknowledged.

(iii) A commitment has already been integrated into the IP to work with regional authorities (see measure 'Consultations with DEHLG and Planning Authorities').

Proposed Amendments Arising:

(i) To insert the following text into Section 2 of the SEA ER as subsection 2.5.8 'Taking into account local authority plans'

(ii) 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 (see Section 8.3) – including cumulative and in-combination effects. Information is not included on this data in Section 4 'Environmental Baseline' of this report 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.

(iii) To insert the following text in the SEA ER at subsection 2.5.5:

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

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

2.21.3.5 Section 4 Environmental Baseline

(i) The overview provided in Section 4.6.3 Ecological Constraints by Sector is noted. There would be merits in identifying which information sources have been used, such as Biodiversity Action Plans etc.

(ii) 4.7 Landscape – It is acknowledged that there is no published national landscape mapping for Ireland. Consideration should be given to including in the SEF areas of significant international, national, regional

and county landscape areas as highlighted in Landscape Character Assessment carried out by the Competent Authorities including Local Authorities and the Heritage Council.

(iii) 4.9 Climatic Factors - In relation to greenhouse gases and climate change, there would be merits in describing the current energy usage and pressures on the existing grid infrastructure and how it is predicted to vary in line with predicted population targets outlined in the Regional Planning Guidelines.

Response:

(i) Acknowledged.

(ii) Acknowledged.

(iii) Acknowledged.

Proposed Amendments Arising:

(i) To insert the following text into Section 2 of the SEA ER as subsection 2.5.8 '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 (see Section 8.3) – including cumulative and in-combination effects. Information is not included on this data in Section 4 'Environmental Baseline' of this report 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.

(ii) See 'Proposed Amendments Arising' at point (i) above.

(iii) To insert the following text into SEA ER Section 4.9:

The EU has set legally binding targets to reduce the greenhouse gases across the EU by at least 20% by 2020, compared with 1990 levels. To facilitate this, two carbon emission reduction Methods exist, at the EU level. One method is applied through the Emissions Trading Scheme (ETS), while a second emission reduction target is applied in the non-ETS sector. Taken together, the combined ETS and non-ETS EU-wide reductions will result in an overall EU-wide reduction of 14% compared to 2005, which is equivalent to a reduction of 20% compared to 1990.

Any generation plants greater than 50MW fall under the EU Large Combustion Plant directive (2001/80/EC). This directive was transposed into Irish law by the Large Combustion Plant Regulations 2003 (S.I. No. 644 of 2003) and limits the emissions of certain pollutants into the air from large combustion plants. There are also some combustion plants associated with other facilities (i.e. where energy production is not the main activity) which are also licensed under the directive. The EPA is charged with ensuring that generation plants meet their requirements under these directives.

There are a number of other EU directives and national policy initiatives that apply restrictions to emissions from generation units.

2.21.3.6 Section 5 Strategic Environmental Objectives

(i) There would be merits including a summary description of the relevance of the Programme in the context of each subsection described.

(ii) Consideration should be given to including a specific SEO in relation to Flooding.

(iii) Objective SEO L1 should consider including a reference to incorporation of County / Regional Landscape Character Assessment significant character areas in addition to those highlighted on the Landscape Constraints Rating Map.

(iv) Consideration should be given in SEO W1 and SEO W2 to including a reference to prevent impacts on the status of surface waters and prevent pollution and contamination to groundwater in line with recommendations outlined in the River Basin Management Plans.

(v) In relation to 5.8.3 Traffic, the Greater Dublin Area Draft Transport Strategy should be integrated as appropriate into Indicator MS1ii as relevant to the Eastern Region described in the SEA.

Response:

(i) This is not considered necessary. These subsections relate to SEOs which are tools which enable the evaluation of the effects of IP provisions. Their relevance to each of the IP provisions is shown throughout the evaluation provided in Section 8 – the status of each SEO is improved by some provisions and potentially conflicted with by others.

(ii) The SEA Directive requires that the evaluation of the draft IP be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected. In compliance with this requirement the SEA focuses upon the most relevant aspects of the environmental characteristics. An SEO for flooding is not considered necessary. It is noted that various measures relating to flooding have been integrated into the IP and flooding will be taken into account as appropriate by lower tier decision making through, inter alia, route selection and lower tier assessments.

(iii) Considered; Proposed Amendment detailed below.

(iv) Acknowledged.

(v) The SEA Directive requires that the evaluation of the draft IP be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected. In compliance with this requirement the SEA focuses upon the most relevant aspects of the environmental characteristics. An indicator for traffic is not considered necessary. As noted in Section 5.8.3 of the ER, 'traffic issues will be considered by lower tier assessments and addressed in Traffic Management Plans.'.

Proposed Amendments Arising:

(i) None.

(ii) None.

(iii) To insert the following text into Section 2 of the SEA ER as subsection 2.5.8 '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 (see Section 8.3) – including cumulative and in-combination effects. Information is not included on this data in Section 4 'Environmental Baseline' of this report 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.

(iv) To update SEOs W1 and W2 as follows: SEO W1: To prevent impacts upon the status of surface waters in line with recommendations outlined in the River Basin Management Plans. SEO W2: To prevent pollution and contamination of ground water in line with recommendations outlined in the River Basin Management Plans.

(v) None.

2.21.3.7 Section 6 Description of Alternative Scenarios

It should be ensured that the preferred alternative scenario reflects a scenario where environmental vulnerabilities are afforded significant protection over the short, medium and long term.

Response:

The IP affords protection to environmental components over the short, medium and long term.

Proposed Amendments Arising:

None.

2.21.3.8 Section 7 Evaluation of Alternative Development Scenarios

Clarify how flooding has been taken into consideration in the assessment of development scenarios.

Response:

The SEA Directive requires that the evaluation of the draft IP be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected. In compliance with this requirement the SEA focuses upon the most relevant aspects of the environmental characteristics. An SEO for flooding is not considered and effects on flooding (not an environmental component specified by the SEA Directive) are not explicitly identified throughout the assessments provided in Sections 7 and 8 of the SEA ER. It is noted that various measures relating to flooding have been integrated into the IP and flooding will be taken into account as appropriate by lower tier decision making through, inter alia, route selection and lower tier assessments e.g. EirGrid shall carefully examine development proposals to ensure consistency with the requirements of The Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG, 2009).

The strategic context for energy infrastructure is set-out in the :

- Irish Government's Energy White Paper "Delivering a Sustainable Energy Future for Ireland" (March, 2007)
- National Development Plan 2007–2013,
- National Spatial Strategy 2002–2020,
- Regional Planning Guidelines 2010–2022,

- County Development Plan and relevant Local Area Plans.

  Electricity infrastructure is vital for County, Regional and National Development. Each Planning Authority is required to provide as an objective within its Development Plan for the provision/facilitation of infrastructure including energy.

Proposed Amendments Arising:

None.

2.21.3.9 Section 8 Evaluation of Draft Implementation Programme Provisions

(i) Section 8.4 Interrelationship between Environmental Components should include a table highlighting the key interrelationships between the environmental issued as highlighted.

(ii) There would be merits in Section 8.5 Strategic Transboundary Effects, in including a paragraph reflecting the intention to comply with EU Legislation (SEA, EIA, Habitats Directive, Water Framework Directive, Floods Directive, etc.) in relation to transboundary grid related projects and infrastructure. EIRGRID should ensure that for Transboundary Plans / Projects proposed timely consultation is undertaken with the relevant statutory consultation bodies in relevant member states.

(iii) Section 8.6.1 Overhead Power Lines – Consideration should be given to promoting measures be established to address issues such as bird strikes, impacts on surface and ground water quality, construction related noises by way of requiring Environmental Management systems for all projects to be carried out in implementing the Programme.

(iv) Section 8.6.3 Construction of New Substations and Extensions of Existing Substations – Where substations and related infrastructure are situated in coastal, riverine and estuarine locations, consideration should be given to assessing the susceptibility to climate change impacts, for example flooding / coastal erosion / sea level rise.

(v) Section 8.11.7 Dublin & Mid East Region – The intention in the third paragraph given to "working with development plans both at Regional and County level to identify infrastructure corridors" is noted. This comment should be repeated for each Region specified in the Programme as it is relevant in each case. A commitment should be given to ensure a close working relationship between development of the National Grid, Regional Planning Guidelines and development Plans to promote sustainable development and appropriate infrastructure to meeting the population and associated commercial, industrial and retail demands for a secure and appropriate grid connection and electricity supply. Your attention is brought to the Greater Dublin Area Draft Transport Strategy currently undergoing SEA, which should be taken into consideration in Grid developments within the Dublin and Eastern Region.

(vi) Section 8.12.2 Network Reinforcement Developments – Clarification should be given whether Appropriate Assessment Screening /EIA have been carried out in relation to the developments described in this section, as appropriate. The potential

impacts of flooding should also be taken into consideration.

Response:

(i) Acknowledged.

(ii) Compliance with EU environmental protection legislation is dealt with throughout the assessment that follows Section 8.5 and in Section 9 'Mitigation Measures'. Correspondence was issued to Northern Ireland Electricity during the consultation stage of the process and we have been corresponding with the Department of Enterprise, Trade and Investment (DETI). Clarification was sought on a number of minor matters and a clarification response was issued.

(iii) Appropriate mitigation measures have been integrated into the IP. Other relevant measures will be taken into account as appropriate by lower tier decision making through, inter alia, route selection and lower tier assessments.

(iv) Appropriate mitigation measures have been integrated into the IP. Other relevant measures will be taken into account as appropriate by lower tier decision making through, inter alia, route selection and lower tier assessments.

(v) This comment is made for this region in particular due to extent of the existing and emerging major road and rail corridors that will develop in this Region during the period to 2025. A commitment to work closely with local and regional planning authorities is already provided

(vi) Clarification shall be given as to whether Appropriate Assessment Screening and/or EIA have been carried out in relation to the developments described in Section 8.12.2 of the SEA ER. With regard to flooding see response under Section 2.21.3.8.

Proposed Amendments Arising:

(i) To insert a matrix table into SEA ER Section 8.4 showing interrelationships between environmental components.

(ii) None.

(iii) None.

(iv) None.

(v) None.

(vi) To provide clarification as to whether Appropriate Assessment Screening and/or EIA have been carried out in relation to the developments described in Section 8.12.2 of the SEA ER.

2.21.3.10 Section 9 Mitigation Measures

(i) Section 9.10.1.5 Freshwater Pearl Mussel: In relation to the Freshwater Pearl Mussel Catchments, consideration should be given to including a commitment in the Programme/ SEF to take the Action measures as outlined in the Sub Basin Management Plans into account where development is considered adjacent to areas associated with Freshwater Pearl Mussels.

(ii) Section 9.10.1.8 Fisheries: There would be merits in highlighting in the Programme/ SEF that development adjacent to designated fisheries are carried out in consultation with Inland Fisheries Ireland to minimise the potential effects on fisheries. There would be merits for sections 9.10.6 through to 9.10.8 to require that waste management, noise, wastewater, soil

management etc be incorporated into Environmental Management Systems which should be required for projects carried out and implemented as required.

Response:

(i) To update Section 9.10.1.5 as suggested.

(ii) Acknowledged.

Proposed Amendments Arising:

(i) To add the following bullet point to Section 9.9.1.9:

Action measures as outlined in the Sub Basin Management Plans will be taken into account where development is considered adjacent to areas associated with Freshwater Pearl Mussels.

(ii) To insert the following new mitigation measure at the beginning of section 9.9.1.10 'Fisheries':

- All works adjacent to designated fisheries waters will be done in consultation with Inland Fisheries Ireland.

2.21.3.11 Section 10 Monitoring Measures

(i) The Monitoring Programme should be flexible to take account of the various stages of the Plan and should be able to deal with specific environmental issues as they arise.

(ii) The programme must be able to deal with the possibility of cumulative effects.

(iii) The Monitoring Programme should include information on how the monitoring proposed will allow unforeseen adverse effects to be identified and responded to as appropriate.

(iv) Who has responsibility for this?

(v) What will trigger appropriate remedial action?

Response:

(i) Acknowledged.

(ii) Cumulative effects arising from implementation of the Implementation Programme comprise those directly attributable to the development of the grid – e.g. the cumulative impact on the landscape which could occur as a result of the addition of further lines or substations, in an area that already contains transmission lines. There will be no cumulative effects caused by other transmission developments because EirGrid is the sole provider.
The monitoring of cumulative effects will refer to the indicators set out in the SEA ER. In addition, the undertaking of the studies which were recommended as mitigation measures (see Section 9 of the SEA ER) and integrated into the IP will provide further baseline against which effects of implementing the IP will be monitored.

In combination effects arising from implementation of the Implementation Programme comprise those attributable to the development of new energy generation infrastructure and other economic development which will be facilitated by the grid e.g. the development of settlements, wind farms, industry etc. These effects arise due to an interaction of a wider range of factors arising from national and sectoral policies. Such national effects are more appropriately controlled, assessed and monitored by the EPA State of the Environment Report, the DAHG report of the implementation of the measures contained in the Habitats Directive – as required by Article 17 of the Directive – and other national monitoring

programmes. Such local effects are more appropriately controlled, assessed and monitored by local authorities.

An indicator which will be used to examine the state of monitoring indicators will be an increase in the reporting on the effects – including cumulative – arising from energy related plans and projects. This will be measured by identifying energy related plans and projects which have occurred over a period of time and examining whether either SEA, EIA or a non-mandatory type of environmental assessment have been undertaken as appropriate.

Also see Proposed Amendment below.

(iii) Unforeseen environmental effects will relate to environmental components which will be monitored by the indicators listed under Section 10 of the SEA ER.

(iv) EirGrid has responsibility for this.

(v) As identified in Section 10.7 of the SEA ER, 'thresholds, at which corrective action will be considered, are as follows:

- court cases taken by the DAHG regarding impacts upon archaeological heritage including entries to the Record of Monuments and Places; and,
- complaints received from statutory consultees regarding avoidable environmental impacts resulting from plans or projects which are prepared or undertaken under the IP.'

Further consideration of thresholds is not appropriate at this level; see explanation detailed under (ii) above.

Proposed Amendments Arising:

(i) To update Section 10.2 of the SEA ER to include the following text: The Monitoring Programme may be updated to deal with specific environmental issues – including unforeseen effects – as they arise. Such issues may be identified by EirGrid or identified to EirGrid by other agencies. EirGrid has responsibility for updating the ER.

To update Section 10.4 of the SEA ER to include the following text: EirGrid will report on the IP implementation and associated SEA and AA monitoring during the lifetime of the programme. It is envisaged that this monitoring will occur every 2-3 years.

(ii) To expand Section 8.3 of the SEA ER and 3.3 of the NIS.

(iii) See Proposed Amendment under (i) above.

(iv) See Proposed Amendment under (i) above.

(v) None.

2.22 Submission No. 22: Co-ordination Unit- Department of Communications, Energy and Natural Resources

Acknowledgement received.

Response:

None

Proposed Amendments Arising:

None

2.23 Submission No. 23: Department of Environment NI (John Linden-Principal Planning Officer)

Submission is related to transboundary consultation which is required if significant impacts of the Implementation Programme are likely for Northern Ireland. DOE NI did not comment on the context

of the SEA however, reports were sent to the SEA co-ordination Unit (part of NI Environment Agency (Pat Corker). The submission enclosed guidance on transboundary consultation.

Response:

Informal Consultation has taken place between EirGrid and the Department of the Environment (Northern Ireland) as no significant transboundary impacts were identified.

Proposed Amendments Arising:

None

2.24 Informal EirGrid

EirGrid colleagues pointed out that projects listed in SEA not accurate or up to date (some have been dropped) therefore need to review and update projects listed and amend as necessary.

Response:

This list has been updated. The IP and ER will detail the projects contained in EirGrid's TDP 2010 which comprises the most up to date projects.

Proposed Amendments Arising:

Update as appropriate.

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