Laois-Kilkenny Reinforcement Project

Application for Planning Approval

Planning Report

ESBI Engineering Solutions
Stephen Court, 18/21 St Stephen's Green, Dublin 2, Ireland
Telephone+353-1-703 8000 Fax+353-1-661 6600
www.esbi.ie

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Prepared by:	Brendan Allen
Title:	Senior Planner Spatial Planning Unit

APPROVED: ***B.Dee*** ***TITLE:*** Team Leader Spatial Planning Unit	***DATE:*** January 2013

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Explanation of Technical Terms

This section provides an explanation of the technical terms used in the project documents.

Bay: A bay is a connection point to a busbar, and comprises switchgear and measurement equipment.

Biological Oxygen Demand (BOD): The BOD of water is the amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material present in a given water sample at certain temperature over a specific time period.

Busbar: An electrical conductor, maintained at a specific voltage and capable of carrying a high current, usually used to make a common connection between several circuits in a system.

Circuit: A line or cable, including associated switchgear, which carries electrical power.

Capacitor Bank: A capacitor (originally known as condenser) is a passive two-terminal electrical component used to store energy in an electric field.

dB(A) : For planning purposes, noise is measured in dB(A), i.e. decibels on the 'A' scale. This scale simulates the response of human hearing to sound and the "A" filter is specified for use in assessing noise levels by International Standards.

Demand: Peak demand figures refer to the power that must be transported from grid connected generation substations to meet all customers' electricity requirements. These figures include transmission losses.

Dissolved Oxygen (DO): Dissolved oxygen refers to the amount of oxygen dissolved in water. It is used up in the decomposition of organic wastes and by animal respiration and is essential to all normal forms of aquatic life. The minimum DO required to support a balanced population of desirable aquatic flora and fauna is widely considered to be 5mg/l. The saturation DO levels at 15oC and 25oC in freshwater are 10.2mg/l and 8.4mg/l respectively.

Frequency of 50-Hertz (Hz): Fields alternate direction and intensity back and forth (50 times each second).

Grid: A meshed network of high voltage lines and cables (400kV, 220kV and 110kV) for the transmission of bulk electricity supplies around Ireland. The grid, electricity transmission network, and transmission system are used interchangeably in Planning and Environmental Reports.

Ha: Hectare (100m x 100m)

km: Kilometre (One thousand metres)

kV: Kilovolt (One thousand volts)

LV: Low Voltage (220V network)

mg/l: In the measurement of water quality parameters such as dissolved oxygen, the metric expression milligrams per litre (mg/l) is equivalent in volumetric terms to ppm.

MV: Medium Voltage (10kV/20kV network).

MVAr: Volt-Ampere reactive (VAr) - unit of reactive power. 1 MVAr = 1,000,000 VAr

MW: Megawatt (One million Watts).

Power Flow: The flow of 'active' power is measured in Megawatts (MW). When compounded with the flow of 'reactive power', which is measures in MVAr; the resultant is measured in MegaVolt-Amperes (MVA).

Salmonid Waters: The EC Directive on the quality of freshwater in order to support fish life' states that salmonid waters are those which support or become capable of supporting fish belonging to species such as salmon, trout, grayling and white fish.

Shunt Reactor: These are used in high voltage transmission systems systems to stabilise the voltage during load variations. A traditional shunt reactor has a fixed rating and is either connected to the power line all the time or switched in and out depending on the load.

Switchgear: A combination of electrical disconnects and/ or circuit breakers used to isolate equipment in or near an electrical substation.

Tesla: The tesla (symbol T) is the SI derived unit of magnetic flux density, commonly denoted as B, (which is also known as "magnetic field").

Transformer: An item of equipment connecting equipment at two different nominal voltages.

List of Abbreviations

A Amperes

AA Appropriate Assessment

AADT Annual Average Daily Traffic

ABP An Bord Pleanála

AC Alternating Current

ACA Architectural Conservation Areas

AIS Air Insulated Switchgear

ALS Amyotrophic Lateral Sclerosis

AOC Area of Concern

AP Athy - Portlaoise

BC Ballyragget - Coolnabacky

BK Ballyragget - Kilkenny

CGS County Geological Sites

cm Centimetre

CHS Cultural Heritage Site

CO^2 Carbon Dioxide

CSO Central Statistics Office

DC Direct Current

DED District Electoral Divisions

DMRB Design Manual for Roads and Bridges

DO Dissolved Oxygen

DoEHLG Department of Environment, Heritage & Local Government

EC European Commission

EIA Environmental Impact Assessment

EIS Environmental Impact Statement

ELF Extremely Low Frequency

ELV Emission Limit Value

EMF Electric and Magnetic Fields

EMF RAPID Electric and Magnetic Fields Research and Public Information Dissemination

EMP Environmental Management System

EPA Environmental Protection Agency

EPRI Electric Power Research Institute

ER Environmental Report

EU European Union

GHz Gigahertz

GIS Geographic Information System

GIS Gas Insulated Switchgear

GQA General Quality Assessments

GSI Geological Survey of Ireland

Ha Hectares

HPA Health Protection Agency

HV High Voltage

Hz Hertz

IARC International Agency for Research on Cancer

ICES International Committee on Electromagnetic Safety

ICNIRP International Commission on Non-Ionizing Radiation Protection

IEEM Institute of Ecology and Environmental Management

IGI Institute of Geologist of Ireland

IWEA Irish Wind Energy Association

km Kilometre

kV/m Kilovolts Per Metre

LCA Landscape Character Areas

LCT Landscape Character Types

LI Locally important aquifer, which is Moderately Productive only in Local Zones

LM Locally Important Aquifer - Bedrock which is Generally Moderately Productive

m Metres

MDC Moneypoint – Dunstown - Coolnabacky

m/s Metres/Second

m^3 Cubic Metres

m^3/s Cubic Metres Per Second

mg/l Milligrams Per Litre

mm Millimetres

mOD Metres Above Ordinance Datum

MPEs Maximum Permissible Exposures

µT microTesla (10-6 Tesla)

mT milliTelsa (10-3 Tesla)

NHA Natural Heritage Area

NIAH National Inventory of Architectural Heritage

NIS Natura Impact Statement

NPWS National Parks and Wildlife Service

NRA National Roads Authority

OHL Overhead Line

OPW Office of Public Works

OSI Ordnance Survey Ireland

PE Potential Evapotranspiration

PM10 Particulate Matter

pNHA Proposed Natural Heritage Areas

PPM Parts Per Million

RMP Records of Monuments and Places

RPS Registered Protected Structures

cSAC Candidate Special area of Conservation

SF6 Sulphur Hexafluoride

SMR Site and Monuments Record

SPA Special Protection Area

UGC Underground Cable

V/m Volts per Meter

WFD Water Framework Directive

WHO World Health Organisation

WWTP Wastewater Treatment Plants

ZVI Zone of Visual Influence

1 Introduction

1.1 Report Context

This planning report has been prepared to accompany an application by EirGrid plc to An Bord Pleanála for planning approval for the Laois-Kilkenny Reinforcement Project.

Planning and environmental appraisals have been carried out throughout the pre-application design stage of this project. This report draws together all the relevant project reports and information so that all the key information related to the project is provided in this planning report.

This report (Volume 2) comprises part of a suite of application particulars, which also includes Statutory Particulars (Volume 1) and an Environmental Report (Volume 3). All documents are required to be read in order to have a full understanding of the nature, location and extent of the proposed development.

It is necessary that the Stage 1 and Stage 2 Lead Consultant's Reports, included here as appendices, should also be read.

1.2 Details of the Applicant

EirGrid plc (EirGrid) is the statutory operator of Ireland's national transmission system or electricity grid. EirGrid is an independent state-owned company. EirGrid's role is as follows:

- To develop, ensure maintenance and operate a safe, secure, reliable, economical and efficient national electricity grid with due regard for the environment;
- To plan and develop the grid infrastructure needed to support Ireland's economy;
- To offer a grid connection to all new generation and demand applicants;
- To supervise the security of the national grid;
- To schedule electricity generation with power generators and stations; and
- To facilitate the market for renewable electricity in Ireland.

It is in this capacity that EirGrid is proposing the Laois-Kilkenny Reinforcement Project.

EirGrid engaged ESB International (ESBI) as Lead Consultants to design all elements of the project. ESBI, as lead consultants, compiled the planning and environmental application documentation with the assistance of sub-consultants.

1.3 Project Overview

Under Article 8 of the European Communities (Internal Market in Electricity) Regulations 2000 (SI 445/2000), EirGrid has the exclusive statutory function "*to operate and ensure the maintenance of and, if necessary, develop a safe, secure, reliable, economical and efficient electricity transmission system with due regard for the environment*".

Over the coming years it is anticipated that the demands placed on the system will become increasingly more onerous. This project will ensure that the local network continues to operate in accordance with the appropriate technical standards, to which the national power

grid must comply (these standards are known as the Transmission Planning Criteria). This is set out in more detail in Chapter 2 of this report.

Accordingly, the project comprises:

- development of a new 400/110 kV Gas Insulated Switchgear (GIS) substation at Coolnabacky townland, north of Timahoe, Co. Laois;
- new connections to the proposed Coolnabacky substation from the existing Moneypoint - Dunstown 400 kV and Athy – Portlaoise 110 kV overhead lines;
- development of a new 110/38kV/MV substation in Ballyragget, Co. Kilkenny, adjacent to the existing 38 kV/MV substation; this will replace the existing substation which will eventually be decommissioned;
- development of a new 110 kV overhead line (OHL) between Ballyragget and Coolnabacky;
- an uprate of the existing Ballyragget - Kilkenny 110 kV overhead line, and;
- a new bay in the existing Kilkenny 110 kV substation.

The Transmission System is a meshed network of approximately 6,500 km of high voltage overhead lines and underground cables and over 100 transmission substations within the Republic of Ireland. It operates at voltages of 110 kV, 220 kV and 400 kV. The design and appearance of the proposed infrastructure associated with the Laois-Kilkenny Reinforcement Project is consistent with and similar in appearance to that which has already been developed on the national grid, and exists in the Irish landscape, including in the local and wider vicinities of the proposed development. Indeed the proposal includes connection to, or uprating of, existing overhead line transmission infrastructure.

A key feature of this project is ensuring that new infrastructure is kept to a minimum by using existing lines to the greatest extent possible, as this will result in the least possible environmental impact to the region.

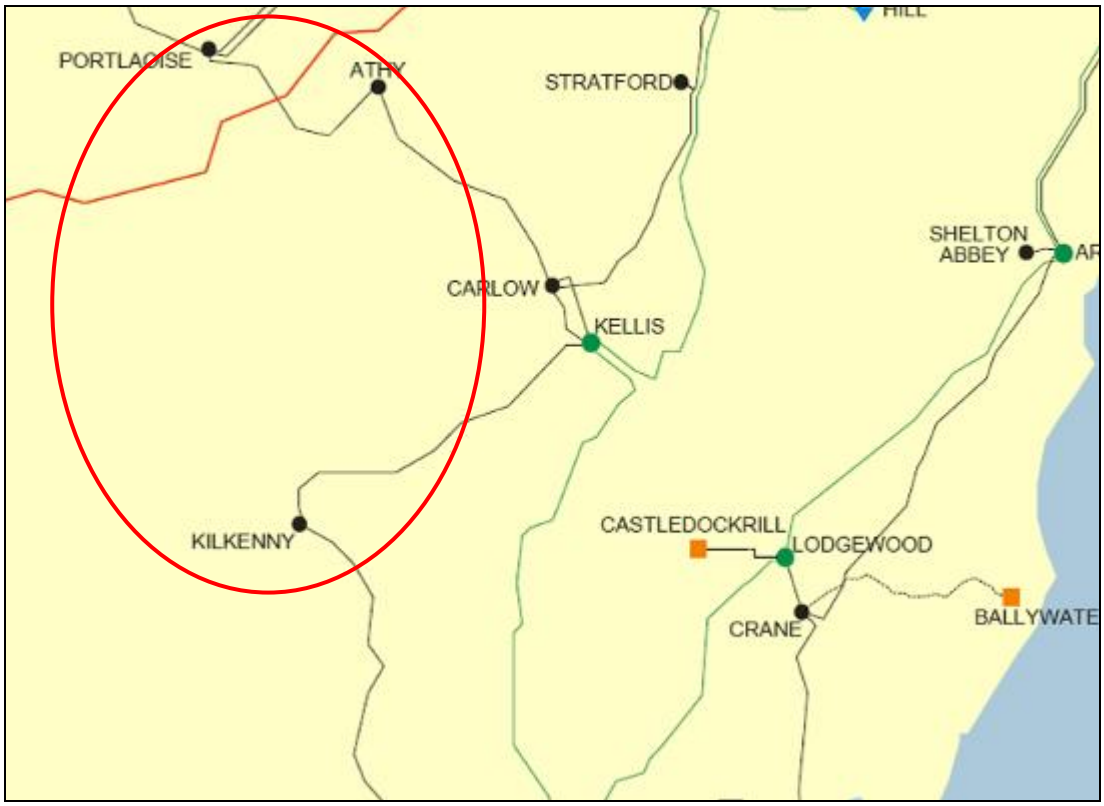

Figure 1.1: Development Location Map Showing Existing Transmission Network 2011

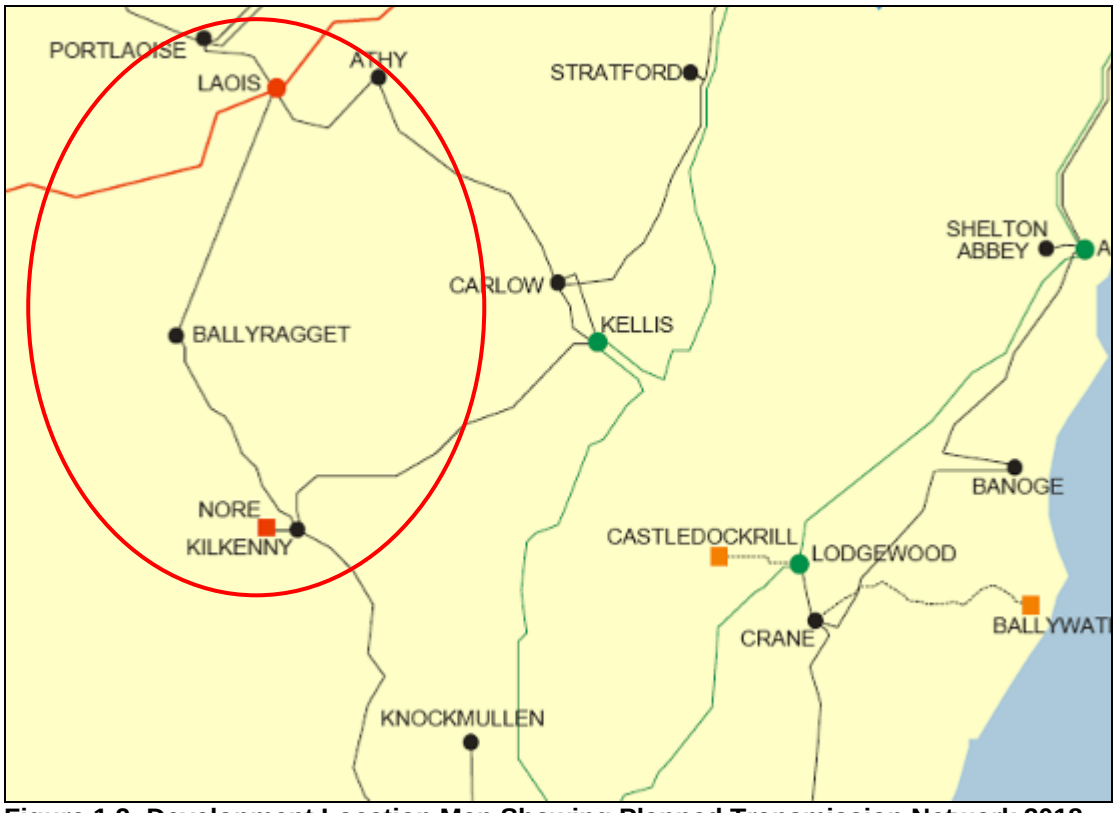

Figure 1.2: Development Location Map Showing Planned Transmission Network 2018

Source = Figures A-1 and A-2 EirGrid Transmission Forecast Statement 2012 – 2018

1.4 Purpose and Structure of this Planning Report

The purpose of this planning report is to provide details which will assist An Bord Pleanála in determining whether the proposed development is in accordance with the proper planning and sustainable development of the area, and accordingly whether planning approval should be granted for the proposed development. This Planning Report draws on and makes references to various reports, including those previously prepared by the Lead Consultant in developing the final proposal, and which have previously been subject to public, stakeholder and landowner consultation.

The following sets out the structure of this planning report so that it is clear where information can be found.

- Introduction – Report context, details of the applicant, project overview and purpose and structure of this report.
- Project Need and Alternatives Considered – Project justification, alternatives considered and preferred reinforcement option.
- Project Development – Summary of Stage 1 and 2 Reports, details of Stages 3 and 4 and stakeholder consultation.
- Legislative Context – Strategic Infrastructure Development (SID), Environmental Impact Assessment (EIA) process and Appropriate Assessment (AA) process.
- Planning Policy Context – National, Regional, Local and planning guidance documents.
- Planning History – Review of planning history within the study area.
- Alternative Project Solutions Considered - Description of alternative project solutions and alternative line routes and substation locations
- Description of Proposed Transmission Infrastructure – Project description project units, engineering design and construction methodology.
- Environmental Evaluation – Evaluation of environmental impacts associated with proposed station(s), OHL and UGC routes, mitigation measures, monitoring and remediation proposals.
- Planning Assessment – Evaluation of proposed development having regard to all national, regional and local planning policies and objectives.
- Conclusions.

The Explanation of Technical Terms provided as part of this Planning Report will assist in understanding the technical acronyms used in the project documents.

2 Project Need and Alternatives Considered

2.1 Project Justification

The Laois-Kilkenny Reinforcement Project is required to address forecasted constraints on the existing transmission network in the Midlands Region, South East Region and County Kildare (referred to from here on in this report as the Area of Concern (AOC)). In assessing the technical need for reinforcement of transmission infrastructure in this area, two issues were identified and each of these in of themselves are required to be addressed (these are addressed in detail in section 2.3);

- Ensuring security of supply
- Improving quality of supply

Although the proposed infrastructure will specifically span between County Laois and County Kilkenny, it will address and improve the above concerns in a the wider Area of Concern, including the counties of Carlow, Kildare, Kilkenny, Laois and Wicklow.

2.2 Existing Electricity Transmission Infrastructure

This section gives a general description of the existing electricity transmission system in Ireland and its purpose. It also describes the transmission network in the Area of Concern in more detail, all with a view to assist in understanding the justification for the proposed Laois-Kilkenny Reinforcement Project.

2.2.1 Existing Transmission System in Ireland

The transmission system in Ireland essentially refers to the higher-capacity electricity network, and comprises the 400 kV (i.e. 400,000 Volts), 220 kV and the 110 kV networks. The transmission system map of Ireland as of January 2012 is shown in Figure 2.1. This is also available on EirGrid's website (www.eirgrid.com). The 400 kV network is represented by red lines, the 220 kV network by green lines and the 110 kV by black lines. Various forms of generators connected to the transmission system are also shown.

Electricity is supplied to most individual customers through the lower voltage distribution system (typically 38 kV and below), which is connected to the transmission system at the 110 kV substations. At these substations, power flows from the transmission system to the distribution system to supply demand. Electricity is distributed to end users via the lower and medium-voltage distribution network, for which there is a separate Distribution System Operator (DSO)

The transmission system needs to be robust to be able to fulfill its purpose which is to reliably and economically transport electricity from generation stations to demand centres around the entire country where the power is required by customers. The transmission network is meshed which means that there are multiple network paths on which to transport power to any substation so as to ensure that all customers have the benefit of the most secure, reliable and economic power at any point in time.

The amount of power required by industrial, commercial, farming and domestic customers varies depending on the time of day and year and other factors such as weather, holidays etc. The number of generators providing power and the amount of power each generator provides to the system is constantly monitored and adjusted to match the changing

customer requirements. The transmission system, therefore, must be flexible and able to cope with the flows of power arising from a wide range of combinations of generation and electrical demand. The transmission system must also be robust enough to withstand a scenario where a transmission line is unavailable (due both to an unforeseen event such as a fault or for planned maintenance), or a generator suddenly becoming unavailable so that another generator located elsewhere has to be used instead.

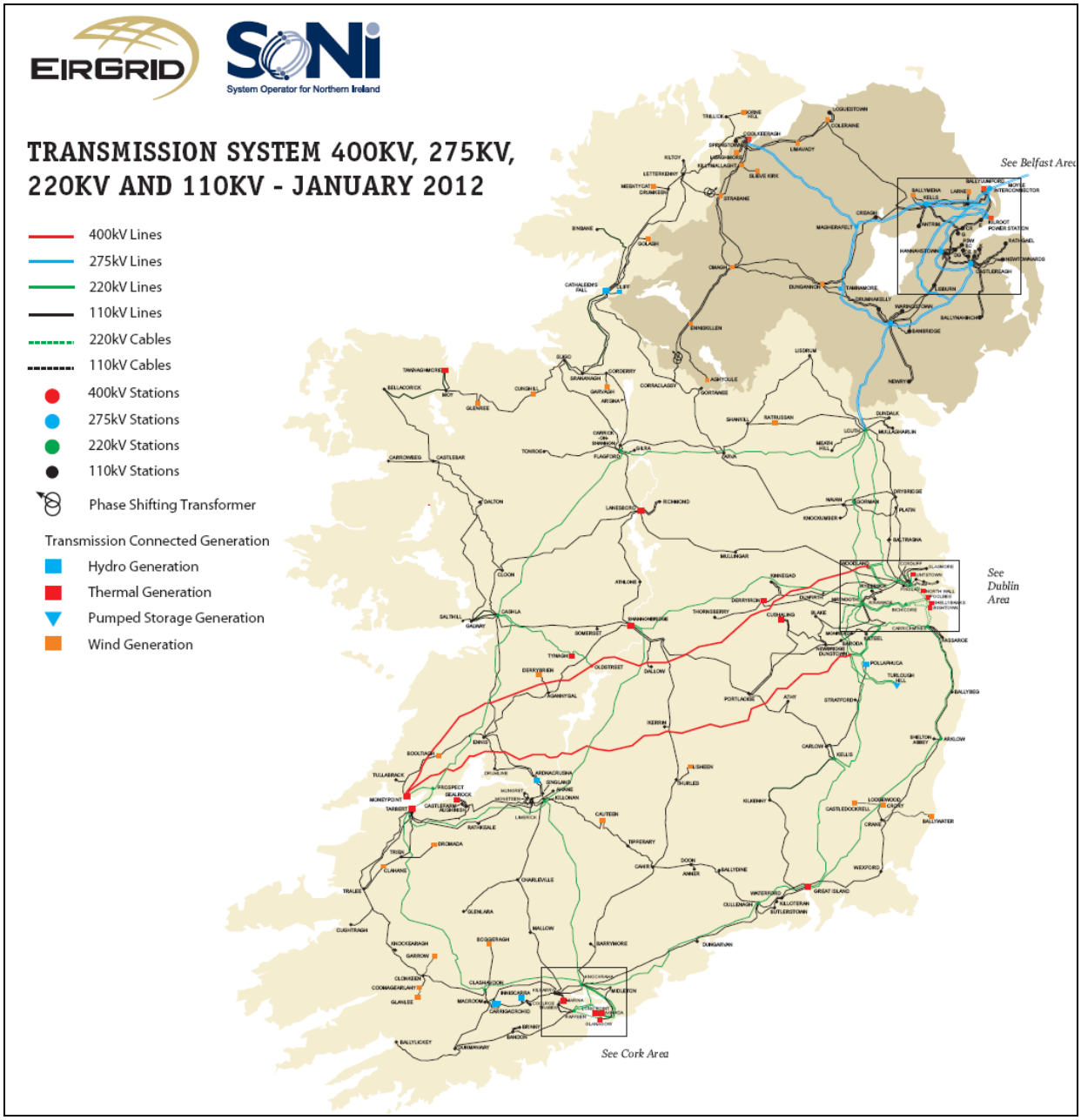

Figure 2.1: Map of Ireland's Transmission System (as of January 2012)

Development of the transmission system is essential when future changes to generation and demand would otherwise jeopardise the safety and integrity of the system. Decisions in this regard are made in reference to the Transmission Planning Criteria (TPC) which set out standards for reliability and quality of transmission services. In summary, the TPC are the technical standards to which the grid must comply. The TPC, which are available on

EirGrid's website, require the transmission network to be designed to be able to withstand outages of any circuit or other item of equipment while maintaining continuity and quality of electricity supply. These criteria must be met under normal operation conditions, and also when any item of plant (lines, transformers, generators etc.) is out for essential maintenance. EirGrid as the Transmission System Operator is statutorily obliged to ensure compliance with these criteria and it is in compliance with this function that EirGrid strategically plans the network to ensure that its reliability and security is maintained before any possible weaknesses occur.

2.2.2 Description of the Transmission Network in the Area of Concern

The area where the existing transmission network is of concern is highlighted in Figure 2.2 and includes counties Carlow, Kildare, Kilkenny, Laois and Wicklow. The main Area of Concern is with the strength and reliability of the 110 kV network within this area.

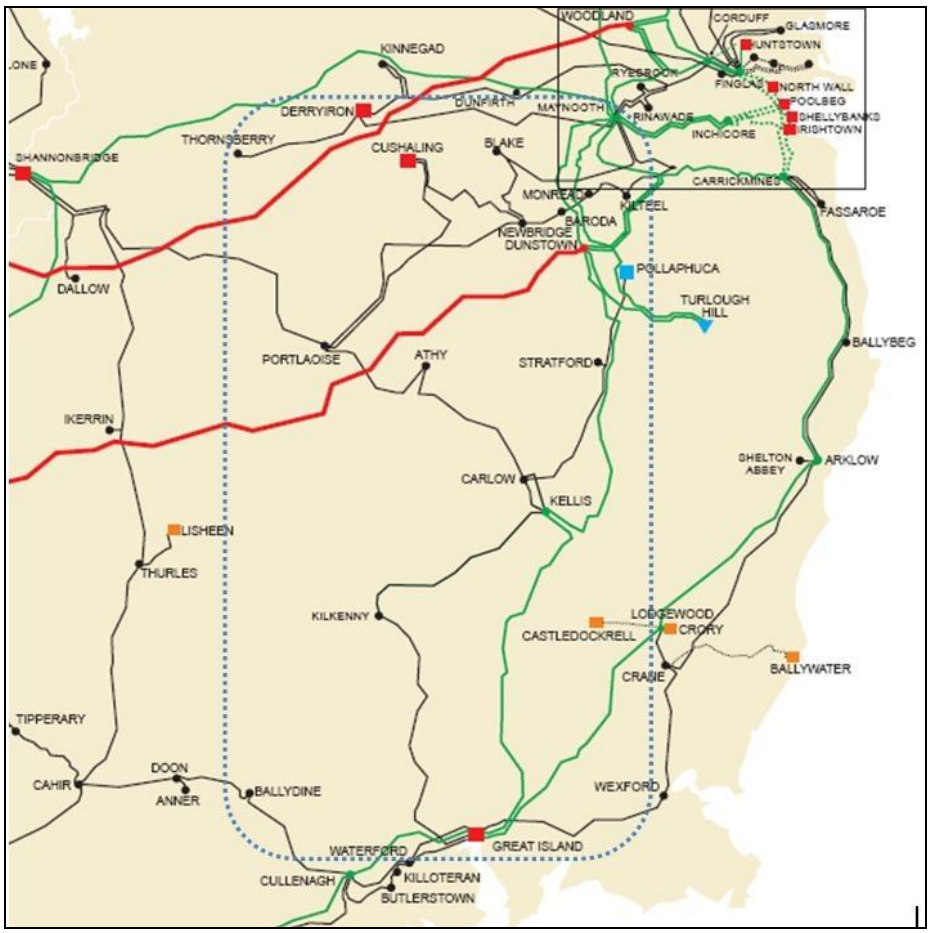

Figure 2.2: Transmission System Map Showing the Transmission Network in the Area of Concern

There are several 110 kV substations (black dots on the map in Figure 2.2) in the Area of Concern through which power is supplied to the underlying distribution system. Of these, the following 110 kV substations supply major demand centres in the Area of Concern including: Carlow, Kilkenny, Kilteel, Monread, Newbridge and Portlaoise.

The 110 kV network in this area is supported by the stronger 220 kV network at Great Island, Kellis, and Maynooth substations via 220/110 kV transformers. The 220 kV network in turn

is supported by the existing 400 kV network at Dunstown 400 kV station in Co. Kildare. It should be noted that the existing 400 kV circuit passes through the Area of Concern, but of crucial importance it does not currently have a direct connection into the 110 kV network in this area.

Peat-fired generation located at Cushaling 110 kV station and hydro generation at Pollaphuca 110 kV station also provides support to the 110 kV network when available and in operation.

Figure 2.3 illustrates the evolution of the transmission network in the Area of Concern from the 1980s until today. Since the 1980s increased demand in the area has been accommodated at existing substations or through the connection of new substations – Athy, Baroda, Kilteel, Monread, and Stratford – which has increased the stress on the transmission system as the network feeding the area has remained largely unchanged in that time except for a few exceptions.

To maintain the network within standards, through the past 30 years a number of reinforcements have been made to strengthen the network, including the addition of the Kellis 220/110 kV substation in 1996, the looping of the Cushaling-Blake 110 kV line into Newbridge substation providing Newbridge with an extra two connections, and the establishment of Cushaling 110 kV station to connect a new generator. In addition, in recent years, capacitor banks have been installed in the area to support the voltage. Capacitors are electrical devices that are installed in stations to support the local voltage. These type of devices are suitable for boosting the voltage in an area in the short term, but would not be considered as long-term solutions, as their effect is reduced when more demand is added to the system, subsequently decreasing the voltage even further. Despite these works, the need to significantly reinforce the network in this area has been identified in technical studies.

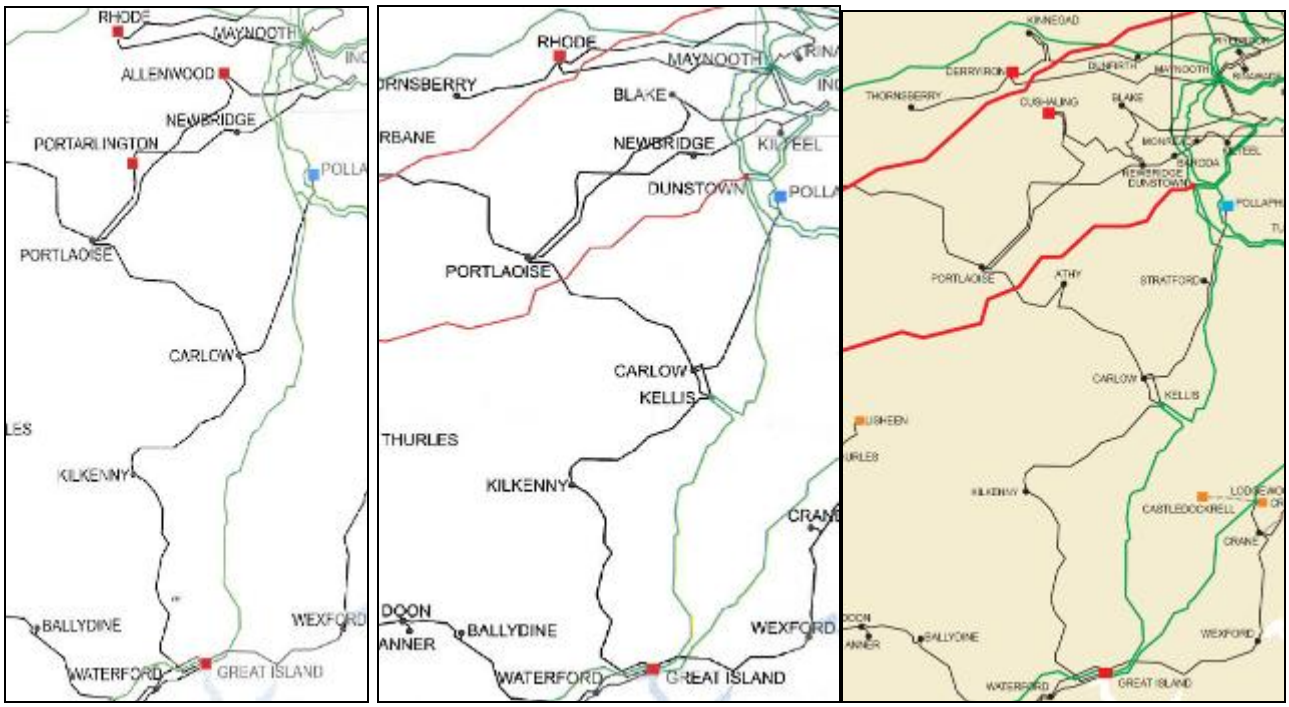

Figure 2.3: Maps Illustrating Evolution of the Transmission System in the Area of Concern from 1980, 1997 and 2012

2.3 Limitations of the Existing Electricity Infrastructure

The need in the Midlands Region, South East Region and county Kildare is twofold and the two issues will be described individually in the below section. Each of these issues in of themselves is required to be addressed;

- Improving quality of supply
- Ensuring security of supply

Improving Quality of Supply

Quality of supply is a collective term for many performance issues affecting the transmission system, including issues relating to low voltages, increased potential for fluctuation in voltage (or voltage dips) and a proximity to voltage collapse, which ultimately leads to complete loss of electricity supply.

The 110 kV network in the Area of Concern is supported by the stronger 220 kV network at Great Island, Kellis, and Maynooth substations via 220/110 kV transformers. If any of the 220 kV circuits (lines or transformers) feeding these stations are unexpectedly lost, the underlying 110 kV network would see a reduction of its strength and hence the voltage would decrease and be more unstable (i.e. a small change in the network would have a large effect on the voltage).

Studies carried out in 2008 estimated that the network would be outside standards as set out in the TPC by as early as 2010 when the combined demand in the area was expected to have reached 420 MW. However, as a result of the economic downturn, annual energy demand for electricity countrywide has fallen by 7.8% since 2008 (as quoted on page 10 of EirGrid's Transmission System Performance Report 2011) while the peak demand has dropped by about 5% in the same period. The peak demand in the Area of Concern was 390 MW in 2011 and is now expected to reach critical levels by 2020, based on median system demand growth rates quoted in the All Island Generation Capacity Statement 2012. If actual demand were to increase in line with the higher growth forecast, the problem could arise as early as 2016. These critical dates need to be considered against the length of time required for planning, consenting and constructing such new infrastructure.

The most onerous loss of an item of plant for the Area of Concern is the outage of the Dunstown - Kellis 220 kV circuit which results in the voltage at a large number of substations across the area being outside of acceptable voltage limits. In this scenario, the 110 kV network would only be connected at Maynooth 220 kV station, Great Island 220 kV station and Shannonbridge 220 kV station. With the amount of demand that is fed within this area, these connections would not be enough to maintain the voltage in the area within the limits as set out in the TPC. In addition, the unexpected loss of the Kellis - Kilkenny 110 kV circuit would similarly result in stations being outside acceptable voltage limits, although it would be more localised around Athy, Carlow, Kilkenny and Stratford 110 kV stations. Furthermore, other contingencies (unplanned outages involving the above mentioned circuits and others) during essential maintenance outages were also identified that would result in 110 kV circuits in the area becoming overloaded and the voltage at a larger number of substations across the counties of Carlow, Kildare, Kilkenny, Laois, and Wicklow falling outside standards.

Security of Supply

From a transmission network perspective, security of supply is concerned with maintaining continuity of electrical supply to consumers. As such, it is taken to mean the ability of the

transmission network to reliably transport electrical energy from where it is generated to the demand centres where it is consumed. In relation to security of supply the Transmission Planning Criteria (TPC) states that *"The load that would be isolated for the loss of two 110 kV lines shall not exceed 80 MW of distribution load"*. The loss of this amount of demand (i.e. load) during the outage situation is described as unacceptable from a security of supply perspective.

Kilkenny 110 kV substation, which is the only 110 kV substation in County Kilkenny, is connected to the rest of the transmission system by two transmission lines, namely the Kellis – Kilkenny 110 kV and Great Island – Kilkenny 110 kV lines.

The peak demand at the Kilkenny substation recorded in 2012 is 74 MW, which approaches the 80 MW limit specified in the TPC. During a maintenance outage, when either circuit is out of operation for a prolonged period for maintenance, the subsequent unplanned loss of the other circuit would interrupt the supply of electricity to the substation. The loss of both these circuits would isolate Kilkenny 110 kV substation from the rest of the transmission system. In this situation the area fed from Kilkenny 110 kV substation would suffer a complete loss of its electricity supply. Although the risk exists that both circuits could be out simultaneously, the risk of this occurring is more likely during periods of planned maintenance. For that reason, EirGrid attempts to schedule maintenance outages at times other than the peak demand periods, generally from March through to October, in order to minimize the potential for impact.

In the studies conducted in 2008 the demand in Kilkenny, during the normal maintenance period, reached 63 MW and was expected to reach the specified 80 MW by 2019. Due to the recent economic downturn, the demand during the normal maintenance period in 2012 reached 62 MW and is now expected to reach the specified 80 MW limit by 2028 based on the median system demand growth rates quoted in the All Island Generation Capacity Statement. As can be seen from the above, the demand levels for the Kilkenny 110 kV substation is back to 2008 levels, but the growth rates applied have been reduced to a long-term annualised growth rate of 1.6% (from 2.9%). Any incremental increase outside of the expected organic growth in demand would accelerate the timing of the need significantly. For example, a step increase in demand of 10MW, as a result of a new customer connection or an expansion of existing customer's facility would require the third circuit into Kilkenny by 2020.

Based on the uncertainty of when the third circuit would be required, this driver does not now present the same urgency as before; however it is important to understand that it will still emerge in time. It is also essential to recognise that a change in the economic climate or a small change in the demand supplied by the station could accelerate the need for the third circuit. This uncertainty in the timing of the third circuit, combined with the long lead-in time for the planning, consenting and construction of transmission infrastructure makes it prudent for EirGrid to consider the security of supply driver when addressing the separate quality of supply issue to achieve an efficient solution for the entire Area of Concern.

The proposed development will provide a third circuit into the Kilkenny 110 kV substation maintaining supply in the situation described and so will enhance the security of supply for County Kilkenny.

2.4 Reinforcement Options Considered

To address issues of quality and security of supply, as identified above, four reinforcement options were considered. All the options that were considered were designed to meet the

technical needs of transmission reinforcement in the Area of Concern, and are described and discussed in the section below.

- Option 1, presented in Figure 2.4, reinforces the existing network with a new 400/110 kV station at Laois, which connects into the existing 400 kV circuit between Dunstown and Moneypoint stations; and the existing 110 kV circuit between Athy and Portlaoise stations. The new reinforcement will also connect a new 110 kV circuit between Laois and Kilkenny stations making use of the existing line from Kilkenny to the existing Ballyragget 38 kV station which will be expanded to a 110/38 kV station. The benefit of connecting the new 400/110 kV station into the existing Athy – Portlaoise 110 kV circuit is that it will provide a direct injection from the highest capacity 400 kV network into the 110 kV network in Counties Carlow, Kildare and Laois which will address the quality of supply in those counties, improving the voltage. The connection to Kilkenny station will address the quality and security of supply issues in the broader Kilkenny area. The option shows very strong technical performance and the least amount of new circuit build (i.e. approximately 30 km).
- Option 2, shown in Figure 2.5, provides a 220/110 kV injection at the existing Dunstown 400/220 kV station. This option would require an extension to the infrastructure in this station to include a new 110 kV busbar and the addition of a 220/110 kV transformer. The network in Kildare is reinforced with a new 110 kV circuit between Dunstown and Monread stations. The South East region is strengthened by means of a new 110 kV circuit between Dunstown and Pollaphuca stations. Security of supply issues in Kilkenny are addressed by means of a new 110 kV circuit from Kilkenny to Carlow stations which provides a link to the 220/110 kV injection at Dunstown station via Pollaphuca and Carlow 110 kV substations. Additional voltage support in the form of 15 MVAr capacitor bank is required at Doon and Wexford stations. This option comprises approximately 59 km new circuit build.

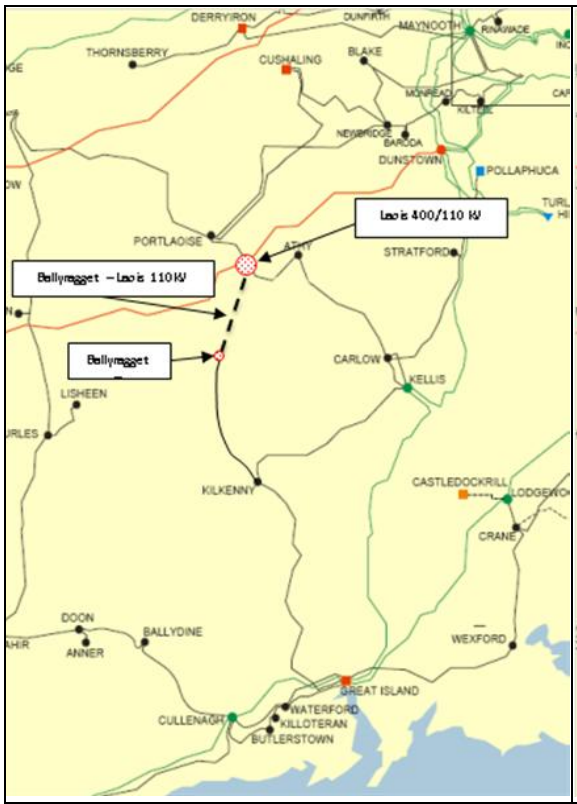

Figure 2.4: Map illustrating the reinforcements associated with Option 1

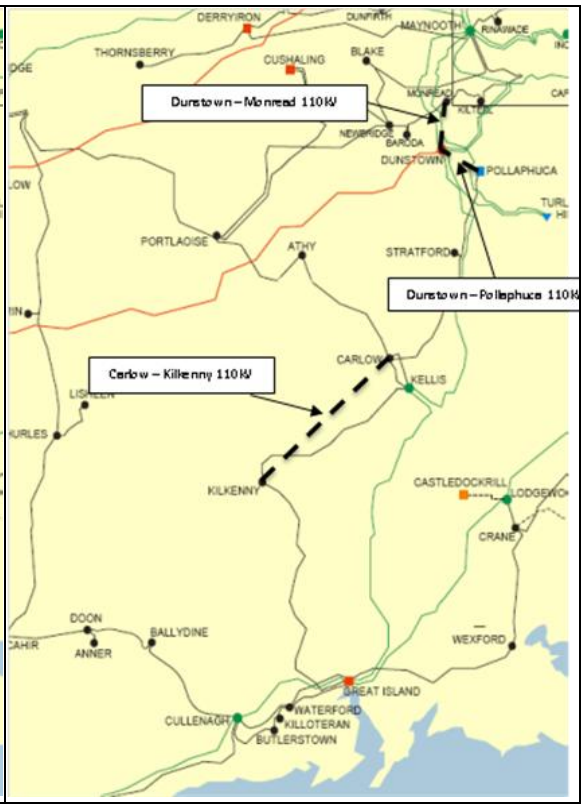

Figure 2.5: Map illustrating the reinforcements associated with Option 2

- Option 3, shown in Figure 2.6, comprises entirely 110 kV circuit build. The network in Kildare is reinforced with a Maynooth – Monread 110 kV circuit. The Carlow and Kilkenny areas are reinforced with the introduction of a 15 MVAr capacitor bank in Carlow 110 kV station and two new 110 kV circuits; (i) Carlow – Kilkenny and (ii) Kilkenny – Lisheen via Ballyragget. Additional voltage support in the form of 15 MVAr capacitor bank is required at Doon and Wexford stations. This option comprises approximately 84 km new circuit build.
- Option 4, shown in Figure 2.7, uses a combination of 220 kV and 110 kV reinforcements. Security of supply in Kilkenny is addressed with a new 220/110 kV station in Kilkenny looped into the existing Great Island Kellis 220 kV line. A new Carlow - Portlaoise 110 kV circuit adds further strength to the south east network. The network in the Kildare region is reinforced by the introduction of a Maynooth Monread 110 kV circuit. Additional voltage support in the form of 15 MVAr capacitor banks are required at both Doon and Wexford stations. This option comprises the most new circuit build, approximately 26 km of double circuit 220 kV and approximately 63.5 km 110 kV.

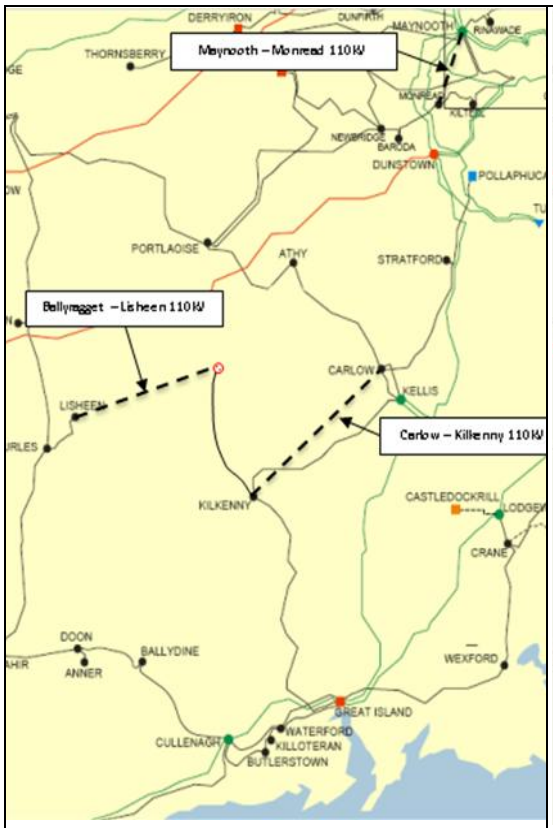

Figure 2.6: Map illustrating the reinforcements associated with Option 3

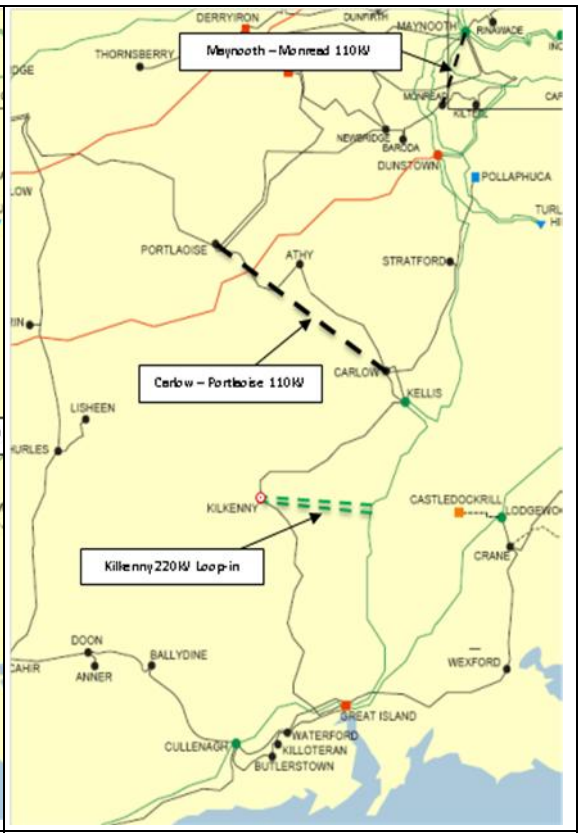

Figure 2.7: Map illustrating the reinforcements associated with Option 4

2.5 Preferred Reinforcement Option

The options were compared by considering their relative performance from a technical and economic perspective. A high-level environmental assessment was done to ensure that each of the options would be implementable from an environmental perspective.

Each of the options was considered to adequately address the identified network constraints, but a comparison of the relative technical performance of each of the options indicated that Option 1 would provide the greatest incremental growth in capacity. This option would represent a strong platform for future economic growth for the Area of Concern and defer the need for any further reinforcement requirements well beyond that of any of the other options.

It must be considered in this regard that this strategic infrastructure will have a lifespan of several decades. Furthermore, when compared to the alternative options, Option 1 represents the least amount of new transmission infrastructure to be constructed (i.e. approximately 30 km of 110 kV new transmission circuits compared with approximately 59 km, 84 km and 116 km for Options 2, 3 and 4 respectively).

In terms of network efficiency (i.e. transmitting power with the least amount of losses), Options 1 and 2 performed the best with both achieving similar results.

A comparison of the initial capital costs and the operating and maintenance costs for each option indicated that Option 1 had the lowest cost. Furthermore, as stated above, Option 1 created the greatest amount of additional capacity, which would mean that as the system requirements continue to grow out into the future, the timing of the next transmission reinforcement (and its associated capital cost) could be deferred further into the future than

any of the other options. This would directly translate into an economic value above that offered by the other options.

In conclusion, all four options meet the network requirements to ensure a suitable level of reliability and quality of supply in the area of concern. Based on a comparison of the four options, Options 1 and 2 are preferable to Options 3 and 4 from an economic and efficiency perspective. Option 1 is preferred to Option 2 as it involves the least new circuit length and adds the greatest amount of spare network capacity for future growth.

Option 1, the Laois-Kilkenny Reinforcement Project, is therefore the best solution to meet the long-term needs of the area.

3 Project Development

3.1 EirGrid's Project Development and Consultation Roadmap

EirGrid has developed a Project Development and Consultation Roadmap for its large transmission infrastructure projects, to ensure that the project development process proceeds in a consistent, logical, and transparent manner. The Roadmap is illustrated in Figure 3.1. Stages 1 and 2 of the roadmap are supported by Lead Consultant's Reports, which are generally completed and the subject of public and stakeholder consultation, before proceeding to the next stage.

In order to assist in understanding the various reporting and consultation processes and environmental appraisals which were undertaken throughout the project, as well as the project development process in general, the following sets out and summarises the contents of the Lead Consultant's Reports Stages 1 and 2. These Reports, which are included as appendices to this Planning Report (see Appendices 1 and 2), were previously issued to An Bord Pleanála during pre-application consultations and were key documents during consultations related to the project, functioning as the basis for public and stakeholder feedback. A brief review of the relevant reports and appendices in those reports is set out below. The purpose of this review is to provide an understanding of all the supporting reports underpinning the final planning approval documentation and why this project is being submitted to An Bord Pleanála for planning approval.

It is essential for a full understanding of the project, including it's development, that the Stage 1 and 2 Reports including all appendices to those reports are read in full, as these reports detail how the project was developed. These reports are included with this report on CD and can also be found on the project website at

http://www.eirgridprojects.com/projects/laoiskilkenny.

Figure 3.1: EirGrid's Project Development and Consultation Roadmap

3.2 Stage 1 – Lead Consultant's Report (Published in May 2011)

The Stage 1 process involves gathering information about the study area so that future decisions about where the project can be located are made based on best available baseline information. The process of information gathering as recorded in the Stage 1 Lead Consultants Report achieves the following:

- Presents the need for the project;
- Establishes a study area for the project;
- Identifies environmental and other constraints within the defined study area;
- Identifies alternative potential substation locations and route corridor options for the project within the defined study area;
- Evaluates the various substation location and corridor options, based on the information gathered to date, having regard to environmental and engineering constraints;
- Identifies an emerging preferred (taken to mean "least constrained" or "best fit") substation site(s) and corridor(s) for the project within which to route the proposed 400 kV and 110 kV circuits required for the project; and
- Invites public and stakeholder consultation and feedback on all issues arising.

The Table of Contents for the Stage 1 Report shows the structure of that report and the processes followed in reaching the conclusions and recommendations. The appendices are particularly important in this regard as they detail the environmental evaluations that were carried out, the contents of each appendix is described below.

The Stage 1 Report can be found at Appendix 1 of this document and can also be found on the project website at http://www.eirgridprojects.com/projects/laoiskilkenny.

Stage 1 Lead Consultants Report – Table of Contents

Part A	**Project Overview**	
Chapter 1	Laois Kilkenny Reinforcement Project Introduction	This section gives an overview of the project.
Chapter 2	Study Area and Constraints Identification	This section identifies the study area and details the relevant environmental constraints therein, as well as discussing Stage 1 consultation.
Chapter 3	Substation Site Identification	This section identifies an emerging preferred substation location.
Chapter 4	Route Corridor Identification	This section identifies potential route corridors.
Part B	**Overview of Environmental Issues**	
Chapter 5	Consultants Findings	This section provides an overview of the consultant's findings in relation to the environmental issues in the study area.
Part C	**Lead Consultant's Recommendation**	

Chapter 6	Conclusions and Recommendations	This section evaluates route corridors and recommends emerging preferred corridors for both the 400 and 110 kV elements.
Part D	**Appendices**	**These are fundamental to understanding the Stage 1 Report and are detailed below.**

Appendix	Report Title	Description
Appendix A-1	'Policy on the Use of Overhead Line and/or Underground Cable'	This EirGrid Document guides the use of appropriate circuit technology
Appendix A-2	'110 kV Underground Cable Feasibility Study'	The purpose of this report was to identify and assess a number of feasible undergound cable route options from Laois-Ballyragget and to identify a preferred route
Appendix A-3	Environmental Reports in Relation to an Underground Cable	The purpose of this report was to identify the environmental impacts that might arise bsaed on the preferred cable route option identified in Appendix A-2
Appendix A-4	Power System Studies, Laois-Ballyragget Cable Feasibility Studies	The purpose of this report was to examine the technical implications of installing an OHL or an UGC between Laois and Ballyragget.
Appendix B	Technical Comparison of AIS vs. GIS Susbtation Technology	This report comapres AIS vs. GIS substation technologies and identifies the preferred technology
Appendix C-2	Description of Project Constraints Report	The purpose of this report was to assist the reader in understanding the key types of constraint found within the project study area. It is intended as an aid to understanding the constraints mapping.
Appendix D-1	Study Area Constraints Report – Human Beings	The purpose of this report was to describe and identify the primary constraints associated with human beings that exist in the project study area.
Appendix D-2	Study Area Constraints Report – Cultural Heritage	The purpose of this report was to describe and identify the primary constraints associated with cultural heritage that exist in the project study area.
Appendix D-3	Study Area Constraints Report - Landscape	The purpose of this report was to describe and identify the primary constraints associated with landscape that exist in the project study area.
Appendix D-4	Study Area Constraints Report - Ecology	The purpose of this report was to describe and identify the primary constraints associated with ecology that exist in the project study area.
Appendix D-5	Study Area Constraints Report – Soils and Geology	The purpose of this report was to describe and identify the primary constraints associated with soils and geology that exist in the project study area.
Appendix D-6	Study Area Constraints Report – Hydrology and Hydrogeology	The purpose of this report was to describe and identify the primary constraints associated with hydrology and hydrogeology that exist in the project study area.
Appendix D-7	Wintering Birds Survey March – April 2010	The purpose of this report was to present the abundance and distribution of wintering wader and wildfowl birds in the project study area
Appendix D-8	Wintering Birds Survey Oct-Dec 2010	The purpose of this report was to present the abundance and distribution of wintering wader and wildfowl birds in the project study area
Appendix D-9	Wintering Birds Survey	The purpose of this report was to present the abundance and

	Dec 2010-Jan 2011	distribution of wintering wader and wildfowl birds in the project study area
Appendix F-2	Assessment of Alternative 400/110 kV Substation Study Areas	This study arose out of consultations with a local group who requested that alternative study area locations for the 400/110 kV substation be considered. This study considers 4 substation study areas (3 no. alternatives and the initial proposed) and assesses them.
Appendix G	400/110 kV Emerging Substation Site	This report details how the emerging preferred 400/110 kV substation site was selected
Appendix I-1	Assessment of Corridors Report – Human Beings	Following identification of a number of candidate overhead line route corridors, this report was prepared to evaluate each route corridor and to identify a most preferred route corridor having due regard to the constraints identified with respect to impacts on human beings.
Appendix I-2	Assessment of Corridors Report – Cultural Heritage	Following identification of a number of candidate overhead line route corridors, this report was prepared to evaluate each route corridor and to identify a most preferred route corridor having due regard to the constraints identified with respect to impacts on cultural heritage
Appendix I-3	Assessment of Corridors Report – Landscape	Following identification of a number of candidate overhead line route corridors, this report was prepared to evaluate each route corridor and to identify a most preferred route corridor having due regard to the constraints identified with respect to impacts on landscape.
Appendix I-4	Assessment of Corridors Report – Ecology	Following identification of a number of candidate overhead line route corridors, this report was prepared to evaluate each route corridor and to identify a most preferred route corridor having due regard to the constraints identified with respect to impacts on ecology.
Appendix I-5	Assessment of Corridors Report – Soils and Geology	Following identification of a number of candidate overhead line route corridors, this report was prepared to evaluate each route corridor and to identify a most preferred route corridor having due regard to the constraints identified with respect to impacts on soils and geology.
Appendix I-6	Assessment of Corridors Report – Hydrology and Hydrogeology	Following identification of a number of candidate overhead line route corridors, this report was prepared to evaluate each route corridor and to identify a most preferred route corridor having due regard to the constraints identified with respect to impacts on hydrology and hydrogeology.

The conclusions of the Stage 1 Lead Consultants Report can be summarised as follows:

- The emerging preferred substation technology for the 400/110 kV substation is GIS (Gas Insulated Switchgear). Primarily housed indoors, this is the smallest and most compact substation type. The station compound will be of the order of 1.2 hectares (3 acres) in overall size.
- The emerging preferred location for the new 400/110 kV substation site is in the townland of Coolnabacky, close to the cross roads (R426/R427), between Timahoe and Portlaoise. This is on the southern boundary of the substation study area, close to the intersection of the existing 400 kV Moneypoint-Dunstown and the Athy-Portlaoise 110 kV overhead lines. Approximately 1.4km of new 400 kV overhead line would be required to connect the existing Moneypoint - Dunstown 400 kV overhead line into the new substation. However, overall, the location of the new substation is considered to limit potential visual impact and other impact on residential amenity and environment to the greatest extent possible or practicable.

- The emerging preferred technology for the 110 kV circuit from Coolnabacky to Ballyragget is single circuit overhead line design.
- The emerging preferred route corridor for the 110 kV circuit from Coolnabacky to Ballyragget is identified.
- The requirement to uprate the existing Ballyragget-Kilkenny line from 38 kV operation to 110 kV is also identified in this Stage 1 Report.

In terms of reaching the conclusions, the following summarises the process by which the conclusions in the Stage 1 Report were reached.

3.2.1 Definition of Study Area

The Project Study Area is the broad geographical region within which a practical feasible route corridor can expect to be found having regard to the technical rationale for the project as outlined in Chapter 2. In this case it covers an area of approximately 29 x 30km (870 sq km). This study area was established taking into consideration the connection requirements for the project. These requirements include connection to the existing Dunstown-Moneypoint 400 kV overhead line, connection to the existing Athy-Portlaoise 110 kV overhead line and a connection to a new 110 kV extension of the existing Ballyragget 38 kV substation. This study area is deemed to be an appropriately sized study area based on the objectives of the project.

The Project Study Area mainly lies within the counties of Laois and Kilkenny. The Project Study Area is bounded to the north by Portlaoise, to the east by Athy, to the west by Mountrath, and to the south by Freshford.

It is generally rural in nature and is generally characterised by farmland interspersed with towns, villages and settlements connected by a network of national, regional and local roads.

The study area does no tinclude the portion of the overall proposed development between Ballyragget and Kilkenny substations as the connection between these nodes is proposed to occur by means of an upgrade to the existing overhead line.

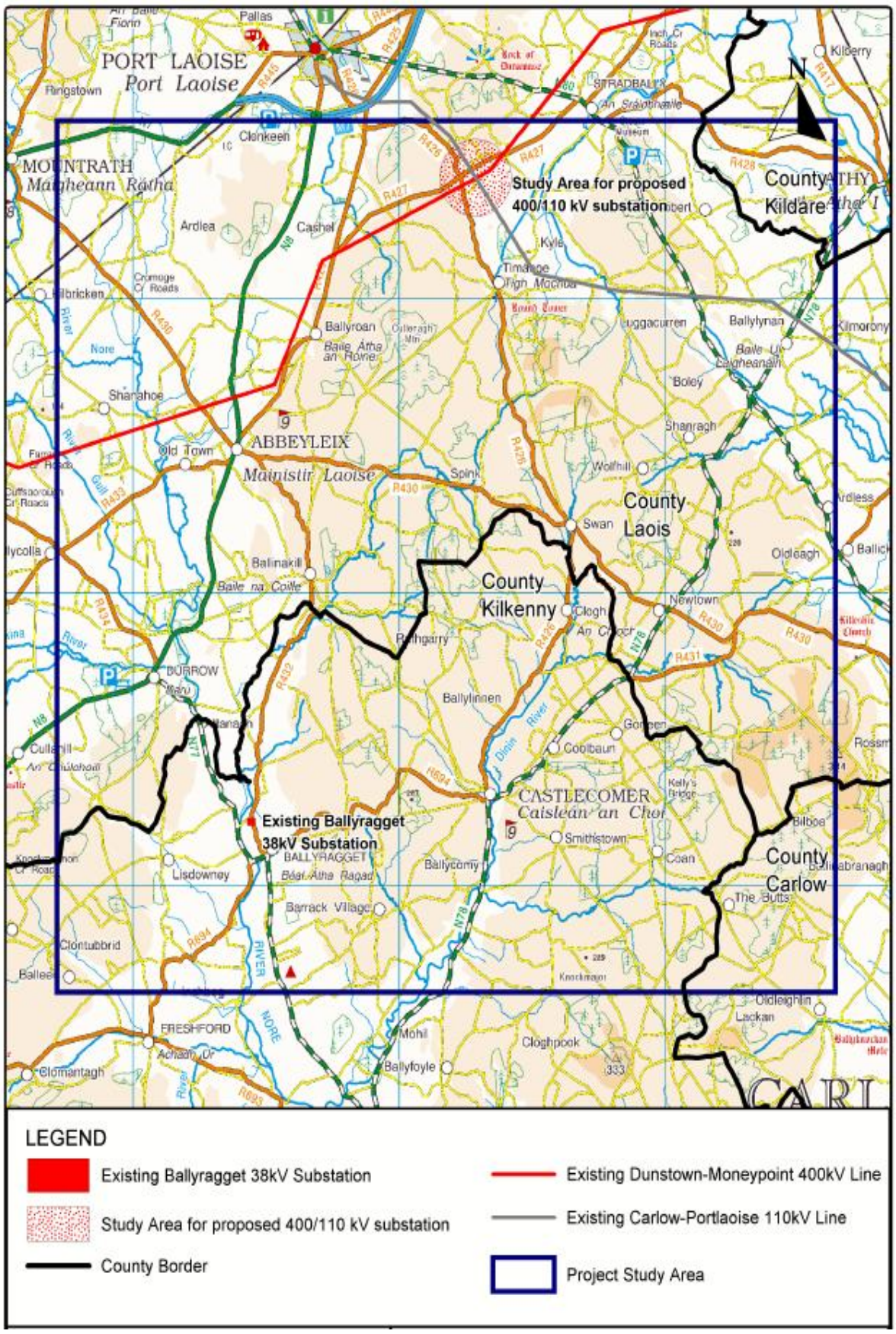

Figure 3.2: Laois-Kilkenny Reinforcement Project, Project Study Area as identified in the Stage 1 Lead Consultant's Report

(Note the Carlow-Portlaoise 110 kV line is now known as the Athy-Portlaoise 110 kV line)

3.2.2 Identification of Constraints within Study Area

The primary purpose of the Lead Consultants Stage 1 Report is to collect information in relation to technical and environmental constraints in the study area. The identification of environmental and other constraints within the study area assisted in determining potential locations for the planned infrastructure. Constraints can generally be divided into three principal categories, namely:

- Natural Constraints (naturally occurring landscapes and features)
- Manmade Constraints (forming part of the built environment)
- External Parameters (design standards, policy, procedural and legal issues)

Constraints were identified through the following process:

- Review of the Planning and Environmental Legislation.
- Evaluation of Study Area by Environmental Consultants.
- Aerial Photography.
- OSI Mapping.
- Consultation.
- An Post Geodirectory.
- Site Visits.
- ESBI GIS Database.

The Study Area was examined under the following headings by environmental consultants:

- Human Beings;
- Cultural Heritage;
- Landscape;
- Ecology (Flora and Fauna);
- Soils and Geology; and
- Hydrology and Hydrogeology.

Figure 3.3 (Appendix C-1 in the Stage 1 Report) illustrates a map of the constraints identified in the project study area.

The full reports which are summarised below can be found in Appendices D1 – D6 in the Stage 1 Report.

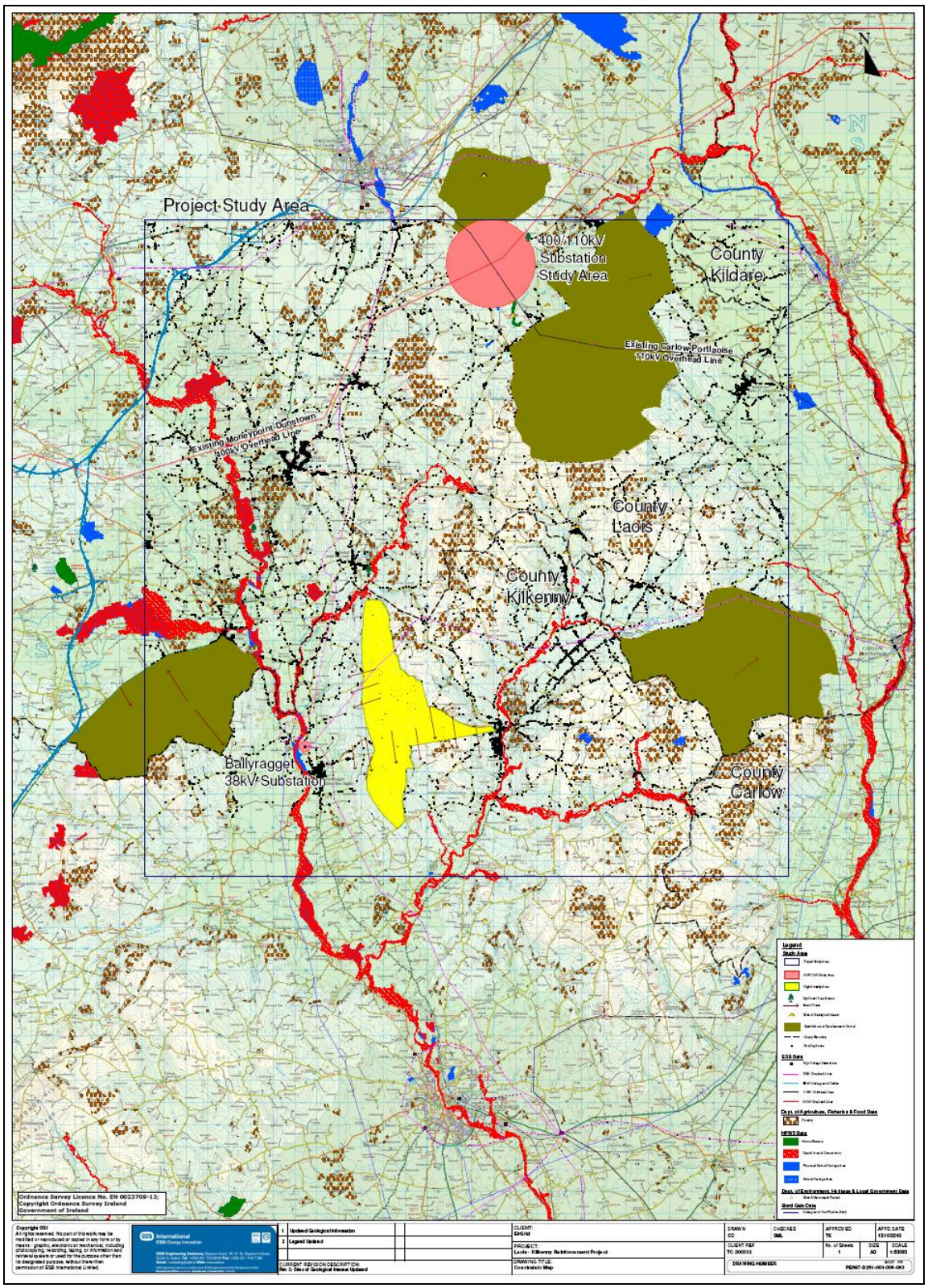

Figure 3.3: Constraints Map (as presented in Stage 1 Report)

(Note: The pink circle denotes the substation study area, i.e. the area in which it was considered that a new 400/110 kV substation could be found)

3.2.2.1 Man Made Constraints

- **Human Beings**

The key constraints in relation to Human Beings are the following:

- *Settlements*

Towns including Stradbally, Timahoe, Ballyroan, Ballylynan, Luggacurren, Abbeyleix, Ballycolla, Durrow, Ballinakill, Castlecomer, Ballyragget, as well as smaller villages and one off housing scattered throughout the area, primarily along local and regional roads.

- *Areas of Tourism Interest*

The location of structures in and relative to, areas of scenic importance need to be carefully considered in order to minimise the landscape impact and associated attractiveness of the area for tourism and amenity purposes.

The main features of tourism within the study area include: The River Nore candidate Special Area of Conservation (cSAC), the Heritage Town of Abbeyleix, the Abbeyleix Wood Complex, views overlooking Castlecomer and Ballyragget and views towards the Slieve Bloom Mountains, Timahoe Round Tower and heritage gardens and parks (for example Heywood Gardens).

- **Cultural Heritage**

The archaeological and architectural heritage features located within the study area can be categorised under the following headings:

- *National Monuments*

Three national monuments in state ownership are located within the study area and all are located within the vicinity of Timahoe, Co. Laois.

- *Recorded Monuments*

993 recorded monuments including 15 redundant records are located within the study area.

- *Protected Structures*

See below under NIAH.

- *National Inventory of Architectural Heritage (NIAH)*

385 structures listed in the NIAH are located within the study area. 179 of these are found in Laois, and 206 in Kilkenny. The majority of sites are located within towns or villages.

All of the cultural heritage sites identified within the study area represent constraints to the proposed overhead lines and substation. The cultural heritage features data from the Bronze Age through to the modern period and the overall density of sites within the study area is considered high. Noticeable distribution patterns include the high numbers of enclosures and ringforts (384), and churches (70) which occur within the study area. River banks are areas of archaeological potential / sensitivity and this should be considered in the route selection process. Whilst upland areas appear to have fewer recorded sites, this is due mainly to the lack of detailed upland archaeological surveys which have been carried out to date. This is the case within this study area where there appears to be a limited number of monuments over upland areas. Of particular note in the study area are the presence of field systems and deserted medieval settlements. These are extensive monuments on the ground and span over several fields.

- **Existing Infrastructure**

The key existing infrastructure in the study area is as follows:

- *Roads*

The M7 / M8 motorway and the National Routes N77, N78, N80, and N8 all traverse the study area as well as Regional Routes, R425, R426, R427, R430, R432, R433, R694, and R431. There is also an extensive network of local and rural roads throughout.

- *Electricity Infrastructure*

The Dunstown - Moneypoint 400 kV, Athy - Portlaoise 110 kV and Ballyragget – Kilkenny 38 kV overhead transmission lines traverse the study area as well as a number of other 38 kV, MV and LV distribution lines. Ballyragget 38 kV and Kilkenny 110 kV substations are also within the study area.

- *Gas Transmission Pipeline*

A section of An Bord Gáis gas pipeline (4 bar) is also found in the southern section of the study area, stopping at Ballyragget.

3.2.2.2 Natural Constraints

- **Landscape**

The study area contains four principal types of landscapes:

- *Central Plain Lowlands*

These are an abundant type of landscape through the centre of Ireland that comprise fairly level ground - usually used for pasture and tillage on lighter soils – interspersed with areas of wetlands and occasional bogs. These landscapes generally have lower visual absorption capacity in areas with higher agricultural capability where fields are larger and hedges are lower. In areas of impeded drainage or poor soils these areas can have medium to high capacity to absorb visual effects - though areas of open water, wetland and bogs are very visually vulnerable. Landscapes west of Ballyragget and Abbeyleix are of the more open type.

- *River Valleys*

These are common, but very localised landscapes - rarely extending for more than 0.5 km on either side of the river. They are visually complex – often having high degrees of visual robustness on account of topography and dense vegetation – though open views along the length of the river can be very expansive and proportionally vulnerable. These conditions are usually interlinked, leading to a general character of visual sensitivity in such landscapes. The River Nore is a river landscape that is noted as a visual and amenity resource.

- *Transitional Areas*

The zone where lowlands blend into uplands are usually characterised by smaller fields, less fertile soil and complex patterns of vegetation, topography and settlement - all of which combine to give relatively high capacity to absorb visual effects.

- *Uplands*

Elevation, topographic exposure, little or no tall vegetation, and few other man-made structures mean that upland areas are usually characterised as being more visually vulnerable than other landscapes - even when used for agriculture.

The southern section of the study area is located in the Landscape Character Area ‘Castlecomer Plateau’ as identified in the Kilkenny Landscape Character Assessment (Kilkenny County Development Plan). It is adjacent to the Castlecomer transition area B2.

The Castlecomer Plateau (B) is noted in the Landscape Assessment as being an extensive upland area with an almost circular shape that lies between the valleys of the Rivers Nore and Barrow, covering most of the north-east of the County. The terrain slopes steeply from the river valleys to the surface of the Plateau, which gently undulates and gives rise to several small ridgelines at an elevation of between 200 and 340m above the sea level. The elevated nature of this physical unit provides a defined skyline and significant and scenic views over the Kilkenny basin and the Nore and Barrow river valleys.

The Castlecomer Transition (B2) is also noted in the Landscape Assessment. This western area is a long linear strip of land, running in a north-south direction, which is parallel to the River Nore Valley and close to the Dinin River. The area encompasses the environs of Ballyragget and Castlemarket areas. The Assessment notes that 'These transitional areas are not perceived as having special landscape or scenic amenity values and are considered suitable for development'.

- **Ecology**

Following the identification of ecological features within the study area, the main ecological constraints relevant to the planned development include:

- *Sites of Conservation Interest*

The study area contains several sites of conservation interest that have been designated as candidate Special Areas of Conservation (cSAC), Natural Heritage Areas (NHA) or proposed Natural Heritage Areas (pNHA). The study area also includes one Nature Reserve that is owned by the State (Timahoe Eskers). There are 3 cSAC's, 1 NHA and 10 pNHA's within the study area.

The largest and most ecologically significant designated site in the study area is the River Nore and Barrow cSAC. This large cSAC includes the main River Nore channel, the majority of its main tributaries (Rivers Gully, Erkina, Owenbeg, Glashagal, Ironmills, Gloshna, Dinin) and some adjacent habitats.

Other smaller sites designated for nature conservation are scattered around the study area.

- *Important Bird Areas*

There is only one Important Bird Area (IBA) close to the study area. This IBA is known as the Upper Barrow flood plain (IE 108). It extends from Monasterevin to Athy on the North Kildare/Laois border, adjacent to the study area. This area attracts wintering Bewick's and Whooper Swans as well as Mute Swans.

Several important sites within the study area identified for waterbirds have been examined. These sites have attracted various wetland species of conservation interest including species listed on Annex I of the EU Birds Directive and other species listed on the Amber and red lists of Bird Conservation Concern in Ireland (BoCCI).

- *Fisheries and Protected Aquatic Species*

The study area contains several important rivers, of which the River Nore is the most significant. Several important tributaries of the River Nore flow through the study area. The major tributaries are also designated in certain areas as part of the River Barrow and Nore cSAC. Tributaries of the River Barrow are also found within the study area.

Many of the freshwater streams and rivers in the Nore and Barrow catchemnt are important nursery waters for salmonid species such as Atlantic Salmon and Brown Trout. The River Nore also contains several other aquatic species listed on Annex II of the EU Habitats Directive including, White Clawed Crayfish, Brook, Sea and River Lamprey and Twaite Shad.

The study area also contains the only site in the world for the hardwater form of the Fresh Water Pearl Mussel (FWPM). This is an Annex II species requiring strict protection. Its distribution is currently limited to a stretch of the River Nore between Poormansbridge and Ballyragget. Other parts of the Nore and its tributaries contain the more common form of the Fresh Water Pearl Mussel. Both species are only known from the Nore above Ballyragget. Otter and Kingfisher, both legally protected species are likely to be found within the study area also.

- *Other Rare and Notable Species*

There are a number of records of other rare plant and animal species, or species with restricted distributions within the study area. Several records of rare plant species such as Yellow Marsh Saxifrage are quite old and have not been verified for 100 years. Opposite-leaved Pondweed is recorded in the NPWS as it has been recorded along the river Goul. This species is listed in the Red Data Book and is also protected by the Flora Protection Order.

Mammal species listed in the Red Data Book that are present within the study area include Badger, Stoat, Hedgehog, Red Squirrel, Pine Marten and Irish Hare. Fallow Deer and Sika Deer are also present in the area, as well as several bat species. All species of bat occurring in Ireland are protected under the EU Habitats Directive, listed under Annex IV.

It should be noted that many notable and rare species of conservation importance are not just confined to designated areas or sites of importance and may in fact be found widely distributed throughout the study area.

- **Soils & Geology**

The key constraints in relation to soils and geology are the following:

- *Sloping Ground and Soft Ground Including Blanket Peat*

There are a number of potential impacts associated with the construction of structures in sloping ground, soft ground and blanket peat, in particular in the identified areas to the west of Ballyroan and to the south of Abbeyleix. Slope angle, accumulation of water following a high intensity rainfall event and the presence of drains in the vicinity of the construction area may lead to peat slope failure. On site machinery and dewatering activities may also be contributing factors to peat slope failure.

- *Areas of Made Ground*

These areas are located at residential areas (towns and villages such as Castlecomer, Ballyragget, Timahoe and Abbeyleix). Cut material would be generated if construction was located in these areas, however the amount would not be significant.

- *Areas where Rock is Close to the Surface*

Rock at the surface is present in isolated locations within the study area. Bedrock would be generated as surplus material if construction was located in these areas. Due to the nature of the construction works the amount would not be significant.

- *Areas of Geological Heritage*

8 sites of geological interest lie within the study area. The Geological Survey of Ireland (GSI) have stated that there are no set distance requirements for planned developments in the vicinity of geological NHAs and CGSs, distance being decided on a site by site basis.

- **Hydrology and Hydrogeology**

The key constraints in relation to water are the following:

- *Physical Constraints*

Water courses are located within the study area. The requirement for the crossing of water bodies is the main constraint.

- *Historical Flooding*

There is a history of flooding in some locations within the study area (e.g. the River Nore at Abbeyleix and Durrow, and the River Dinin at Castlecomer). Cognisance should be given to the locations of these previous flood events when locating structures, particularly in the vicinity of watercourses and floodplains and other surface water features.

- *Groundwater Supplies*

A number of groundwater supplies have been identified from the GSI well database. Additional public or private water supplies may be present in the area.

- *Groundwater Vulnerability*

Regionally important bedrock and gravel aquifers are located within the study area. The GSI vulnerability rating in some of these locations is classified as extreme.

3.2.3 Emerging Preferred Substation Technology for 400/110kV Substation

Two alternative types of substation were considered for this particular project. One is an outdoor type, known as an Air Insulated Switchgear (AIS) substation. The second type is an indoor type, known as a Gas Insulated Switchgear (GIS) substation.

As their name suggests, both use different insulating mediums (Air or Gas) between hardware devices (circuit breakers) within the station. Smaller distances between parts can be achieved with gas as its insulating strength is higher than that of air, resulting in a more compact overall station size. The land take size associated with the GIS stations can be significantly smaller than when compared to AIS. For example an AIS substation would require approximately 12 acres in comparison to approximately 2.6 acres for a GIS substation.

When considering the type of substation to use, land take is only one consideration. Technical performance including operational flexibility and maintenance as well as comparative costs must also be considered.

ESBI carried out a comparison report on the substation technology options and the recommendation was to proceed with a GIS solution. This recommendation was based on both the cost and technical aspects as well as taking into account the overall smaller size and the associated reduced environmental impact of the GIS substation. This Report is entitled ‘Technical Comparison of AIS vs. GIS Substation Options’ (Appendix B in the Stage 1 Report).

3.2.4 Emerging Preferred Location for the 400/110kV Substation

As previously stated, within the project study area provision was also made for a substation study area. Within this area, 9 separate sites were considered as potential locations for the substation.

The conclusion of the Stage 1 Lead Consultants Report was that, of 9 no. identified potential sites, the substation site identified in Figure 3.4 is the emerging preferred substation site from a technical and environmental perspective, and that future stages should focus on further development of this site. Appendix G of the Stage 1 Report – *“400/110 kV Emerging Substation Site”* provides a detailed report of all sites considered

during the site selection process, as well as setting out the reasons why the site identified in Figure 3.4 emerged as the preferred site. This is also outlined in more detail in Chapter 7 of this report.

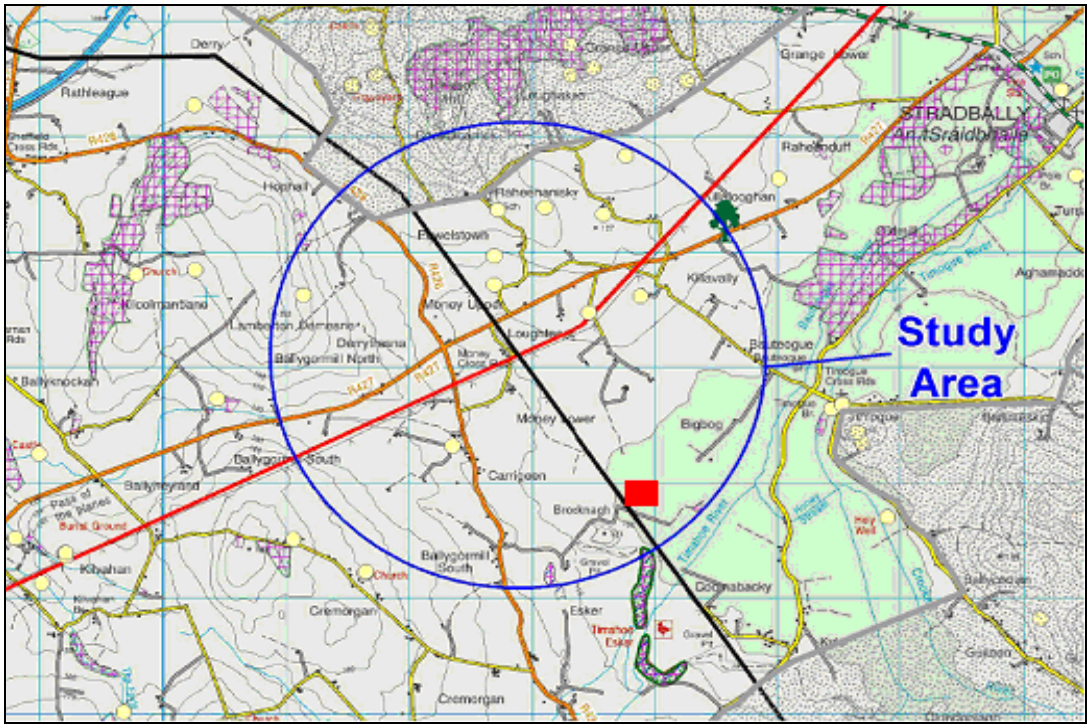

Figure 3.4: Emerging Preferred Substation Site (as presented in Stage 1 Report)

The preferred site has a number of key characteristics:

- The preferred site is located in the southern portion of the substation study area, in the townland of Coolnabacky. It is approximately 1.5km south of the existing 400 kV overhead line and is located in an isolated area close to a disused quarry.
- The folio has good topographical enclosure and good screening vegetation. It is well located as there are a low number of dwellings in the immediate vicinity in contrast to other parts of the study area, and in particular the immediate vicinity under the cross over point of the Dunstown - Moneypoint 400kV and Athy - Portlaoise 110kV overhead lines.
- The site is accessed from an existing quarry road, with good screening from the R426 and R427 roads.
- Whilst additional overhead lines and associated structures will be required in order to connect the existing transmission network into this site, this is an area that has existing overhead lines and new structures will be seen in this context. New lines and structures are required for whatever substation site option is identified.

The full report '400/110 kV Emerging Substation Site' can be found in the Stage 1 Report, Appendix G.

3.2.5 Emerging Preferred OHL Technology for Laois - Ballyragget Circuit

EirGrid's position on the use of overhead or underground circuit technology states that an underground cable will be used only when all of the following conditions apply:

1. An overhead line is not environmentally and/or technically feasible.
2. A technically and environmentally acceptable route for an underground cable can be found.
3. The effect on the transmission network due to the electrical characteristics of the underground cable is acceptable, and the relative poorer 'availability' of the underground cable relative to that of an equivalent overhead line is tolerable.
4. The relative greater cost of the underground cable when compared to an overhead line can be justified.

Notwithstanding this position, the use of underground cable has been considered in detail for this specific project. It should be noted that undergrounding of the Ballyragget-Kilkenny circuit was not considered appropriate as this overhead line already exists.

In relation to the policy above, as only one of the four conditions is applicable, EirGrid are proceeding with an Overhead Line solution for the Laois-Ballyragget circuit.

The full document 'Policy on the use of Overhead Line and/or Underground Cable', GDC-1R001-00, is included in Appendix 1 of the Stage 1 Report.

3.2.6 Emerging Preferred 110kV OHL Route Corridor for Laois - Ballyragget Circuit

Following a technical and environmental evaluation of a number of feasible route corridor options, which is outlined in more detail in Chapter 7 of this report, the emerging preferred option was deemed to be the Central Route Corridor (Node 1-2-4-6-7-8-9-10). This can be seen in Figure 3.5.

Figure 3.5: Emerging Preferred 110kV Route Corridor (as presented in Stage 1 Report)

This corridor passes over higher ground of the Castlecomer Plateau so it is somewhat removed from the habitats and species of interest along the River Nore lowlands. This route involves a single crossing of the River Barrow and Nore cSAC. The proposed crossing is located at a narrow section of the cSAC (the Owenbeg River at Boleybrack). This route also crosses some minor rivers and streams in the Nore and Barrow catchments that are still likely to be used by fauna species of conservation importance.

3.2.7 Ballyragget- Kilkenny Circuit

As the proposal entails the uprating of the existing Ballyragget-Kilkenny overhead line, no other route corridors were considered for this section.

3.3 Stage 2 – Lead Consultants Report (Published in February 2012)

The primary purpose of the Stage 2 Report is to give consideration to all feedback arising from the Stage 1 Report and to detail the evaluation process that has been undertaken in order to identify the preferred route corridor and the preferred substation sites for the project.

Essential to achieving this objective was the consultation process in which all interested parties (statutory, non statutory agencies/bodies, landowners and the general public) were given the opportunity to review and comment on the Stage 1 process, procedures and conclusions. In particular, the Stage 1 environmental evaluation was primarily based upon desktop, vantage point survey and other information sources as well as public and

stakeholder feedback, but did not include on site assessment. As such, input and feedback with regard to local issues is crucial and forms part of the ongoing evaluation process as provided for in EirGrid's Project Development and Consultation Roadmap.

The Stage 1 report, which was published in May 2011 was the primary context within which consultation and evaluation took place.

Feedback from this consultation process was reviewed and, where considered by EirGrid and the project team to be required and justified, the route corridors and other findings previously identified in the Stage 1 report were modified. The output from Stage 2 Report was that the emerging preferences identified in Stage 1 become preferences.

The Stage 2 report presents preferred corridors (one for the 110 kV line and one for the 400 kV connection) with indicative line routes within these corridors and outlines the procedure by which subsequent landowner identification and engagement occurred in respect of confirming the indicative line route. Further consultation with the wider community also took place. All feedback from this stage of the process was again reviewed by the project team and modifications, where considered appropriate, were made to the preferred route corridors and indicative line routes. The preferred 400 kV and 110 kV route corridors from the Stage 2 Report can be seen in Figure 3.6. Again the Ballyragget-Kilkenny circuit is not identified for consultation in the Stage 2 report, as it is intended to upgrade the existing circuit between these two nodes.

The indicative line routes identified in Figure 3.7 (Figure 11.1 of the Stage 2 Report), represents what the project team consider to be the most appropriate line routes within the identified preferred 400 and 110 kV corridors, having regard to a list of technical, and environmental criteria and to public and landowner consultation and engagement.

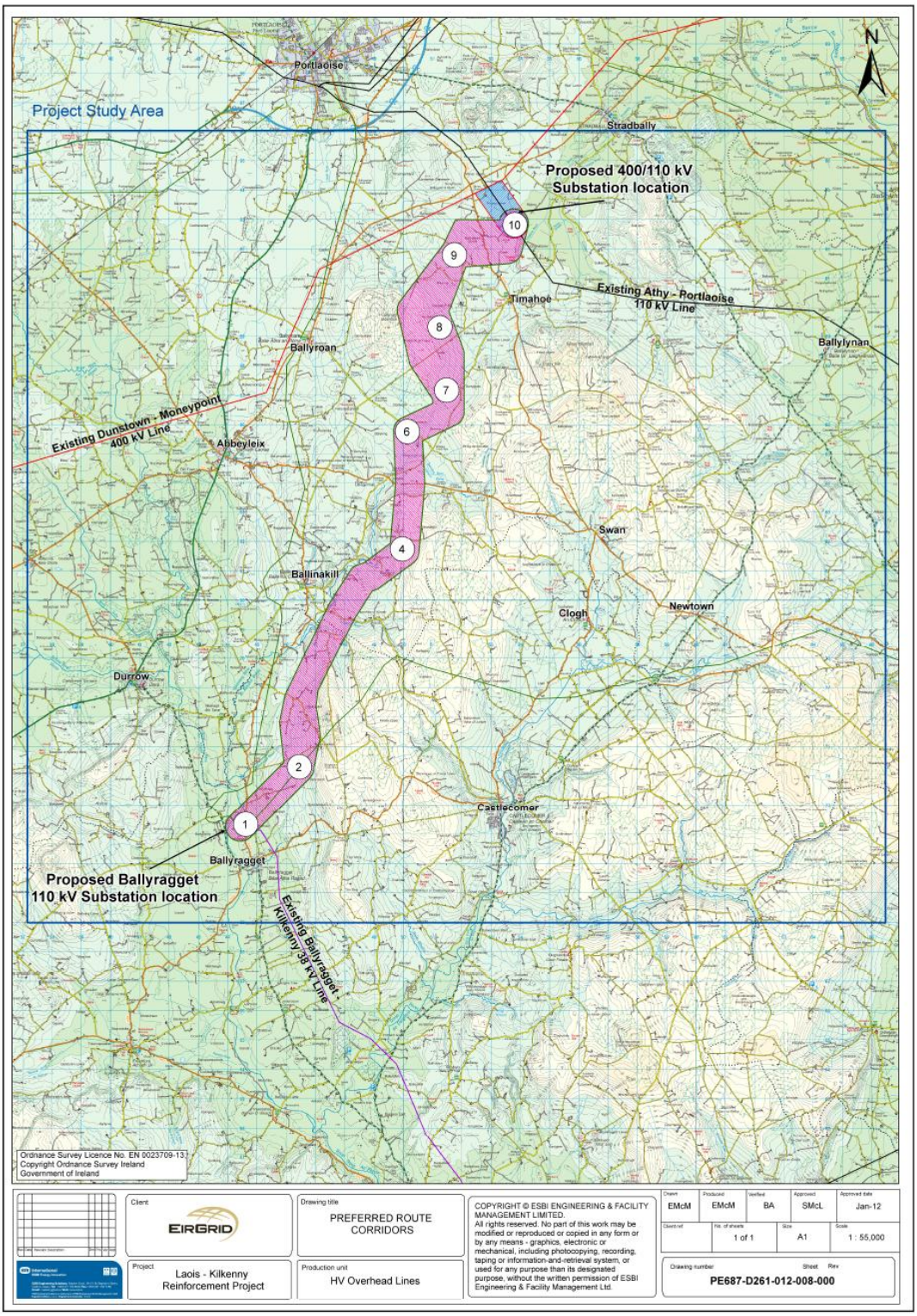

Figure 3.6: Preferred 400 kV and 110 kV Route Corridors (as presented in Stage 2 Report)

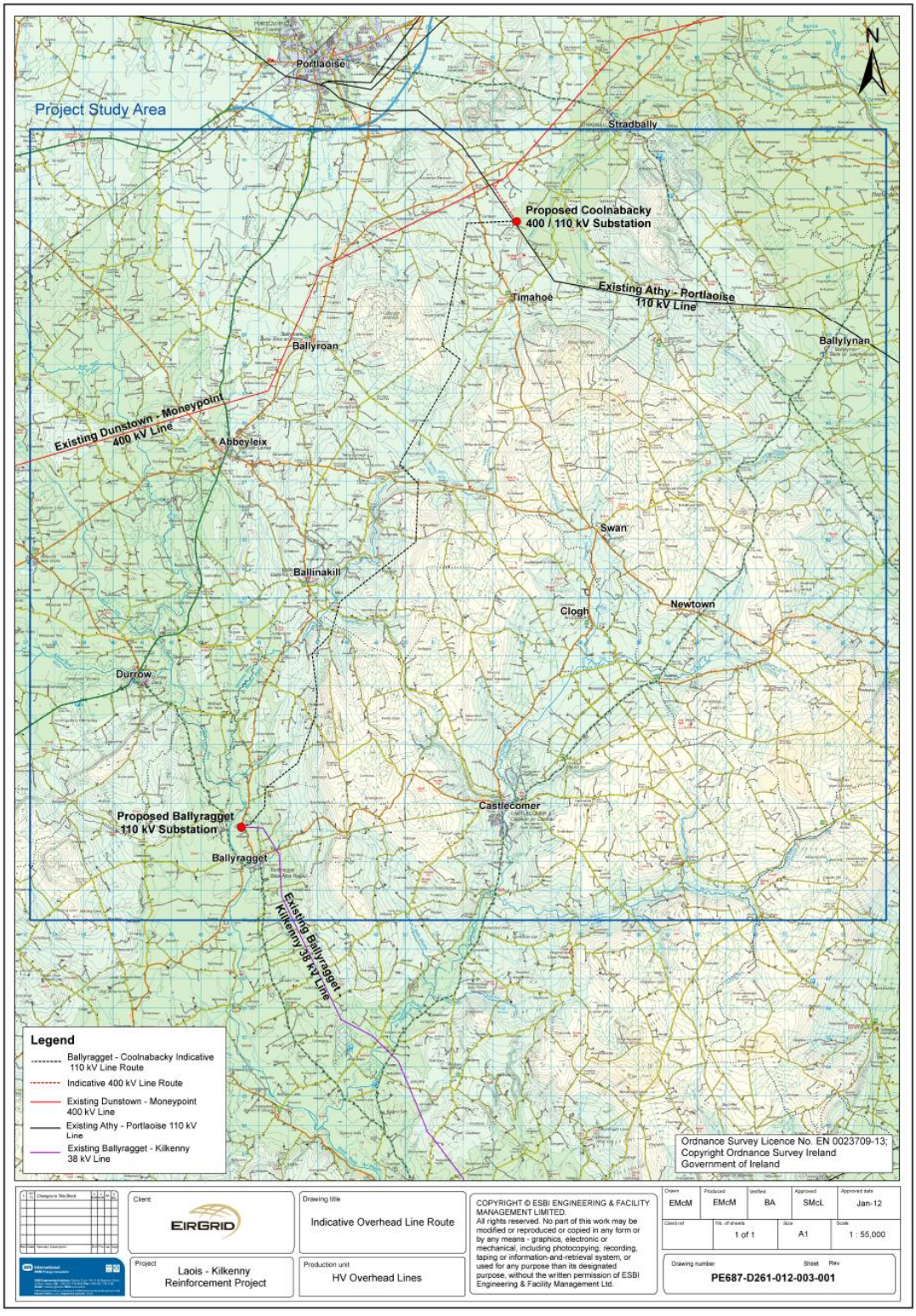

Figure 3.7: Indicative 400 and 110 kV line to progress to Stage 3

The Table of Contents for the Stage 2 Report shows the structure of that report and the processes followed in reaching the conclusions and recommendations. The appendices are particularly important in this regard as they provide further details showing how consultation was structured for this stage.

The Stage 2 Report can be found at Appendix 2 of this document and can also be found on the project website at http://www.eirgridprojects.com/projects/laoiskilkenny.

Stage 2 Lead Consultants Report – Table of Contents

Chapter 1	Introduction	This section gives an overview of the Stage 2 Report.
Part A		
Chapter 2	Consultation on Stage 1 Report	This section details consultations arising from the Stage 1 Report.
Chapter 3	Proposed Substations	This section provides details of the proposed substations.
Chapter 4	Modifications to Route Corridor	This section provides details of modifications to route corridors.
Chapter 5	Route Corridor Evaluation	This section provides an evaluation of route corridors.
Chapter 6	Lead Consultant's Conclusion Part A	This section provides conclusions in relation to Part A.
Part B		
Chapter 7	Consultation and Landowner Engagement	This section provides details of landowner engagement.
Chapter 8	400 and 110kV Connections to Coolnabacky Substation	This section provides details of 400 and 110kV Connections to Coolnabacky Substation.
Chapter 9	Lead Consultant's Conclusions Part B	This section provides conclusions in relation to Part B.
Chapter 10	Environmental Impact Assessment and Appropriate Assessment Screening Reports	This section provides information on the requirements for EIA and AA screening.
Chapter 11	Next Steps	

This list of appendices details the reports referred to in the appendices. Other appendices in the Stage 2 Report consist of copies of maps, public notices/documents, etc. They are self explanatory and are not detailed further in the table below.

Appendix	Report Title	Description
Appendix D	Final Winter Birds Survey	The purpose of this report was to present the abundance and distribution of wintering wader and wildfowl birds in the project study area. These surveys were carried out at various intervals in 2010 and 2011 and a number of interim reports were produced and issued as Appendices to the Stage 1 Report. This final report gathers all of the information into one report.
Appendix J	400 kV Overhead Line v Undergorund Cable Feasibility Study	This study considers the use of underground cable and overhead line for the purposes of making the 400 kV connection from Coolnabacky substation to the existing Moneypoint-Dunstown 400 kV overhead line. A comparative assessment of both technologies is made, having regard to technical, cost and environmental considerations.
Appendix M	Stage 1 Screening Natura Impact Statement	This Stage 1 Appropriate Assessment Screening Report, dated Janurary 2012, was carried out to assist the competent authority in carrying out Appropriate Assessment screening. This interim report, dated January 2012, has subsequently been updated with further information. The revised Stage 1 Screening Report was issued to An Bord Pleánala during the course of the pre-application consultation meetings. A Stage 2 Natura Impact Statement was subsequently compiled and is submitted with this application.

The key findings of the Stage 2 Report were as follows:

- Following feedback from the consultation process along with further investigation/ by the Lead Consultant on the localised impact of the route corridors, the preferred route corridor for the 110 kV line from Coolnabacky 400/110 kV substation to Ballyragget 110 kV substation is the emerging preferred corridor identified in the Stage 1 Report with two minor modifications. These modifications are to the corridors' width at node 7 and between nodes 9 to 10. The emerging preferred route corridor for the 400 kV connection, as identified in the Stage 1 report remains the preferred 400 kV route corridor.
- The Lead Consultant also recommends that the emerging preferred Coolnabacky 400/110 kV substation site as identified in the Stage 1 report is the preferred 400/110 kV substation site for the project.
- Further consultation with directly affected landowners and the wider community along with the completion of the field walking stage of environmental assessment may result in minor localised changes to the preferred route corridors to facilitate the process of identification of a feasible line route within the emerging preferred 400 kV and 110 kV corridors. These changes will be reviewed where necessary.
- The identified 400 and 110 kV line routes should progress to Stage 3 of the project.

3.4 Stage 3 – Confirmation of Design

Stage 3 of the process continued consultation and engagement with the statutory and non statutory agencies/bodies, the general public, landowners and An Bord Pleanála. It also considered feedback from the Stage 2 report. The proposed substation designs and location of structures on landholdings and the proposed line design were discussed with landowners, generally on site where possible, during the course of landowner survey interviews, with a view to accommodating suggested design changes, where considered appropriate. The outcome of Stage 3 is not a formal Lead Consultants report but is a final confirmation of

substation and line design. Final environmental reports and the final planning drawings and documentation presented as part of this Stage 4 – Prepare Planning Application, are based on the outcome of the Stage 3 confirmation of design process. Stage 3 included meetings in July and August 2012 with An Bord Pleanála to discuss specific details of the project and planning approval process and also includes ongoing consultation with landowners.

During this Stage 3, it was confirmed that the majority of existing structures along the Ballyragget-Kilkenny Overhead Line would have to be replaced to uprate the line to 110 kV technical standards. It was originally intended to add a 110 kV extension to the Ballyragget 38 kV / MV substation. In developing this design and following discussions with ESB it was considered more appropriate to instead develop a new 110 kV / 38 kV / MV substation which would replace the existing 38 kV/ MV substation at Ballyragget. The replacement substation would be built adjacent to the existing station on ESB owned lands with the existing station eventually being decommissioned.

3.5 Stage 4 – Planning Application Submission

Stage 4 of the EirGrid planning roadmap is the application for planning approval submitted to An Bord Pleanála. It includes all planning and environmental reports.

The planning application is structured as follows:

1. **Volume 1 – Statutory Particulars**

   Contents include: Application Form, Public Notices, Schedule of Prescribed Bodies, Letters of Consents and Plans and Drawings.

2. **Volume 2 – Planning Report**

   Contents include: this Planning Report (with Stage 1 and 2 Lead Consultants Reports as appendices).

   It should be noted that there appendices to both the Stage 1 and 2 Reports which are available on the project website. These are not reproduced in paper copy as part of this planning report but are included on a CD at the back of this report.

3. **Volume 3 – Environmental Report**

   Contents include: Reports relating to: Human Beings, Landscape and Visual, Cultural Heritage, Ecology, Soils and Geology, Hydrogeology, Material Assets, Air and Climate, Interactions and Schedule of Commitments.

   Various appendices in the report provide supporting information and should be read as part of the Environmental Report.

In addition and solely for the convenience of An Bord Pleanála, an A3 set of the statutory plans and drawings is provided.

3.6 Stakeholder Consultation

As detailed previously, consultation with stakeholders is a fundamental element of the EirGrid Project Development and Consultation Roadmap (Figure 3.1). Extensive

consultation was undertaken for this project with identified stakeholders and the general public from the outset of the project with numerous open days, information clinics and landowner surveys and interviews taking place.

The consultation based around the Stage 1 report is a key element of the project, as it is vital to get feedback from all concerned parties, in order to obtain as much information as early as possible so as to inform subsequent decisions regarding route identification and project confirmation.

Consultation continued through Stages 2 and 3. Consultation in these stages occurred with key stakeholders and agencies having regard to the feedback from Stage 1. It increasingly focussed on landowner engagement during these stages, as landowners along the indicative preferred line route were identified and interviewed, and options (where available) for the location of structures were discussed.

This process of landowner engagement facilitated the more detailed siting of structures along the alignment, with the focus being on seeking agreement between the project team and the landowner regarding the optimum siting of structures. Where the project team could not facilitate a landowner preference for siting of structures, for example due to a likely significant technical or environmental constraint or impact arising (following consideration and assessment of the option), this was explained to the affected landowner during this engagement process.

The consultation can be broadly categorised as occurring with key stakeholders, agencies, landowners and the general public. However, the principle behind such consultation remains the same for all groups i.e. to engage in open, honest and meaningful dialogue, and to evaluate and incorporate, where possible or appropriate, all suggestions and modifications brought to the attention of, or subsequently identified by the project team.

The Project Team were cognisant that adoption of the Aarhaus Convention was in the process of being ratified by the Irish Government as the project progressed and consultation was structured with this in mind.

3.6.1 Key Stakeholders and Agencies

The Project Team endeavoured to work with key stakeholders and agencies with a view to ensuring that the process of identifying the preferred project solutions took into account their particular area of responsibility. Consultation letters, a project briefing document and a notification of the Stage 1 Lead Consultants Report were issued on 20th May 2011. These letters were followed up with phone calls, emails and meetings where requested. The list of stakeholders and agencies that were consulted is as follows:

- An Bord Pleanála
- An Taisce
- Fáilte Ireland
- Inland Fisheries Ireland
- Kilkenny County Council
- Laois County Council
- National Parks and Wildlife Service (NPWS) – Development Applications Unit
- Development Application Unit – DoEHLG
- BirdWatch Ireland
- Bord na Móna

- National Roads Authority (NRA)
- Irish Farmers' Association (IFA)
- South-East Regional Authority
- Midlands Regional Authority
- Department of the Environment, Community and Local Government
- Coillte
- Commission for Energy Regulation (CER)
- Environmental Protection Agency (EPA)
- Geological Survey of Ireland (GSI)
- Health and Safety Authority (HSA)
- Health Service Executive (HSE)
- Irish Aviation Authority (IAA)
- Irish Peatland Conservation Council
- The Arts Council
- Teagasc
- County Carlow Chamber of Commerce
- Carlow County Council
- Wicklow County Council
- Kildare County Council
- Carlow County Enterprise Board
- Forfás
- Kilkenny Archaeological Society
- Kilkenny Chamber of Commerce
- Kilkenny County Enterprise Board
- Kilkenny Strategic Policy Committee
- Laois Chamber of Commerce
- Laois County Enterprise Board
- Laois Heritage Society
- Mountaineering Ireland
- Radiological Protection Institute of Ireland
- RTE Frequency Coverage and Planning Department
- The Heritage Council
- Department of Transport
- Department of Arts, Heritage and Gaeltacht Affairs
- Department of Justice Equality and Law
- Department of Enterprise, Trade and Employment
- Department of Community, Rural and Gaeltacht Affairs
- Department of Communication, Energy and natural Resources

- Department of Agriculture, Fisheries and Food
- Department of Environment, Heritage and Local Government
- Public Representatives including Local Councillors, TDs and Senators.

3.6.2 The Public

EirGrid is committed to ensuring that all members of the public were fully aware of the project and encouraged them to participate in the public consultation process.

At all times the project team endeavoured to engage with landowners and the general public in respectful, honest and open discussion. The local knowledge of landowners and local communities is invaluable to the project team, and therefore their input is vital. The project team must merge this local knowledge with technological and environmental survey and assessment, experience and expertise in line routing and station design, to come up with an optimum solution.

Consultation on this project began week commencing 26th October 2009, with the publication of a newspaper notice in six regional newspapers. The newspaper notice consisted of a blank study area map supplemented with a project description. The purpose of this notice was to inform the wider public of the proposed project, to seek information and local inputs that could be incorporated into the decision making process and also to publicise the project contact details.

A project website was set up as well as a dedicated project specific email address, phone number and postal address. Numerous contacts have been made with the project team since these were set up as well as meetings with local stakeholders.

Upon completion of the 'Project Constraints Map' and supplementary 'Description of Project Constraints' report a second newspaper notice was placed during week commencing the 14th June 2010. The purpose of the notice was to present the findings to date and to show the constraints that had been recorded in the study area which would influence the route selection and site selection process.

Public Open Days were held on the 17th and 18th of June 2010 in Kilkenny and Portlaoise respectively where members of the general public could meet with and discuss any aspect of the project with members of the project team.

Feedback from these consultations was assessed and considered in the route and site identification stage. This culminated with the publication of a 'Stage 1 Lead Consultant's Report' which identified the consultant's emerging preferred route corridor and site.

A third series of newspaper notices was published in early June 2011 to advise stakeholders that the Stage 1 Report was available and sought feedback on the findings therein.

A second series of Public Open Days was held on the 9th, 10th and 24th of June 2011 in Kilkenny, Portlaoise and Ballyragget where the findings of the Stage 1 Report and indeed any aspect of the project could be discussed with members of the project team. An EMF specialist was also available to discuss any queries in relation to EMF and health.

Information brochures were also dropped to local shops, credit unions, libraries and county council offices in Kilkenny, Ballyragget, Ballinakill, Timahoe, Stradbally and Portlaoise ahead of the open days.

Anybody who had contacted the Project Team previously was also directly informed that this report had been published as well as given dates for Open Days.

A fourth series of newspaper notices thanking people for the feedback received over the course of the Stage 1 consultation period was also then published at the end of June.

Starting in August 2011, landowners along the preliminary indicative line routes (Coolnabacky-Ballyragget) were issued survey packs, advising them of the proposed project.

This allowed landowners to outline any concerns or suggestions for consideration before the line route and structure locations became finalised. Lands were also surveyed during this period.

The 'Stage 2 Lead Consultant's' report was published in February 2012. Key findings included the identification of the preferred site locations as well as the indicative overhead line routes.

A 5th series of newspaper notices, advertised a third series of Public Open Days which were held on the 23rd and 24th of February in Kilkenny and Portlaoise.

Information brochures were again dropped to local shops, credit unions, libraries and county council offices in Kilkenny, Ballyragget, Ballinakill, Timahoe, Stradbally and Portlaoise ahead of these open days.

In March 2012, following review of feedback from Stage 2 Report consultations further survey packs were issued to landowners along the line routes.

A series of 6 information clinics were then held in Portlaoise, Ballyragget and Kilkenny at the end of March into early April 2012.

Landowners along the routes of the existing Ballyragget-Kilkenny and Portlaoise-Athy lines were notified of intention to carry out walkover environmental and technical surveys by way of hand delivered letters at the beginning of June 2012.

The consultation process is summarised as follows:

Event	Date	Description	Location
Newspaper Notices #1	w/c 26th Oct 2009	▪ Description of Proposed Project ▪ Definition of Study Area	Kilkenny People, Leinster Express, Laois Nationalist, Carlow Nationalist, Kildare Nationalist, Leinster Leader.
Newspaper Notices #2	w/c 14th June 2010	▪ Description of Proposed Project ▪ Presentation of Constraints Recorded in Project Study Area ▪ Advertise Open Days	Kilkenny People, Leinster Express, Laois Nationalist, Carlow Nationalist.
Open Days #1	17th & 18th June 2010	▪ As above ▪ Project Team available in person to discuss any findings	Portlaoise Heritage Hotel, River Court Hotel Kilkenny.

		▪ Attempt to incorporate any local knowledge	
Newspaper Notices #3	31st May to 6th June 2011	▪ Description of Proposed Project in four newspapers ▪ Presentation of findings of Stage 1 Report ▪ Advertise Open Days	Laois Nationalist, Leinster Express, Offaly Express, Kilkenny People.
Open Days #2	9th,10th, 24th June 2011	▪ To present Stage 1 Report ▪ Project Team available to discuss any findings or answer any queries in relation to the project	Portlaoise Heritage Hotel, River Court Hotel Kilkenny, Canon Malone Hall, Ballyragget.
Newspaper Notices #4	22nd-24th June 2011	▪ To promote awareness of the project ▪ To thank people for inputs received during the consultation on Stage 1 Report.	Laois Nationalist, Leinster Express, Offaly Express and Kilkenny People.
Newspaper Notices #5	13th and 14th, 20th and 21st February 2012	▪ Description of Proposed Project in three newspapers ▪ Presentation of findings of Stage 2 Report ▪ Advertise Open Days	Laois Nationalist, Leinster Express, Kilkenny People.
Open Days #3	23rd and 24th February 2012	▪ To present Stage 2 Report ▪ Project Team available to discuss any findings or answer any queries in relation to the project	Portlaoise Heritage Hotel, River Court Hotel Kilkenny.
Information Clinics #1	28th-30th March and 3rd-5th April 2012	▪ To provide information about the project	Portlaoise Heritage Hotel, River Court Hotel Kilkenny, Canon Malone Hall, Ballyragget
This summary does not list any meetings with individuals, local stakeholder groups, or statutory stakeholders that took place. EirGrid were also present at local events such as the National Ploughing Championships in Athy in 2010 and 2011.			

3.6.2.1 Co-ordination of Interactions with the Public

To co-ordinate interactions with the general public throughout the project, the project team implemented a process to ensure that general and individual concerns were directly addressed by the project team. This primarily occurs through:

- Contact made through e-mail, by letter or phone;
- All information received is made available to all members of the project team for review;
- The Lead consultant liaises with the EirGrid Project Manager to decide on the appropriate course of action;
- A member of the project team contacts the individual concerned and becomes their personal point of contact for the duration of the project; and
- The project team are always available to meet on request.

3.6.3 Landowners

It was decided for the project, that public consultation on the line route and possible project solutions would be approached in three distinct phases:

1. Directly affected landowners were notified of the proposal. A dedicated wayleave coordinator was appointed to be a direct point of contact for this group.
2. Landowners at a representative distance of 50 metres either side of the proposed development were notified of the proposal. It should be noted that this representative distance has no meaning in terms of routing or health and safety. The dedicated wayleave coordinator was appointed to be a direct point of contact for this group.
3. The wider general community were kept informed of project development, with opportunities for feedback and consultation.

3.6.3.1 Landowner Identification Process

Property Registration Authority (PRA) searches were conducted to identify all landowners along the indicative line route and station location. Any land parcels unidentified from the above process were subsequently identified through a search of the registry of deeds and by gathering information from other local residents and landowners. All information gathered is confirmed with the identified landowner at the survey interview stage as outlined below.

3.6.3.2 Survey Interview Stage - Survey Interview Documentation

All landowners were contact by the project team and an information pack was delivered in the majority of cases. This pack was issued to landowners along the Coolnabacky-Ballyragget indicative line route on 8th August 2011.

- A Cover Letter - This letter introduces the project, invites landowners to engage in the consultation process, makes reference to the survey letter including all attachments and introduces the lead project consultant. Contact details for the wayleave officer appointed for the project are also included in this letter. This gives every landowner a personal point of contact for the duration of the project.

- EirGrid Survey Letter - This letter again outlines the proposed project, the Townland, Barony and County across which the initial indicative line route crosses and station location and a general outline of the survey interview process. Importantly the letter contains information regarding EirGrid's 'Policy Towards Landowners For Access And Survey Of Land'.
- Landowner Survey Map - This map accompanies each survey letter and shows the initial indicative line route (in red) as it crosses the landowner's property. The individual property boundary of each landowner is highlighted in blue. The structure locations were not established at this stage and therefore were not marked on the map.
- Project Briefing Document - A further project briefing document (2nd in series – August 2011) outlining the project need, benefits and timelines is included for information. This briefing document also includes contact details of the project team.
- A copy of the ESB/IFA Code of Practice for the Survey, Construction and Maintenance of Overhead Lines (made available on request).
- A booklet was made available (on request) explaining electric and magnetic fields (EMF's).

3.6.3.3 Survey Interview Stage - Survey Interview Process

Following the issue of these survey packs, landowners were called to by a member or members of an ESBI project survey interview team working on behalf of EirGrid. The purpose of these visits was to explain the proposal to the landowners, to seek the landowners agreement to facilitate walkover surveys by environmental consultants and to ensure that all landowners had the opportunity to raise directly with the project team any concerns or suggestions regarding the proposed indicative line route, and to establish a direct line of communication between landowners and the project team.

The vast majority of landowners were contacted by an initial call to the door by a survey interview team representative. All landowners at the time of contact were offered the opportunity to discuss the project and complete a standard pre-survey interview form. If this time was not convenient to the landowner, a more suitable date and time was arranged.

A pre-survey interview form was filled out with the landowner by the survey interview team representative. The purpose of this interview is to accumulate as much information as possible regarding the landholding for the purposes of routing and constructing the proposed overhead line. It is also an opportunity for the landowner to express a preference for where the line structures might be sited on the landholding. Finally, it is an important opportunity to discuss the overall project and to address any queries or concerns that might arise in respect of the project. A copy of this interview record is left with the landowner.

The majority of the survey interviews were carried out between August 24th and September 23rd 2011. As of that time most of the landowners were met; however some landowners were not available or unreachable. Landowners were either met directly, or if they were not directly met, contact was made through a third party such as an agent or through a family member, where the landowner agreed to such an approach.

Whilst the majority of the landowners have facilitated the walkover surveys by the environmental consultants, some did not consent to access and were subsequently sent a second letter on 9th January 2012 requesting permission for access to conduct surveys and discuss how impacts on farming activities could be minimised. The letter also stated that the

line will be designed with the information available in the event that the landowner was still not willing to facilitate the walkover surveys. Maximum site access is preferable in order to seek to place structures at locations in agreement with landowners to the greatest extent practicable or feasible. Prior to the finalisation of the project design the project team (including the environmental consultants) had been granted access by landowners to the vast majority of landholdings.

This level of access is considered adequate to have ensured the optimal technical design of the proposed line and an adequate environmental assessment of the proposed development. Where lands were not accessed, information gathered had indicated that there was no feature or item of concern that necessitated on site inspection in the first place or alternatively, the lands were surveyed from neighbouring fields or public road in conjunction with desktop records and aerial photography records.

Landowner engagement continues throughout the process and the project team are always willing to meet with any landowner at any stage of the design process, as it is EirGrid's preference to achieve maximum site access so that structures are placed at locations agreed with landowners to the greatest extent practicable or feasible.

3.6.4 Feedback Received

From the public open days, a period of approximately one month was generally given for the public to make submissions to the project team, within which the project team would seek to accumulate information from statutory and non-statutory consultees. Any information received after this time was also considered.

Important for the project team is the review and analysis of all feedback received throughout the consultation period, so the project team can assess if any of the feedback causes:

- Re-evaluation of the project;
- Need for alternatives to, or modification of the project;
- Re-evaluation of planned line route (i.e. minor deviations or the use of alternative routes).

Whilst formal response dates were specified to respond to the Stage 1 and 2 reports, all feedback was considered, irrespective of when it was received.

3.6.4.1 Key Stakeholders and Agencies

- **An Bord Pleanála**

Prior to the preparation of this application, four pre-application consultation meetings were held with An Bord Pleanála in August 2009 and in July, August and October 2012.

Whilst various issues were discussed, the key purpose of these meetings was to determine the following:

1. Whether the proposed development qualifies as a Strategic Infrastructure Development (SID) under Section 182A of the Planning and Development Act 2000, as amended.
2. If it does qualify as SID, to seek the advice of An Bord Pleanála on the nature and extent of the proposal, as well as on matters that should be addressed in the application for Planning approval, in terms of accompanying reports, studies, planning documentation, etc.

The outcome of the consultation meetings in relation to the above issues was as follows:

An Bord Pleanála issued a letter to EirGrid dated 26th October 2012 enclosing its record of the meeting of the 15th October 2012. In the record it stated that:

- *"it was the preliminary view of the Board that it considered the proposed development to be strategic infrastructure and that any planning application should therefore be made directly to the Board".*
- *"The Board offer the preliminary view that Environmental Impact Assessment (EIA) was not considered necessary for the proposed development; however an Environmental Report (ER) would be required".*

An environmental report is now being submitted to An Bord Pleanála with this application for planning approval.

- **Local Authorities**

The proposed development will take place within the functional areas of two Local Authorities – Laois and Kilkenny County Councils. Neighbouring Local Authorities close to the development area include Carlow and Kildare County Councils.

Consultation has taken place with all Local Authorities with a particular focus on those authorities where the development will be located.

Consultation has mainly been through meetings between the Project Team and Council Officials, as well as briefings to the Elected Members by the Project Team.

In order to obtain technical information required for developing the project and to inform Council Officials, additional consultation focussing on specific technical areas including; water, roads and heritage, have taken place with various departments in the relevant Local Authority. Regular updates have been provided throughout the course of the project by way of letter, email, phone call or other meetings.

The key meetings which took place between the Project Team and Local Authorities are set out below.

Meeting	Date	Purpose
Laois Planners and County Manager	14/08/2009	Presentation on Grid 25 and to advise on Laois-Kilkenny Reinforcement Project.
Laois Area Councillors	14/12/2009	Presentation on Laois-Kilkenny Reinforcement Project
Portlaoise Electoral Area Councillors	16/12/2009	Presentation on Laois-Kilkenny Reinforcement Project
Laois Planners and County Manager	05/05/2010	Status update meeting on Laois-Kilkenny Reinforcement Project
Kilkenny Planners and County Manager	19/10/2009	Presentation on Grid 25 and to advise on Laois-Kilkenny Reinforcement Project

Kilkenny Strategic Policy Committee	03/12/2009	Presentation on Grid 25 and to advise on Laois-Kilkenny Reinforcement Project
Kilkenny Planners	28/06/2012	Presentation on Laois-Kilkenny Reinforcement Project
Carlow (Director of Services)	8/10/2009	Presentation on Grid 25 and to advise on Laois-Kilkenny Reinforcement Project
Midlands Regional Authority	13/05/2010	Presentation on Laois-Kilkenny Reinforcement Project

Kilkenny Strategic Policy Committee wrote to ESB International on 25th August 2011 requesting an open day in Ballyragget. Kilkenny Strategic Policy Committee were made aware that open days were previously held in Ballyragget on the 24th and 30th June 2011.

Kildare County Council issued a letter (dated 2nd June 2011) stating Kildare County Council *"does not wish to make any comment on the project at this stage but would appreciate update on the later stages of the project".*

- **National Parks and Wildlife Service (NPWS)**

The NPWS were contacted by the project ecologist. From this correspondence the project team were advised that subsequent to the Stage 1 Report, the River Nore was designated as a Special Protection Area (SPA) under the EU Birds Directive (2009/147/EC), Site Code 004233, this is within the study area. Further to the NPWS informing the project ecologist of the newly designated Nore SPA, a review of the potential impact arising from the project on the new SPA was carried out by the project ecologist. The review found that modification of the emerging preferred route corridor is not necessary as a result of the newly designated SPA. This designated area overlays sections of the previously designated River Nore and River Barrow Candidate Special Area of Conservation (cSAC) (site code 2162) which was taken into account in the original Stage 1 assessments.

- **National Roads Authority (NRA)**

A letter was received from the National Roads Authority (June 2011) referring the project team to several policy documents including:

- The Authority's Policy Statement on Development Management and Access to National Roads;
- DoEHLG Spatial Planning & National Roads (Draft) Guidelines for Planning Authorities, June 2010;
- Environmental Impact Assessment of National Road Schemes – A Practical Guide;
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes;
- Guidelines for the treatment of Air Quality During the Planning and Construction of National Road Schemes;
- Road Safety Audit (NRA HD 19/09); and
- Traffic and Transport Assessment Guidelines (TTA).

The letter also advised that a full and comprehensive traffic assessment should be carried out. The assessment is contained in the Environmental Report accompanying this application.

- **Inland Fisheries Ireland**

A letter was received from Inland Fisheries Ireland (formally Central Fisheries Ireland) (June 2011) referred to a previous correspondence in which several issues were highlighted. The following is a summary of these issues:

- Consideration should be given to all river tributaries irrespective of size;
- Care on the placement of line supporting structures relating to silt and erosion;
- Care in relation to the use of concrete relating to pH values;
- Care in relation to earth movement and the production of silt;
- Care in relation to the use of oils and fuels;
- From a visual perspective Inland Fisheries Ireland would prefer if the circuit is undergrounded, however it also acknowledged that this method has the potential to generate negative impact on the water habitats and state that if this method is to be used that an under bore is used for river crossings; and
- The line sag over waters should not be a safety concern for anglers.

- **Fáilte Ireland**

A meeting was held with Fáilte Ireland on 16th June 2011 at which EirGrid and ESBI gave an overview of the project. Subsequent to that meeting Fáilte Ireland made a submission (by email dated 24th June 2011) to the project team. The submission highlighted that there are a number of important tourist assets in the vicinity of the study area including Abbeyleix Heritage Town, the Rock of Dunamase, Castlecomer Discovery Park, as well as the uplands that lie between the N8 and the N78.

Fáilte Ireland holds the view that the emerging preferred corridor as highlighted in the Stage 1 report *"is the one to have the least effect on the tourism amenity value of the area".* Fáilte Ireland also stated that they are not aware of any negative impacts on the tourism amenity value of the area that are likely to arise from the proposed 400/110 kV substation.

- **An Taisce**

An Taisce replied (by email dated 25th May 2011) stating at this stage *"there are no major elements that would be problematic from our point of view."*

- **Geological Survey of Ireland (GSI)**

The GSI issued a map (by email dated 8th November 2011) showing the extent of the Timahoe esker geological heritage site recommended for CGS designation under the IGH 7 Quaternary Theme.

- **Office of the Minister for Agriculture, Fisheries and Food**

A letter was received on 27th May 2011 from the Office of the Minister for Agriculture, Fisheries and Food stating that the project will be brought to the attention of the Minister.

3.6.4.2 The Public

There has been a steady response from the general public which has continued outside the official consultation period end date of the 9th March 2012. In addition to general queries, expressions of objection were received. The majority of people responding are living along or in close proximity to the emerging preferred route and/or the 400/110 kV substation site. There also has been ongoing correspondence with a local opposition group located close to the 400/110 kV substation area; and additional substation study areas (in the vicinity of Cullenagh mountain) were assessed based on consultation with this group.

Contact with the project team was in most cases initially made through the project e-mail, details of which where publicised on the project briefing document. Phone calls were the next preferred method of communication. Post was the least used method. In September 2010 and 2011 EirGrid proactively engaged with stakeholders by having a stand at the National Ploughing Championships in nearby Athy, where members of the project team were on hand to deal with any queries on the project from the general public. Open Days and Information Clinics in the area have also facilitated access to the project team.

Whilst many individual submissions were received from the public they have been grouped into themes. The main submission themes from the public in relation to the project were:

- Need for the project;
- Impacts on the environment;
- Health and safety issues, including electromagnetic fields (EMF);
- Impacts on farming;
- Landscape and visual impact;
- Substation Size and Location; and
- Undergrounding the 400 and 110 kV connections.

The EirGrid Project Development and Consultation Roadmap illustrates the importance of public consultations at the various stages throughout the project development process.

3.6.4.3 Landowners

Feedback from landowners was received primarily during Stages 2 and 3, when landowner interviews took place. The types of issues raised related mainly to the specific location of structures on lands. Proposed structure locations have been selected having regard to a variety of criteria, including landowner preference, following an extensive period of on-site landowner engagement. Where feasible, and having regard in particular to technical and environmental issues, such preferences have been accommodated in the proposal before ABP.

3.7 Conclusions

Having established the need for the project, the project proceeded according to the EirGrid Project Development Roadmap. This Roadmap provides for extensive consultation at all stages in the process, so that the views of stakeholders and the public can be considered during the project design process. This, in the view of EirGrid and its project team, has resulted in an extremely robust project proposal now before An Bord Pleanála.

The proposal derives from a careful consideration of a number of strategic and more detailed alternatives, particularly regarding the routing and siting of the proposed

transmission infrastructure, having regard to its necessary nature, form and extent, as well as the governing strategic need for the proposal.

In this context, EirGrid submits that the proposed development is in accordance with best international practice for the design of transmission infrastructure, and with the principles of proper planning and sustainable development.

4 Legislative Context

4.1 Strategic Infrastructure

An Bord Pleanála has deemed that the proposed development falls within the scope of Section 182A of the Planning and Development Acts 2000-2010, and accordingly this application for Approval is being made to the Strategic Infrastructure Division (SID) of An Bord Pleanála (ABP).

4.2 Environmental Impact Assessment

4.2.1 Requirements for an Environmental Impact Assessment (EIA)

Having regard to the preliminary view expressed by An Bord Pleanála that statutory Environmental Impact Assessment is not required but that the preparation of an Environmental Report is appropriate, EirGrid has proceeded on this basis but EirGrid requests that An Bord Pleanála furnish its formal decision as to whether it considers than an Environmental Impact Statement is required in relation to the application and, further, the reasons and considerations grounding that decision.

4.3 Requirement for Appropriate Assessment

An Bord Pleanála as the competent authority must carry out the appropriate assessment if it deems it to be necessary. In order to assist the Board, the planning application includes a Natura Impact Statement. The purpose of the statement is to provide the following information to the Board.

- A description of proposed development and local site area characteristics;
- Identification of relevant European sites, and compilation of information on their qualifying interests and conservation objectives; and
- An assessment of likely effects on European sites arising from the project.

4.4 Conclusion

An Bord Pleanála (ABP) has determined that the project constitutes Strategic Infrastructure Development (SID) and accordingly it is being submitted to ABP for Planning Approval.

The preliminary view expressed by ABP is that statutory Environmental Impact Assessment is not required but that the preparation of an Environmental Report is appropriate. An Environmental Report is submitted with this application.

In order to assist the Board in carrying out Appropriate Assessment, the application for planning approval includes a Natura Impact Statement.

5 Planning Policy Context

5.1 National Plans and Policies

5.1.1 White Paper on Energy Policy Framework 2007-2020

The White Paper *'Delivering a Sustainable Energy Future for Ireland'* sets out a strategic Energy Policy Framework to deliver a sustainable energy future for Ireland. Strategic goals outlined in the White Paper in relation to security of energy supply include:

- Ensuring that the electricity supply available consistently meets demand;
- Delivering electricity to homes and businesses over efficient, reliable and secure HV and MV networks; and
- Being prepared for energy supply disruptions.

The White Paper emphasises that *'the availability of reliable, secure and competitively priced electricity supply must be assured at all times'* and highlights the fact that electricity *'is a vital ingredient in the competitiveness of Irish industry and Ireland's long term economic and social development'.*

The White Paper also sets the target of 33% of electricity being produced from renewable generation by 2020. This target was subsequently increased to 40%.

GRID25

EirGrid's *GRID25 (published in 2008) – A Strategy for the Development of Ireland's Electricity Grid for a Sustainable and Competitive Future*, was published in response to the above White Paper. Grid25 outlines EirGrid's high level strategy for upgrading Ireland's electricity transmission network. Of particular note in this instance, Grid25 notes that demand in the Midlands region is expected to rise by over 40% by 2025 and demand in the South-East region is expected to rise by over 45% by 2025

Benefits for both the Midlands and South-East regions of the Grid25 strategy include:

- Proposals will ensure increased security of supply to major urban areas and to the region as a whole;
- Increased power available to the region;
- Increased transmission capacity will allow for growth of renewable generation connections in the region;
- A modern network that will allow for renewable generation from the region;
- A significant future growth in demand from both industry and domestic users can be accommodated;
- Greater network capacity to allow for small-scale thermal generation in the region; and
- A significant investment by EirGrid in the region.

The consequences of not progressing with transmission infrastructure development in the Midlands and South-East regions are identified in Grid25 as follows (Table 5.1)[1]:

[1] GRID25, page 7

- Over the next five to ten years, there will be no capacity in the network to cater for new customers and the reliability of supply to existing customers will fall below normal international standards;
- There will be no capacity in the network to allow further renewable generation to be connected; this will have severe consequences on the ability of Ireland to meet its renewable targets and its long-term sustainable energy supplies;
- Further interconnection will not be possible in the South East region.

In this context, the proposed development is a key enabler to the future growth of the Midlands and South East regions and also for the development and harnessing of renewable energy resources. The outline of need and consequences of action is set out below (Source: GRID25).

GRID25 is essential to:	The consequences of non-action are:
Supporting growth in the regions and ensuring continued reliability and security of supply;	Within the next five to ten years key parts of the Grid will have reached capacity and will be in danger of overloading, resulting in loss of supply to customers;
Providing high-quality, highvoltage bulk power supply for Ireland that will enable the different regions to attract in future industry and boost existing industry;	High-tech industry that requires secure, high quality energy supplies will be limited to locations with strong grid infrastructure;
Exploiting Ireland's natural renewable sources of energy (wind and wave);	The needs of new and current residential clients will not be met;
Reducing Ireland's carbon emissions by transmitting renewable energy in line with Government policy;	The power system will not be able to guarantee security of supply;
Increasing Ireland's connectivity to the European Grid, allowing for both bulk exports of electricity and imports of electricity when appropriate.	Access to the market will not be possible for all low-cost generators limiting competitiveness in the electricity market;
	The drive to reduce Ireland's CO2 emissions and meet its targets for the use of renewables in compliance with legislation will be seriously undermined;
	Ireland will not be strongly connected to the European Grid and will be unable to participate fully in a pan-European electricity market.

The Grid25 Implementation Programme 2011-2016 has been subject to a Strategic Environmental Assessment (SEA). The SEA has been undertaken in order to anticipate and avoid adverse impacts arising from the Implementation Programme.

5.1.2 National Development Plan 2007 - 2013

The National Development Plan (NDP) 2007-2013 seeks to ensure that Ireland remains competitive in the global international marketplace and that any economic success will be shared more equally at a regional level and throughout society. A strategic objective of the Energy Programme of the NDP is to ensure security of supply nationally and regionally. The NDP further states that 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*'.

It is considered that the strategic objectives of the NDP remain entirely valid, despite the current economic downturn.

5.1.3 National Spatial Strategy

The NSS is a 20 year strategic vision for the spatial development of Ireland. It outlines how a strengthened network of cities and towns together with rural communities and resources will be mobilised and complemented by appropriate social and physical infrastructure, to create more balanced development across the country. In relation to key infrastructure projects, the NSS identifies that '*a feature of the most mature and successful economies is that they possess highly developed, well integrated infrastructure that supports movement, i.e. public and private transport, and energy and communications networks*.'

The NSS identified nine, strategically located, medium sized 'hubs' whose purpose is to work together to promote regional development in their areas. Kilkenny has been identified as one of these hubs. 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 provide national scale social, economic infrastructure and support services. The Grid25 strategy endorses the NSS goal of developing gateways and achieving balanced regional development.

5.2 Regional Policies

The proposed development is located within the functional areas of the South-East and Midland Regional Planning Authorities therefore it is necessary to set out the relevant policies and objectives of the Regional Planning Guidelines (RPG) which relate to the proposed development.

5.2.1 Regional Planning Guidelines for the South-East Region 2010 – 2022

The RPGs for the South East Region 2010 – 2022 provide a long term strategic planning framework for the region. The key relevant Principle Planning Objectives of the South-East RPGs are as follows:

> *'PPO 6.3: It is an objective of the Regional Authority that local authorities, the private sector, energy production and supply companies are encouraged to formulate sustainable energy policies and practices which seek to:*
>
> - *Ensure security of energy supply in order to support economic and social development;*
> - *Source energy at a price that does not adversely affect competitiveness;*

- *Develop variable and alternative sources of energy generation;*
- *Maximise the use of renewable energy technologies;*
- *Promote a culture of energy conservation by all users;*
- *Assist the development of indigenous sustainable energy enterprises;*
- *Support and promote sustainable indigenous Bio-energy industries including the Bio-ethanol industry'.*

'PPO 6.5: The Regional Authority supports the sustainable development and expansion of the GRID network and future connections to renewable sources of energy (including Gate 3 projects), subject to appropriate assessment of all necessary environmental considerations'

Chapter 3, Section 3.2, Objective A9 sets out the following strategic goal for the region.

'Supporting the development and improvement of key economic infrastructure, such as energy generation and transmission networks, including renewable energies and telecommunications, all of which are essential for the continued development of the region.'

Section 6 of the RPG's considers '*Communications/Energy/Regional Climate Change Strategy'.*

Section 6.2.1 states that:

'The South-East Regional Authority actively and strongly supports the sourcing and generation of energy from within the South-East. Security of energy supply at a competitive price is a cornerstone of future sustainable development within the region'.

Section 6.2.2 states that:

'The Regional Authority endorses the Eirgrid document 'Grid 25' for National Electrical Grid Development from 2008–2025'.

Section 6.2.3.2 'National Transmission/Distribution Network' states that:

'The South-East Regional Authority recognises the need to increase electrical infrastructure which will be required within the region, including development of new 'main' 400 KV lines and strengthening of 220 KV, 110 KV transmission lines and equipment. The potential of a new interconnector to the UK or mainland Europe will strengthen the security of supply and provide opportunities to export and/or import electricity. The electrical distribution network will be upgraded/maintained as required in order to ensure quality of power supply and minimise electrical faults. Early consultation by transmission system operators with Planning Authorities and other relevant bodies is encouraged'.

5.2.2 Regional Planning Guidelines for the Midland Region 2010 – 2022

The Regional Planning Guidelines provide a robust sustainable planning framework for the Midlands Region within the context of the Planning and Development Act 2000 (as amended), and the National Spatial Strategy 2002-2020. Importantly not only do they have regard to the National Spatial Strategy in the context of the Midlands Region, but they also consider the surrounding regions.

The key relevant energy policies of the Midland RPGs are as follows:

'TIP32: Support and promote the sustainable improvement and expansion of the electricity transmission and distribution network that supply the Midland Region'.

'TIP33: Support the sustainable development of the infrastructure required to assist the Midland Region in the delivery of renewable energy particularly in the context of the existing energy infrastructure in the region and the need to make a transition from peat to renewable energy'.

Strategic Goal 8 in the Midland Regional Planning Guidelines is:

'To promote the delivery of renewable energy particularly in the context of the existing energy infrastructure in the Midland Region'

Chapter 5 addresses the Region's 'Transport and Infrastructure Strategy'. This section recognises that an efficient, reliable and cost effective electricity supply is a key resource for regional development.

Section 5.8.1 Electricity Transmission states that:

'An efficient, reliable, and cost effective electricity supply is a key resource for regional development. In 'Eirgrid 25', the report outlines that without investment in the region's electricity transmission network there will be no capacity over the next five to ten years and the reliability of the supply will fall below normal international standards. Furthermore, there will be no capacity in the network, to allow further renewable generation to be connected. In order to avoid such a scenario, EirGrid, the national body responsible for the management of the electricity transmission network, have planned key investments, through upgrading of the transmission network and new circuit build, reinforcement, to cater for continued demand growth in the linked gateway towns of Athlone, Tullamore and Mullingar and principal towns of Longford and Portlaoise.

The transmission reinforcement projects in the Midland Region are, in the short-term, driven by the need to increase the security and quality of supply to key parts of the network. There is also an identified long-term need to reinforce transmission infrastructure equipment throughout the region so as to facilitate the integration of new wind generation that is associated with meeting the commitment of providing 40% of the Republic of Ireland's energy demand from renewable sources. The potential for renewable energy generation such as wind energy will require connectivity to the electricity transmission network. Such connectivity will be required to sustain power transfers between wind generation in the West and the main load centre of Dublin. The upgrading of the transmission network will facilitate power flows from both renewable and conventional sources to maximise the use of existing power corridors. In this regard, these RPGs promote the improvement and expansion of the transmission network throughout the Midland Region'.

Section 5.8.1.1 outlines that:

Development Plans should facilitate the sustainable provision of energy networks in principle provided that it can be demonstrated that:

- *The development is required in order to facilitate the provision or retention of significant economic or social infrastructure*
- *The route proposed has been identified with due consideration for social, economic, environmental and cultural impacts*
- *Where impacts are inevitable mitigation methods have been included*
- *Where it can be shown that the development is consistent with best international practice.*

Section 5.11 outlines the transport and infrastructure objectives of the Midland RPGs with objective TIO11 to:

- *'Promote and support the sustainable provision of the following electricity transmission infrastructure:*
- *Provide an electricity transmission network to the linked gateway of Athlone, Tullamore, and Mullingar and principle towns of Longford and Portlaoise that will provide for the future needs of the region.*
- *Support the proposals to reinforce all 110 KV circuits to Lanesboro and Portlaoise'.*

In summary, the policies and objectives of the Midland and South-East Regional Authorities support the improvement and expansion of electricity transmission and distribution networks to increase the security and quality of supply to both regions.

5.3 Local Policies

5.3.1 Laois County Development Plan 2011 – 2017

Chapter 9 of the County Development Plan (CDP) considers Energy and Telecommunications. Within this chapter there are specific objectives relating to energy networks, energy transmission and power lines. The Core aim of the chapter is:

> *'To identify the energy and telecommunications needs for the county and the manner in which the council can facilitate their development to ensure a secure energy and communications network to support the residents and future development needs of the county while fostering the transition to a lower carbon county'.*

Relevant policies in the CDP include:

LCC Ref ET 9 / O03: *'To encourage and facilitate the development of renewable power generation facilities in the County, including the support of non renewable energy developments where it is consistent with the proper Planning and sustainable development of the County and ensure that any plan or project associated with energy generation and supply which has the potential to significantly affect a Natura 2000 site is appropriately assessed in accordance with Article 6 of the Habitats Directive in order to avoid adverse impacts on the integrity of the site and environmental legislation';*

LCC Ref ET 9 / O05: '*To support and facilitate the development of the electricity infrastructure to ensure a secure supply for the residents of County Laois and ensure that any plan or project associated with energy generation or supply which has the potential to significantly affect a Natura 2000 site is appropriately assessed in accordance with Article 6 of the Habitats Directive in order to avoid adverse impacts on the integrity of the site and environmental legislation'.*

Section 5 *'Electricity'* of this chapter includes the following policies:

LCC Ref ET 9 / P01: '*Facilitate energy infrastructure provision, including the development of renewable energy sources at suitable locations, so as to provide for the further physical and economic development of County Laois'.*

LCC Ref ET 9 / P14: *'Support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and projected residential, commercial, industrial and social needs of the County'.*

LCC Ref ET 9 / P15: *'Co-operate and liaise with statutory and other energy providers in relation to power generation in order to ensure adequate power capacity for the future needs of the County'.*

LCC Ref ET 9 / P16: *'Ensure that the assessment of energy development proposals will have regard to the impacts on public rights of way and walking routes'.*

LCC Ref ET 9 / P17: *'Support the statutory providers of national grid infrastructure by safeguarding such strategic corridors from encroachment by other developments that might compromise the provision of energy networks where strategic route corridors have been identified'.*

LCC Ref ET 9 / P18: *'Protect areas of recognised landscape importance and significant landscape views from construction of large scale visually intrusive energy transmission infrastructure. In such circumstances, it is an objective to seek alternative routing or transmission methods'.*

LCC Ref ET 9 / P19: *'Only in cases where feasible, require the provision of electricity cables underground, especially in the urban environment, and generally within areas of public open space, in the interest of visual amenity'.*

LCC Ref ET 9 / P21: *'Ensure that the development of high tension power lines will be restricted, and that new high tension lines will not be permitted adjoining existing dwellings, except where no other alternative can be shown to exist'.*

LCC Ref ET 9 / P24: *'Facilitate the sustainable provision of energy networks in principle provided that it can be demonstrated that:*

- *The development is required in order to facilitate the provision or retention of significant economic or social infrastructure.*
- *The route proposed has been identified with due consideration for social, economic, environmental and cultural impacts.*
- *Where impacts are inevitable mitigation features have been included.*
- *Where it can be shown the proposed development is consistent with international best practice.*
- *That any such projects shall fully comply with the Policies/Objectives provided within the Plan, in relation to protection of environmental vulnerabilities and sensitivities'.*

5.3.2 Kilkenny County Development Plan 2008 – 2014[2]

Chapter 9 of the CDP considers *'Infrastructure and Environment'* refers to the provision and renewal of energy infrastructure.

Section 9.8 'Energy and Telecommunication Facilities' states the following:

> *'The availability of energy is of critical importance to facilitate new development. The National Development Plan 2007-2013 sets out policies for the provision of electricity from both renewable and non-renewable sources'.*

Section 9.8.1 'The National Grid' states the following:

> *'In support of sustainable development and efficient energy utilisation, Kilkenny County Council supports the infrastructural renewal and development of electricity*

[2] At the time of writing of this report the existing Kilkenny Plans are in the first stages of review and the 2014 – 2020 Kilkenny County and City and Environs CDP will be adopted in due course.

networks in the region, including the overhead lines to provide the required networks, subject to amenity and health considerations'

5.3.3 Kilkenny City and Environs Development Plan 2008 – 2014

The proposed development will be located adjacent to the boundary of the Kilkenny City and Environs Development Plan. The CDP makes mention of the importance of energy availability to sustain proposed development in the plan area.

Section 8.3 'Energy and Telecommunication Facilities' states the following:

'The availability of energy is of critical importance to facilitate new development. The National Development Plan 2007-2013 sets out policies for the provision of electricity from both renewable and non-renewable sources'.

Section 8.3.1 *'The National Grid'* states the following:

'In support of sustainable development and efficient energy utilisation, the Councils recognise and support all energy source providers in the development of a suitable network in the South-East region capable of sustaining the scale of development proposed for the region, subject to amenity and health considerations'.

5.4 Government Policy

There are no specific national guidance documents relating to the design of overhead electricity transmission lines, however the Government recently issued a "Policy Statement" in relation the strategic importance of transmission and other energy infrastructure.

5.4.1 Government Policy Statement on Transmission Infrastructure

The 'Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure' (published in July 2012), reaffirms the imperative need for development and renewal of energy networks, in order to meet both economic and social policy goals.

In the policy statement, the Government endorse the major investment underway in the high voltage electricity transmission system under EirGrid's Grid 25 Programme and outlines that the benefits will include:

- Securing future electricity supply for homes, businesses, farms, factories and communities;
- Underpinning sustainable economic growth and new jobs in the regions; and
- Enabling Ireland to meet its renewable energy targets and reducing the country's dependence on imported gas and oil and reduce CO2 emissions.

The document notes that the planning process provides the necessary framework for ensuring that all necessary standards are met and that comprehensive statutory and non-statutory consultation is built into the process.

The document also states the following:

'While the Government does not seek to direct infrastructure developers to particular sites or routes or technologies, the Government endorses, supports and promotes the strategic programmes of the energy infrastructure providers, particularly EirGrid's Grid 25 investment programme across the regions, and reaffirms that it is Government policy and in the national interest, not least in the current economic circumstances, that these investment programmes are delivered in the most cost efficient and timely way possible, on the basis of the best available

knowledge and informed engagement on the impacts and the costs of different engineering solutions'.

5.5 Conclusion

The planned Laois-Kilkenny Reinforcement Project and its objectives are supported and planned for at a national, regional and local planning level and the project is consistent with relevant policies and objectives.

6 Planning History

6.1 Planning History Relevant to the Proposed Development

There have been no previous planning applications made for the proposed development, therefore there is no relevant planning history.

6.2 Planning History of Other Relevant Developments

There are high voltage lines and related substations in the study area many of which have been in existence or developed over the past 30 years.

The existing Ballyragget-Kilkenny line was permitted in 1988 (Reg. Ref. KCC P.702/88). Planning permission was granted in 1998 (Reg. Ref. KCC P.98/10) to realign and upgrade 670m of the existing Ballyragget-Kilkenny 110 kV line from 38 kV to 110 kV. Planning permission was also granted in 1998 to erect a 110 kV substation at Ballyragget (Reg. Ref. KCC P.98/390). In addition, the existing substation in Athy was developed in 2011.

In addition there are lower voltage lines serving local villages and dwellings which have been developed incrementally over many years. The proposed development is therefore not a new feature in the study area.

Planning applications in the vicinity of the proposed development are monitored on a regular basis by the lead consultants to ensure conflicts do not arise.

Permitted developments in close proximity to the centre line of the OHL, with extant permissions are identified on 8 no. drawings (PE687-D261-026-001-001 to PE687-D261-026-008-001), which form part of the Volume 1 -Statutory Particulars, submitted as part of this planning application.

The types of planning applications that typically occur in the vicinity of the proposed development primarily relate to applications for single rural dwellings.

Planning applications for housing developments submitted by landowners along or in the vicinity of newly proposed overhead lines are not uncommon. EirGrid is of the view that any conflicts that may arise in the future in relation to such developments can be resolved by virtue of the ESB policy with respect to loss of development which is contained within the *ESB/IFA Code of Practice for Survey, Construction & Maintenance of Overhead Lines in Relation to the Rights of Landowners*.

7 Alternative Project Solutions Considered

7.1 Description of Alternative Project Solutions

7.1.1 Process for Considering Alternatives

The consideration of alternatives is a fundamental aspect of environmental appraisal for any transmission infrastructure. The appraisal is an iterative process which follows a structured process as follows:

- Alternative options of achieving the objectives of the project are identified at a technical level in Chapter 2 of this report;
- Following identification of a preferred project solution at a technical level, a study area is identified;
- Within the study area a number of alternative substation locations and OHL and/or UGC route corridors are identified and assessed having regard to the constraints identified therein;
- Based on the assessment a preferred substation site and route corridor emerges;
- The emerging substation site and preferred route corridor is then reviewed in respect of feedback received during the consultation phase;
- A preliminary substation design is determined for the site and an indicative line route is designed within that corridor; and
- Finally, a substation is designed for the preferred site and the loop-ins to the substation are finalised.

7.1.2 Preferred Project Solution

The technical alternatives considered for the Laois - Kilkenny Reinforcement Project have been described previously in Chapter 2 of this report – Project Need and Alternatives Considered, as well as in the Stage 1 Report. The preferred reinforcement option, identified in Section 2.5, which is the subject of this application represents the preferred project solution.

7.1.3 Substation Technology Alternatives (AIS vs. GIS)

As described in Section 3.2.3 and in Section 1.8 of the Stage 1 Report, two technologies were considered for the 400/110 kV substation : Air Insulated Switchgear (AIS) and Gas Insulated Switchgear (GIS). EirGrid concluded that it was appropriate to proceed with the GIS option in this instance. The decision to proceed with GIS was based on both the cost and technical aspects as well as taking into account the overall smaller size and associated reduced environmental impact.

7.1.4 Undergrounding as an Alternative Technology

The option of undergrounding both the Coolnabacky to Moneypoint/Dunstown 400 kV connection and the 110 kV Coolnabacky-Ballyragget circuit was investigated as part of the consideration of alternatives.

The process of considering undergrounding follows a policy which has been developed by EirGrid. This policy is set out previously in section 3.2.5 of this report.

Coolnabacky-Ballyragget 110 kV Circuit

Having regard to the Laois – Kilkenny Reinforcement Project, application of the policy resulted in the following outcome.

In relation to condition (1) above for the 110 kV circuit, Chapters 4, 5 and 6 of the Stage 1 Report confirm that there are three environmentally feasible corridors including variants of these corridors, within which to route a 110 kV overhead line, and that the predicted environmental impacts of such a development are sustainable. As such, condition (1) does not apply.

In relation to condition (2) above, EirGrid commissioned ESB International to carry out a feasibility study to identify an underground cable route option. This study identified and evaluated several feasible routes identifying one preferred route. This study entitled '110 kV Underground Cable Feasibility Study' (Ref: PE424-F0000-R000-011-004) is included in the Stage 1 Report, Appendix A-2. A further environmental study was then carried out on this one cable route. This report found that while there are some environmental impacts, especially during the construction phase, these can be minimised with appropriate mitigation measures and the environmental impacts are therefore sustainable. This study is entitled 'Environmental Reports in Relation to an Underground Electricity Circuit for the Laois-Kilkenny Reinforcement Project' and is included in the Stage 1 Report Appendix A-3. As such condition (2), does apply.

In relation to condition (3) above, a project specific technical screening study has examined the electrical characteristics of using a cable for the proposed circuit. This study found that whilst the use of a cable would result in a more onerous utilisation of the local 110 kV network, the overall effect is deemed tolerable. This study entitled 'Power System Studies: Laois-Ballyragget Cable Feasibility Studies' is also included in the Stage 1 Report, Appendix A-4.

In relation to condition (3) above, the availability of both an overhead line and an underground cable has been assessed based on a combination of fault data from the Irish Transmission System and from CIGRÉ data on 110 kV faults. From these it has been concluded that on average, over it's lifetime an overhead line will give a better service availability than an underground cable. This is based on the knowledge that, on average, the fault rates of underground cables are comparable with the fault rates of overhead lines (sustained faults as opposed to transient faults) however the repair times for underground cable faults (average repair time of 15 days for 110 kV UGC) are considerably longer than for faults on overhead lines (average repair time of less than one day). It follows therefore that an overhead line will provide a better level of service availability, and is therefore more reliable than an equivalent underground cable. Based on this criterion and for this development, an overhead line is considered preferable to an underground cable.

In relation to condition (4) above, the costs for both an overhead line and an underground cable solution have been estimated. Based on the emerging preferred overhead line route corridor identified in the Stage 1 Report, Chapter 6 and the emerging preferred underground cable route identified in the Underground Cable Feasibility Report, it is estimated that the underground cable would cost nearly three times more to install than the equivalent overhead line. The relative high cost of an underground cable cannot be justified given the fact that viable overhead line solutions exist and therefore condition (4) does not apply.

In summary, EirGrid's position on the use of high voltage underground cable and overhead line in the Ireland states that all four of EirGrid's conditions must apply for an underground cable to be used for a proposed circuit.

As only one of the four policy conditions is applicable, EirGrid are proceeding with an overhead line solution for the 110 kV circuits which is consistent with relevant policies.

400 kV Coolnabacky-Moneypoint/Dunstown Connection and the Athy-Portlaoise 110 kV Connection

Having identified the preferred site for the substation (again the term 'preferred' should be taken to mean 'best fit' or 'least constrained' from a technical and environmental perspective), the next step was to consider in detail how the existing OHL's would be "looped into" (how the incoming circuit, irrespective of whether it is underground cable or overhead line is routed to connect to the equipment within the substation) the new substation.

In order to determine the most appropriate connection method, EirGrid commissioned a feasibility study on the connection options to the proposed Coolnabacky substation from the existing 400 kV overhead line entitled "Assessment of 400 kV Connection Methods to Coolnabacky Substation" (see Stage 2 Report, Appendix J). The proposed substation is located approximately 1.4 km from the 400 kV line. Overhead line connectivity to the transmission network from candidate sites was a key consideration when assessing suitability of substation sites.

The Athy – Portlaoise 110 kV line is adjacent to the proposed substation. 110 kV connection options available to the substation are by overhead line to the substation site with very short lengths of cable to the compound.

In the feasibility study four methods of connecting the Dunstown – Moneypoint 400 kV line to the proposed Coolnabacky 400/110 kV substation were examined:

1. Double circuit underground cable (DC UGC)
2. Single circuit underground cable(s) (SC UGC)
3. Double circuit overhead line (DC OHL)
4. Single circuit overhead line(s) (SC OHL)

In order to establish the preferred connection method ESBI produced preliminary designs for all four connection methods, environmental assessments were then carried out by environmental consultants, and technical suitability and costs were established for each of the methods. Using this information a preferred connection option was recommended.

The report recommended that the preferred connection option from the proposed Coolnabacky 400/110 kV substation to the existing Dunstown – Moneypoint 400 kV line and the existing Athy – Portlaoise is by way of a 400 kV double circuit overhead line and a 110 kV overhead line respectively with very short lengths of underground cables within the substation compound.

As part of the final connections, referred to in technical terms as "loop-ins", of the overhead lines into the proposed substations at Coolnabacky and Ballyragget, very short sections of underground cable are used within the station compounds. These very short lengths of cable within the substation are required in order to achieve the optimal technical design for the loop-ins.

7.1.5 Alternative Substation Locations

7.1.5.1 Substation Study Areas

As part of the Stage 1 Lead Consultants Report, a study was carried out to assess the suitability of potential 400/110 kV substation study areas. This study was requested

following consultations with a local community group. EirGrid were asked to consider an alternative location at Cullenagh for the proposed substation study area. The subsequent report examined four potential study areas including Cullenagh, Abbeyleix, Cashel and EirGrid substation study area. The four study areas examined can be seen in Figure 7.1 below.

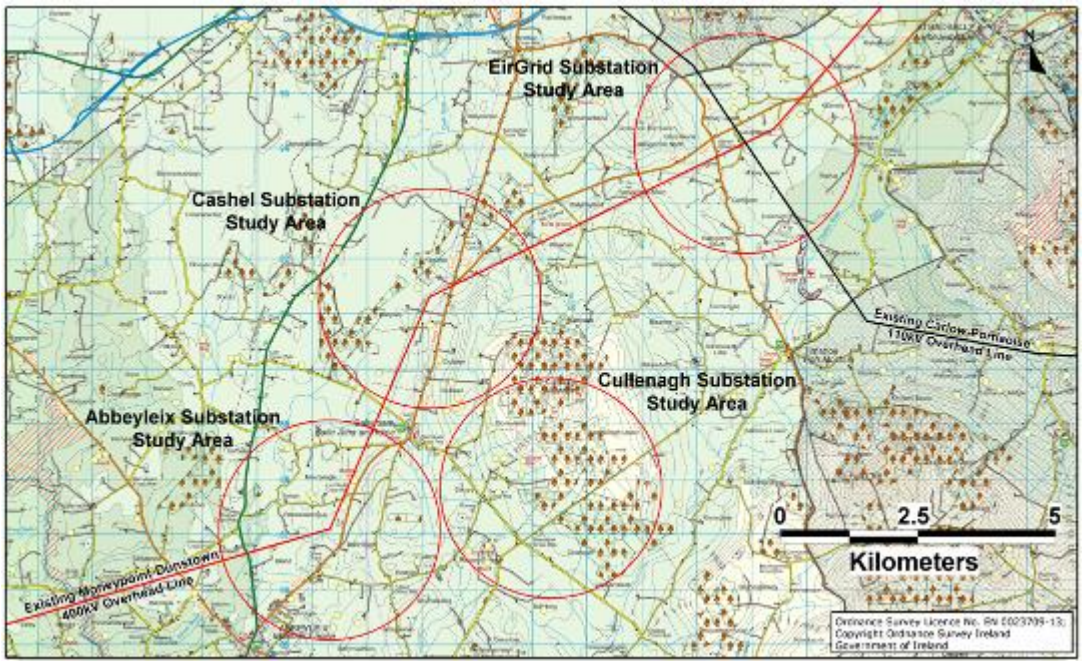

Figure 7.1: Alternative Substation Study Areas

The four substation study areas were assessed under the following technical, environmental and other relevant criteria:

- Vehicular Access
- Study Area Topography
- Study Area Flooding history / Drainage
- Existing planning permissions in Study Area
- Study Area Settlement pattern including population
- Existing infrastructure within Study Area
- Environmental constraints
- Transmission system connection potential of study area
- Cost

The originally proposed substation study area as proposed by EirGrid was deemed to be the most suitable location having regard to physical, environmental, technical and social factors associated with the type of development proposed and the inherent suitability of the receiving environment to accommodate same. A copy of the report can be found in Stage 1 Report, Appendix F-2. On completion, the findings of this report were then relayed to the local community group.

7.1.5.2 Substation Locations

The process for identifying alternative station locations and how a preferred station location emerged is described in the Stage 1 Lead Consultants Report Chapter 3. This section summarises the information in the Stage 1 Report.

Following identification of the study area and mapping of constraints, nine suitable land folios within the study area were identified as being potentially suitable in which to site the planned substation, primarily comprising those which avoided identified environmental and other constraints to the optimum extent. The potential sites considered within that area denoted on Figure 7.1 as the “EirGrid Substation Study Area” are identified in more detail in Figure 7.2.

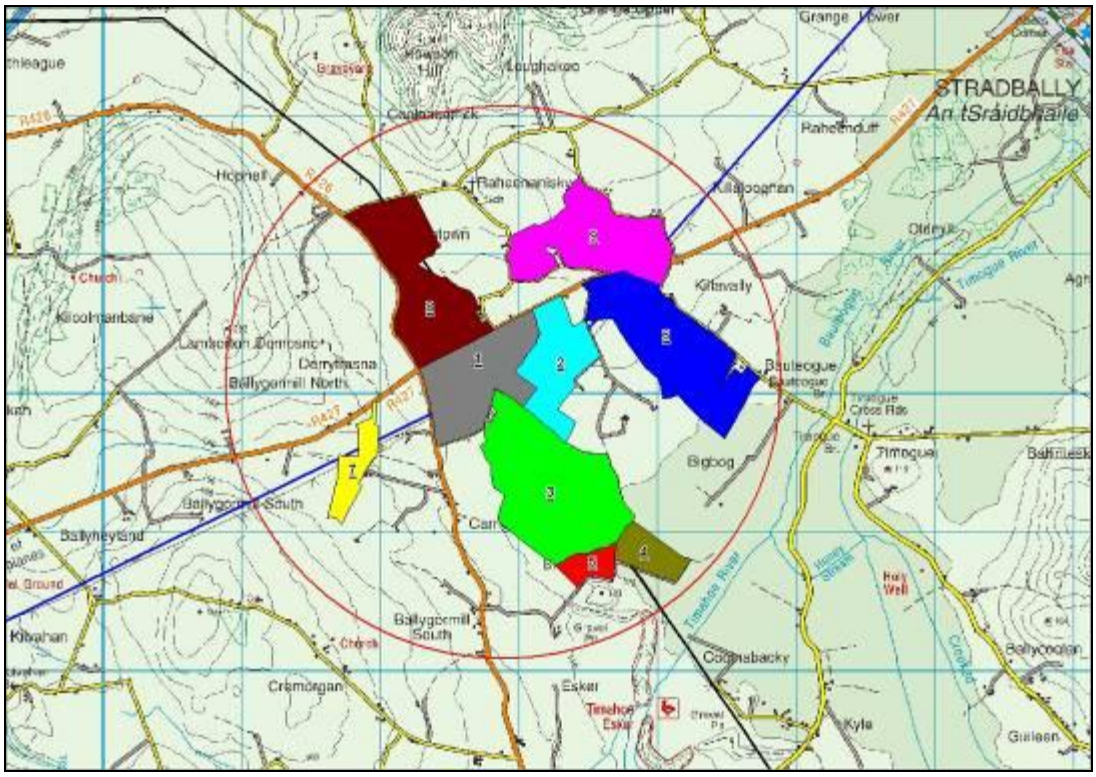

Figure 7.2: Potential Substation Sites Considered

The conclusion of the Stage 1 Lead Consultants Report was that, of 9 no. originally identified potential sites/folios, the substation site identified previously in Figure 3.4 of this report emerged to be the optimum site option to meet the requirements of this project whilst having the lowest potential environmental impact on the receiving environment. The full report ‘400/110 kV Emerging Substation Site’ can be found in the Stage 1 Report, Appendix G.

7.1.6 Overhead Line Route Corridors

The process for identifying alternative line route corridors and how an emerging preferred corridor was identified is described in detail in Chapter 6 of the Stage 1 Report. This section summarises the information in the Stage 1 Report.

The environmental and other constraints identified within the project study area were used to assist in identifying possible route corridor options between the two substations (being

the planned new 400/110kV station as identified in Chapter 3 and the existing Ballyragget substation).

Potentially feasible corridors within which a transmission line could be accommodated were identified and are set out in the Stage 1 Report and can be seen reproduced in Figure 7.3 of this report.

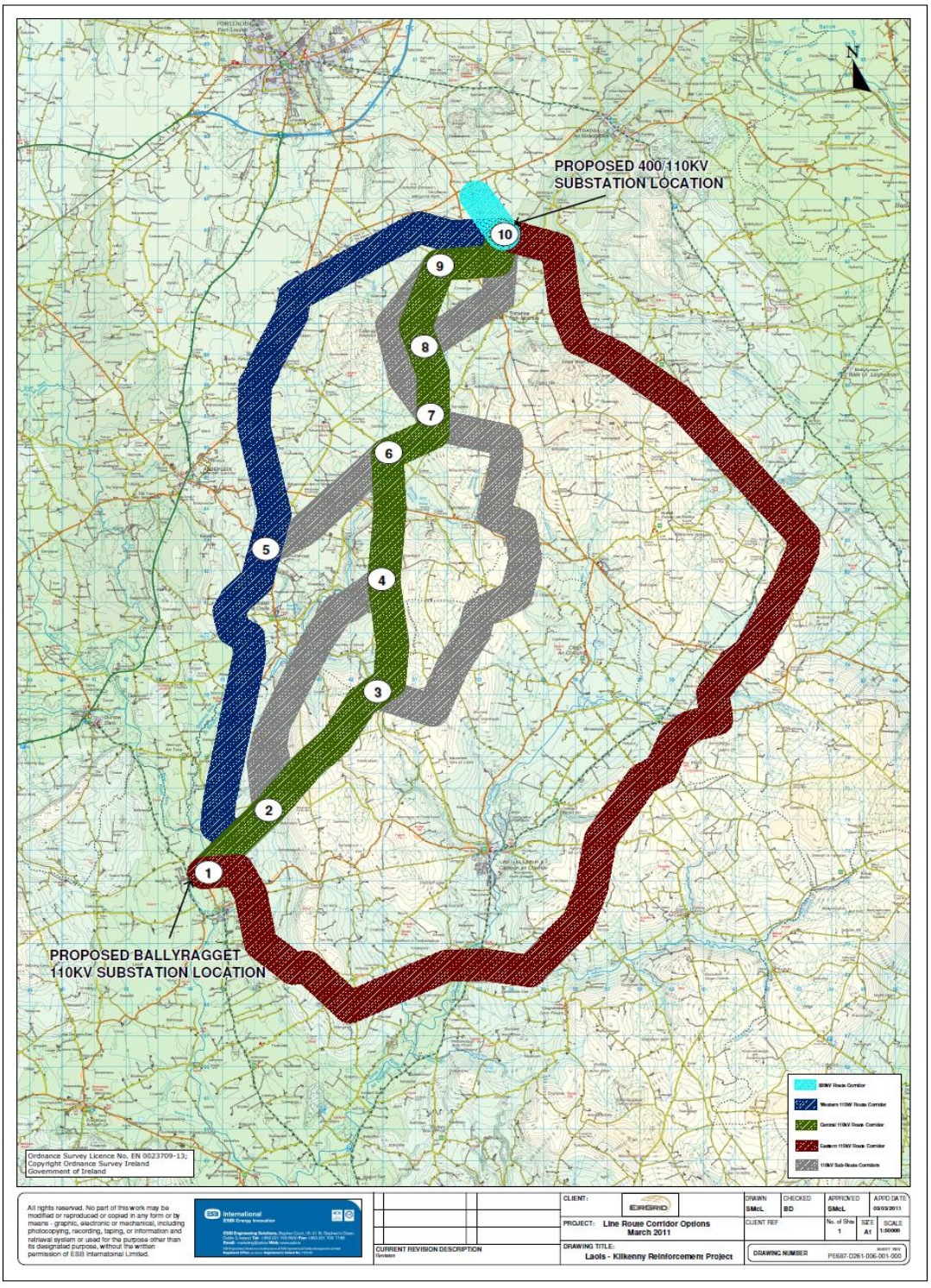

Figure 7.3: Potentially Feasible Line Route Corridors (as presented in Stage 1 Report)

The following describes at a high level how these corridors were selected and the characteristics associated with each:

Identification of Feasible Route Corridor Options

Having regard to the constraints identified within the project study area (summarised previously in this report), a number of feasible route corridors, within which a transmission line could potentially be accommodated were then identified. The identified corridors avoided the identified constraints to the greatest extent practicable or feasible. These can be broadly classified as a western corridor, a central corridor and an eastern corridor. A number of 'sub-options' were also developed having regard to the constraints identified. The corridors were typically 1km wide and the reasons for selecting same are as follows:

- **Western Corridor (28km)**

  The western corridor (Nodes 1-5-10) was primarily selected as it follows the route of the existing Ballyragget-Portlaoise 38 kV line and is therefore an established powerline corridor (albeit for a lower voltage line than is being proposed in this instance). Further north, the western corridor changes direction and follows the route of the existing 400 kV Moneypoint-Dunstown overhead line towards the identified Coolnabacky substation site.

- **Central Corridor (and variants) (c.26km)**

  The central corridor was selected as it is the most direct route that minimises the impacts on the majority of the constraints identified. This corridor, and it's variants/sub-options, largely avoid the main population centres and associated one off housing, as well as keeping to the transitional upland plains (off ridgelines and out of river valleys). Where constraints were unavoidable, variant sub-corridors were identified and considered.

  The reasons for selecting these were as follows:

  Node 1-3: Established to follow the existing 38 kV line route, however this route traverses higher ground and a designated high amenity area.

  Node 2-4: Established as an alternative to Node 2-3-4: which mainly avoids the aforementioned High Amenity Area (although not entirely as it is constrained from doing so by the cSAC to the north).

  Node 4-6: Established to minimise impact on cSAC by crossing river at a narrow point (Boleybeg Bridge North on a tributary of the Owenbeg river). Neither of the supporting structures (polesets) are within the cSAC at this crossing point.

  Node 3-7: An alternative to 4-6 which was established to avoid forestry, higher ground and the cSAC.

  Node 5-6: An alternative off the western corridor established to avoid Abbeyleix, Ballyroan and the existing 38 kV and 400 kV lines.

  Nodes 6-7-8: Chosen to avoid traversing the higher ground of Cullenagh Mountain. Node 7-9 is an alternative to this.

  Nodes 8-10 and Nodes 8-9-10: Corridor options for connecting to the Coolnabacky substation site. These options have regard for housing, Timahoe village and Timahoe Esker.

- **Eastern Corridor (44km)**

  This corridor (Nodes 1-10) is the longest of the alternatives as it attempts to avoid the high amenity area to the east of Ballyragget. It is further constrained by Castlecomer and associated one off housing/ribbon development along the N77/N78, which results in a limited number of locations being available to cross these roads, as well being constrained by the Barrow and Nore cSAC.

- **400 kV Corridor (1.8km)**

  This corridor is determined by the identified site location of the proposed substation at Coolnabacky and routing options from the Moneypoint-Dunstown 400 kV line to same. It parallels the existing 110 kV Portlaoise-Athy line route.

Assessment of Route Corridor Options

Following identification of the above corridors, a qualitative multi-criteria comparative evaluation of all corridors was undertaken, ensuring the input of each technical and environmental specialist discipline. This resulted in corridors, or parts thereof being designated as Emerging Preferred, Less Preferred and Least Preferred. The objective was to identify a corridor (or indeed a composite corridor) that on balance had the least overall impact on the identified constraints.

Human Beings: The central corridor has the lowest population (124 addresses) when compared with the other corridor options (west 442 and east 330). The central corridor is the least constrained in terms of population numbers and population density and would present relatively more options for line routing. It is therefore the preferred option with respect to Human Beings.

Cultural Heritage: The central corridor was most preferred on the basis that it contains the lowest number of cultural heritage sites, and does not contain any large clusters of archaeological monuments or NIAH structures. The overall density of monuments in this corridor is also low (0 National Monuments - however 1 has subsequently been confirmed as being a National Monument, 0 NIAH structures, 23 recorded monuments). The central corridor is therefore the preferred option with respect to Cultural Heritage.

Landscape: The central corridor is preferred as it minimises landscape and visual impacts more than the alternative corridors considered, given the topography and characteristics of the receiving environment.

Ecology: The emerging preferred corridor is the central corridor. The corridor passes over higher ground of the Castlecomer Plateau so is somewhat removed from the habitats and species of interest along the River Nore lowlands. The corridor involves one single crossing at a narrow section of the cSAC. The western corridor would also need to cross the cSAC, also passes close to the sensitive environment of Lisbigney bog, and is close to lowland areas that are frequented by wintering waterbirds and as such could interfere with flightpaths. The eastern corridor is least preferred as it is the longest and will therefore have the largest construction footprint. Additionally it would need to cross cSAC twice and also passes over Coan Bog NHA.

Soils and Geology: The least preferred options were western corridor (node 1-5) and eastern corridor (1-10) due to the presence of blanket peat. The central corridor was preferred, however it was noted that potential impacts at all other nodes would be similar throughout. There is an identified site of geological significance (Timahoe Esker) near the Coolnabacky substation site.

Hydrology and Hydrogeology: It was noted that the level of impact for all options was slight negative and moderate negative for all corridor options however the western corridor (nodes 5-10), eastern corridor (nodes 1-10), and the 400 kV corridor were least preferred due to the presence of both regionally and locally important sand and gravel and bedrock aquifers. The most preferred corridor was central corridor (variant). It should be noted that such potential constraints are generally overcome by means of good construction practice in line development.

The findings of these assessments are set out in detail in the Stage 1 report and associated appendices. They are included on CD as part of this application and continue to remain freely available online on the project website.

http://www.eirgridprojects.com/projects/laoiskilkenny/phaseonereports/

The corridor evaluation process resulted in the central corridor being identified as the emerging preferred option, in the Stage 1 Report. Some disciplines preferred a Node 2-3-4 whilst another preferred 2-4. Node 2-4 was considered to have the least impact on the designated High Amenity Area and its associated Scenic Views whilst Node 7-9 and 7-8-9 were amalgamated as they overlapped substantially and both were considered equally feasible.

Even though each corridor option was initially considered by each environmental discipline in isolation, all identified the central corridor as being the most preferred. It should be noted that as per EirGrid's Project Development and Consultation Roadmap, no decision is made in this regard at this stage of project development; rather the findings of the Stage 1 Information Gathering stage form the basis and focus for public and stakeholder consultation and engagement, with the intention of receiving valuable feedback.

In this regard, following this Stage 1 evaluation, the emerging preferred corridor and associated Stage 1 report were issued to all stakeholders for consideration and feedback in May 2011.

Stage 2 began by considering all feedback in respect of the publication of the emerging preferred corridor.

A minor modification (corridor widened by 30m at node 7) was made to the emerging preferred corridor due to line route design within that corridor.

A second minor modification (corridor widened by 600m at node 9-10) was made to the emerging preferred corridor due to line routing exercise which sought to avoid the Timahoe Esker.

In general no feedback emerged during this period of consultation which required EirGrid to fundamentally re-appraise its process, information gathered, evaluation or conclusions.

During Stage 2 of the roadmap process, all corridor options were re-evaluated again in light of modifications made above and also in light of all other stakeholder feedback received. It concluded that the preferred corridor remained the emerging preferred corridor as previously identified in Stage 1, with the two minor modifications described above.

Thus by the end of Stage 2, a preferred corridor had been identified that on balance, generally avoids the constraints identified as far as is reasonably possible (the use of the term 'preferred' in this context should be considered to constitute a 'best-fit' or 'least-constrained' option). It is not suggested that there will be no impact associated with such infrastructural developments – zero impact is not possible – but it does seek to minimise impacts on all identified constraints, primarily by means of avoiding them in the first instance.

Following confirmation of the preferred route corridor the next step in EirGrid's Roadmap process, is the identification of a feasible line route within that corridor. The most significant constraint here is generally the avoidance of houses and avoidance of other constraints that the corridor itself has not been able to avoid given its 1km width (e.g cSAC river crossing), or that encroach into the corridor boundary. The line route identification process generally occurs in the context of direct landowner engagement (where possible and which has generally occurred in this instance), and on site surveys and assessment. This continues up to the submission of the application for the proposed development with associated environmental assessment.

The overhead line route selection process attempts to generally avoid many changes of direction, which in turn minimises the number of steel angle towers required, and maximises the number of straight runs supported on the wood polesets.

The preliminary indicative overhead line route is set out in the Stage 2 Report and is seen reproduced in Figure 7.4 of this report.

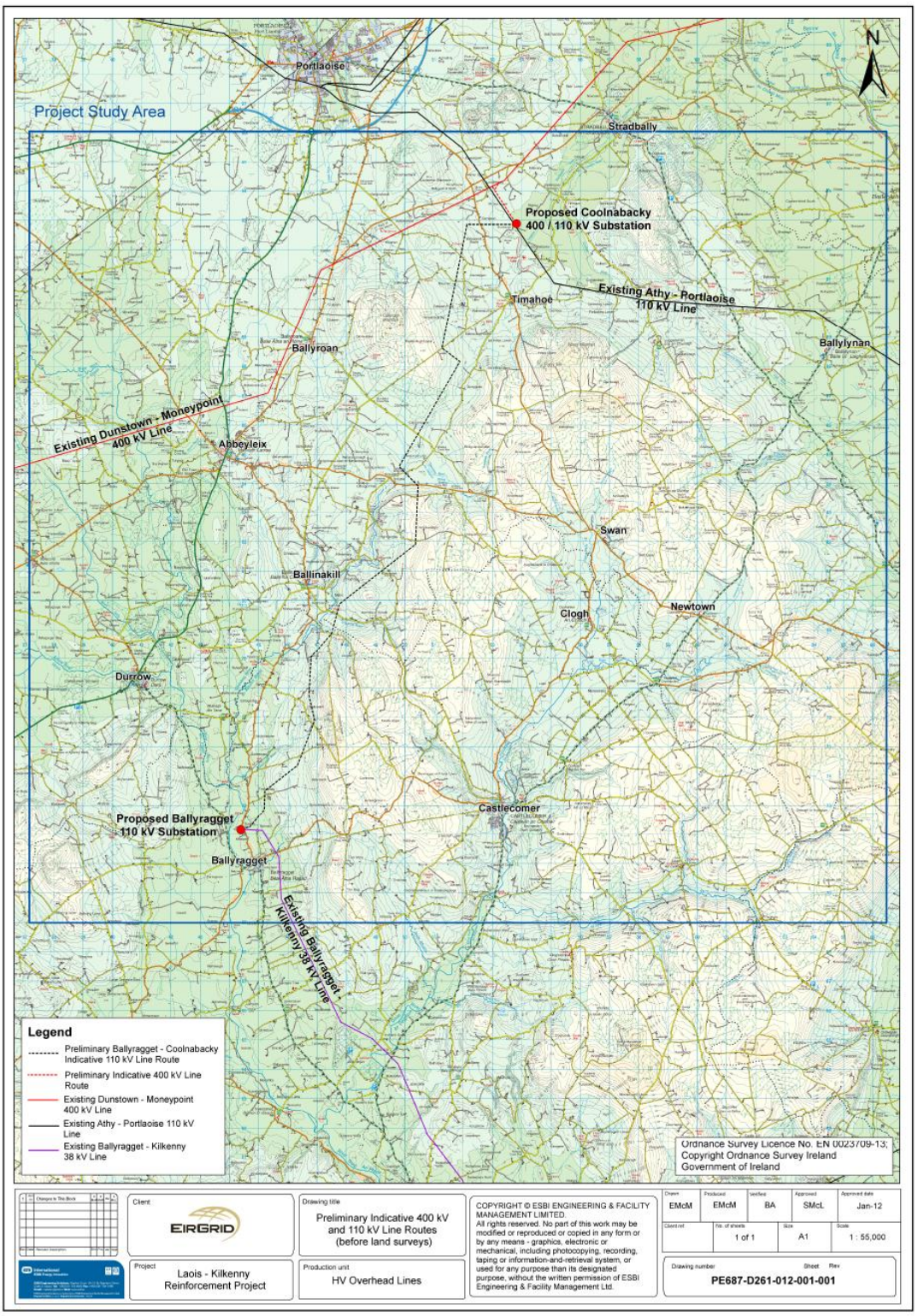

Figure 7.4: Preliminary Indicative Overhead Line Route (as presented in Stage 2 Report)

7.2 Amendments to Indicative Line Route

Following feedback from landowners and from the environmental consultants, and as a result of landowner engagement, walkover and desktop studies, a number of localised modifications were made to the initial indicative 110 kV line route issued to the landowners. The majority of the modifications are only moves of a few metres and were requested by either the environmental specialists or the line route designer to improve upon the original indicative line route. Other modifications were requested by the landowners, some of which were significant and the environmental consultants were requested to review these further.

At the time of publication of the Stage 2 report, only angle tower locations (used where the line changes direction and the structures that therefore actually determine the alignment) were identified - intermediate poleset locations had not been determined. Where landowners did not consent to environmental consultants entering lands to carry out surveys, some angle masts have been placed on improved grasslands with less ecological value than hedgerows.

Stage 3 appraised in more detail the previously identified route for the OHL. Refinements to the OHL generally arose as a result of the engagement process with landowners and other directly affected parties. Where possible, requests for changes were accommodated.

7.3 Conclusion

As a result of the iterative project development process, in reference to the Project Development Roadmap, and having regard to careful consideration of alternatives, a final project solution emerged and is the subject of this application for planning approval.

8 Description of the Proposed Transmission Infrastructure

8.1 Project Description

The proposed Laois-Kilkenny Reinforcement Project consists of the following inter-related elements:

- development of a new 400/110 kV Gas Insulated Switchgear (GIS) substation at Coolnabacky townland, north of Timahoe, Co. Laois;
- new connections to the proposed Coolnabacky substation from the existing Moneypoint - Dunstown 400 kV and Athy – Portlaoise 110 kV overhead lines;
- development of a new 110kV / 38kV / MV substation in Ballyragget, Co. Kilkenny adjacent to the existing 38 kV/MV substation, this will replace the existing substation which will eventually be decommissioned;
- development of a new 110 kV overhead line (OHL) between Ballyragget and Coolnabacky;
- an upgrade to the existing Ballyragget - Kilkenny 110 kV overhead line, and;
- a new bay in the existing Kilkenny 110 kV substation.

The statutory notices in Volume 1 provide a full description of the proposed development that is the subject of the application for planning approval.

8.2 Project Units

Following iterative site selection, route selection and design process, each component of this project can now be described in more detail and as such has been broken down into a number of 'project units' as illustrated in Figure 8.1.

The locations of all structures (substation, OHL and UGC) referred to in this section are identified on 8 no. drawings (PE687-D261-026-001-001 to PE687-D261-026-008-001), which form part of the Volume 1 -Statutory Particulars, submitted as part of this planning application.

These drawings show the proposed development in the context of all the various constraints. The Explanation of Technical Terms provided as part of this Planning Report will assist in understanding the technical acronyms used in this section.

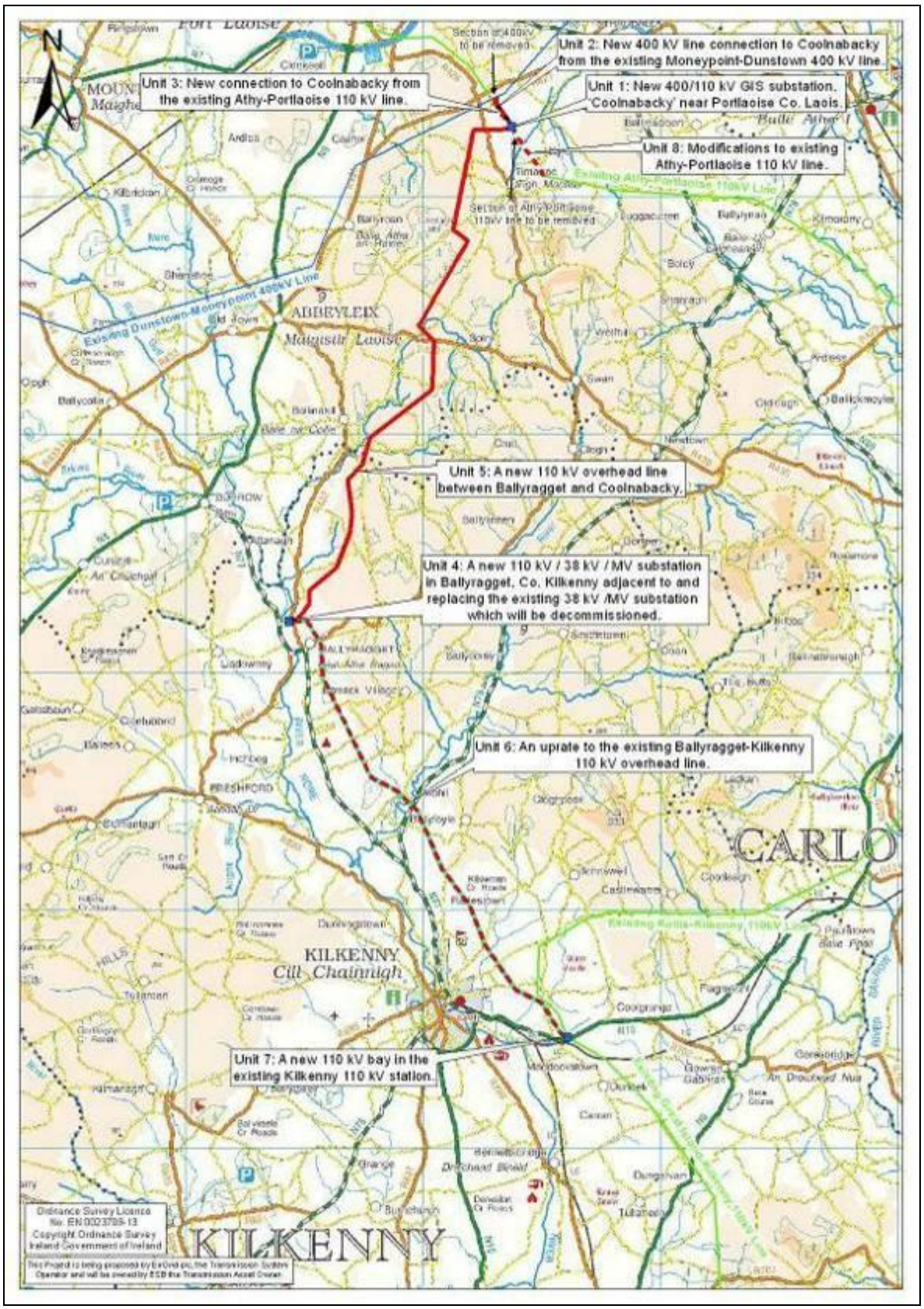

Figure 8.1: Layout of Project Units

As detailed in Figure 8.1 the proposed Laois – Kilkenny Reinforcement Project will consist of 8 units. The following are detailed description of these units. Photographs are provided to illustrate some of the infrastructure being described.

8.2.1 Unit 1 - New 400/110 kV GIS substation at Coolnabacky townland, Co. Laois

This substation is proposed in a 6.7 hectares field in the townland of Coolnabacky near the town of Timahoe, Co. Laois. The substation installation will consist of two steel framed buildings within a 117m x 98m plan area secured by a 2.6m high palisade fence. One of the buildings will house the 400 kV switchgear (electrical equipment) whilst the other building will house the 110 kV switchgear (electrical equipment). A 400 kV gantry and associated line equipment will be required to divert the 400 kV overhead lines into the 400 kV GIS building. The support gantrys will be located outdoors behind the 400 kV building. The installation also includes two 400/110 kV, 500MVA transformers and two shunt reactors. These will be positioned in bunded enclosures between the two steel framed buildings. The enclosures shall be (plan area 25m x 10m each) for transformers and (plan area 14m x 10m each) for shunt reactors. Both shall be surrounded on three sides by fire walls approximately 10m high.

The 400 kV indoor station (building dimensions 64m x 15.3m x 12m) will be equipped with 8 bays (2 no. lines (Moneypoint & Dunstown), 2 no. transformers, 2 shunt reactors and 2 spare bays).

The 110 kV indoor station (building dimensions 50m x 11.5m x 12m) will also be equipped with 8 bays (3 no. lines (Athy, Portlaoise, Ballyragget), 2 no. transformers and 3 spare bays).

It is proposed to store excavated material on site in the form of berms. The berms volume will be approximately 11,000m^3 over a plan area of 5,000m^2.

It is proposed to store excavated material on site in the form of berms. The berms volume will be approximately 11,000m^3 over a plan area of 5,000m^2.

It is proposed that 8 separate sedimentation/attenuation ponds (average area 110m^2) will be constructed on site. A group of 4 northwest of the substation and 4 to the east of the compound. Two of these ponds will be used temporarily to treat the runoff from the berm, with the remaining 6 used to treat surface water being discharged from the compound prior to entry into the water streams.

The proposed access to the station shall be via a modification to the existing road (that currently serves a farmstead with dwelling and a disused sand/gravel quarry near the station site) in the townlands of Esker and Coolnabacky. The access road will be 1.2km (total area = 0.865Ha) from the R426 (public road) to the substation compound gates (bringing the total development area for Coolnabacky 400/110kV substation to 7.6 hectares). The modifications to the existing road shall include:

- Moving the junction (at the public road) south by 25m with 160m of new access road to be created to accommodate this new junction.
- Expansion of an existing bend to accommodate turning circles of large vehicles.
- New section of road 250m through land owner's property to accommodate large vehicles. Figure 8.2 shows the proposed site layout. Detailed drawings are contained in Volume 1 Statutory Particulars submitted as part of this planning application.

Figure 8.2 shows the proposed site layout. Detailed drawings are contained in Volume 1 – Statutory Particulars submitted as part of this planning application.

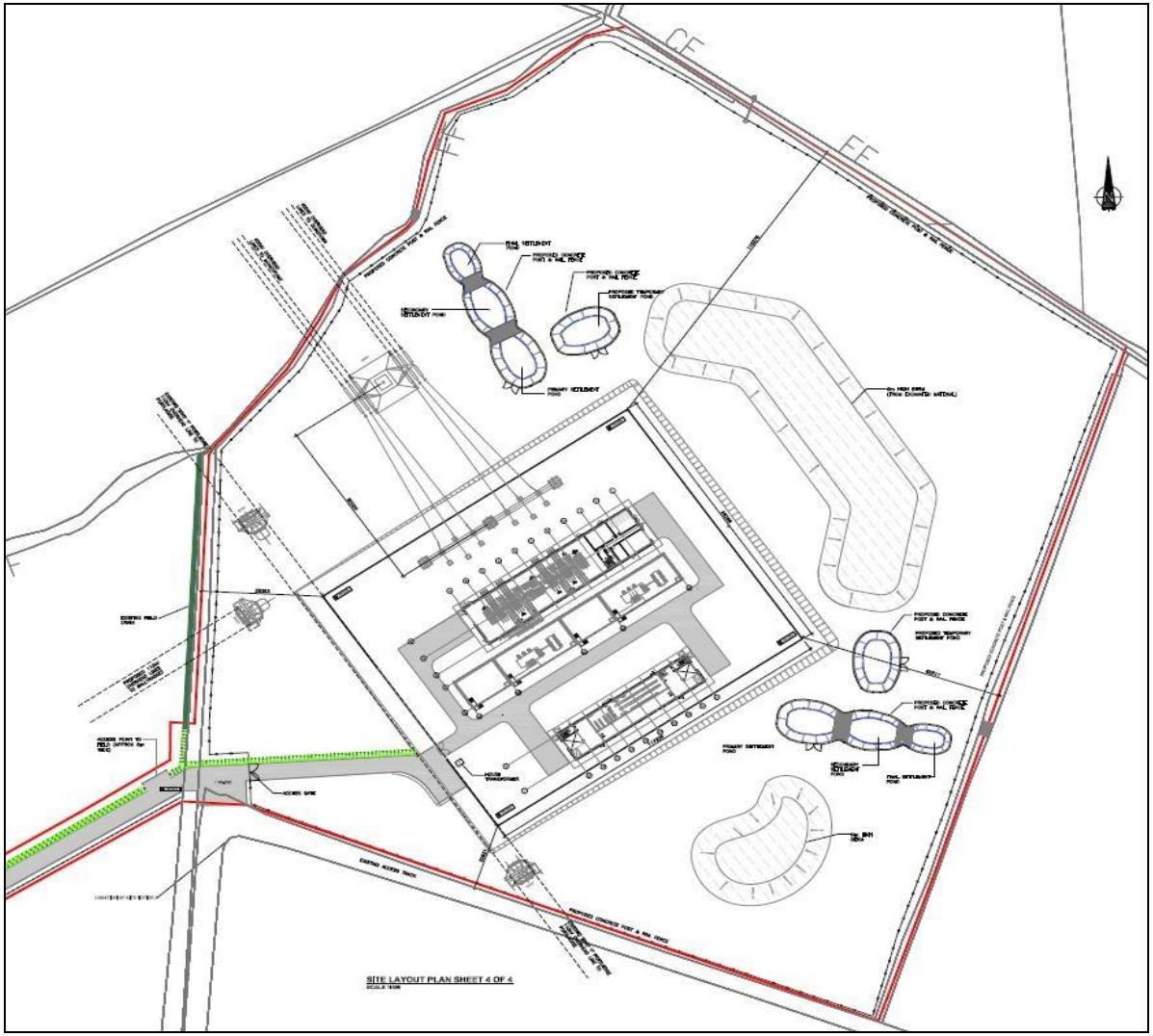

Figure 8.2: Site Layout of the Proposed Coolnabacky GIS Substation

8.2.2 Unit 2 - New connection to Coolnabacky from the existing Moneypoint - Dunstown 400kV line

The connection to the proposed Coolnabacky substation from the Moneypoint – Dunstown 400 kV line will be made by way of 400 kV overhead line. This will be achieved by 2 new single circuit spans (280m and 295 m respectively) connecting to 1.2km of 400 kV double circuit line which brings the 400kV circuits onto a support gantry in Coolnabacky 400/110 kV substation.

The proposal includes 2 new 400 kV single circuit angle masts (MDC2 & MDC8) within the alignment of the existing 400 kV line of heights 37.25m & 32.25m respectively; 2 new 400 kV double circuit angle masts (MDC3 & MDC7) both 55.5m in height and 3 new 400kV intermediate masts (MDC4, MDC5 & MDC6) all 57.75m in height extending from the existing 400 kV line to the proposed substation. One of the existing 400 kV intermediate masts on the existing 400 kV line and approximately 150m of the existing 400 kV overhead line between the 2 connection points to the Moneypoint – Dunstown 400 kV line will be removed.

The line and structure positions were selected to minimise impact on the environment by paralleling an existing transmission line and avoiding locating support structures in hedges. This line route is also the shortest possible. This 'unit' is necessary to connect the existing 400 kV line into the new 400/110 kV substation.

Figure 8.3: Photomontage of the Proposed 400 kV OHL

(Note: Location is on the R427 looking south to the substation – existing 400 kV line is in the foreground)

8.2.3 Unit 3 - New connection to Coolnabacky from the existing Athy - Portlaoise 110 kV line

The proposed Coolnabacky substation is situated beside the Athy – Portlaoise 110kV line. It is proposed to replace intermediate polesets AP98 and AP99 with lattice steel line/cable interface masts approximately 21m in height (both these structures contained on the Coolnabacky site). These structures have a generally similar scale and character to the existing angle towers on this circuit. Short lengths of cable will connect the new line/cable interface masts AP98 (100m) and AP99 (190m) into the 110kV building within the Coolnabacky compound.

Approximately 150m of existing overhead line will be removed between AP98 and AP99.

This 'unit' is necessary to connect the existing 110 kV line into the new 400/110 kV substation.

Figure 8.4: Photograph of a 110 kV Earthwire Line/Cable Interface Mast

8.2.4 Unit 4 - A new 110 kV / 38 kV / MV substation in Ballyragget, Co. Kilkenny

The new Ballyragget 110 kV / 38 kV / MV substation will be constructed adjacent to the existing 38 kV /MV substation in the townland of Moatpark near Ballyragget. The site area is approx. 1.5 hectares. The existing 38 kV / MV Ballyragget substation will ultimately be decommissioned and replaced.

This new substation will be in a compound of 61m x 70m plan area secured by a 2.6m high palisade fence. The substation compound will contain 1 no. 31.5MVA and 1 no. 5MVA transformer positioned in transformer bunds and 1 no. 200A Arc Suspension Coil between the substation buildings. 2 no. lightning masts 14m in height will also be placed in the compound.

The 110 kV electrical swtichgear equipment will be housed in a steel framed building (dimensions 50m x 11.5m by 12m high) designed for 6 no. Line Bays, 2 no. Transformer Bays, a coupler Bay and busbar.

The 38 kV and MV switchgear equipment will be housed in a block built building (dimensions 24.5m x 8m by 7m high). This building will be designed for 8 no. 38 kV Line Bays, 2 no. 38kV/MV Transformer Bays, 1 no. 38 kV Sectionaliser Bay and 1 no. 38 kV Riser Bay along with 2 no. MV Transformer Bays, 10 no. MV Line Bays, 2 no. MV House Transformer Bays, 1 no. MV Sectionaliser Bay and 1 no. MV Riser Bay.

Access to the station will be via a new access road (60m long) from an existing gate to the substation field. The existing gate will be modified by removing sections of hedgerow, chainlink fence and a section of block wall to the left and right to allow the required sightlines to be achieved.

The foul water treatment on site will be via a septic tank and percolation area. The surface water treatment on site will be via soakaway areas.

On completion and energisation of the new Ballyragget substation the existing 38 kV substation will eventually be dismantled. Two of the 38 kV end masts in this substation will be retained with line-cable interfacing equipment being mounted on them.

Figure 8.5 shows a photomontage and the proposed site layout of the substation. Detailed drawings are contained in Volume 1 Statutory Particulars submitted as part of this planning application. Figure 8.6 shows an aerial view of the wider context where the proposed substation will be located. The nearby Glanbia plant is a significant industrial feature in this area and provides a context for the proposed substation which is significantly smaller in scale.

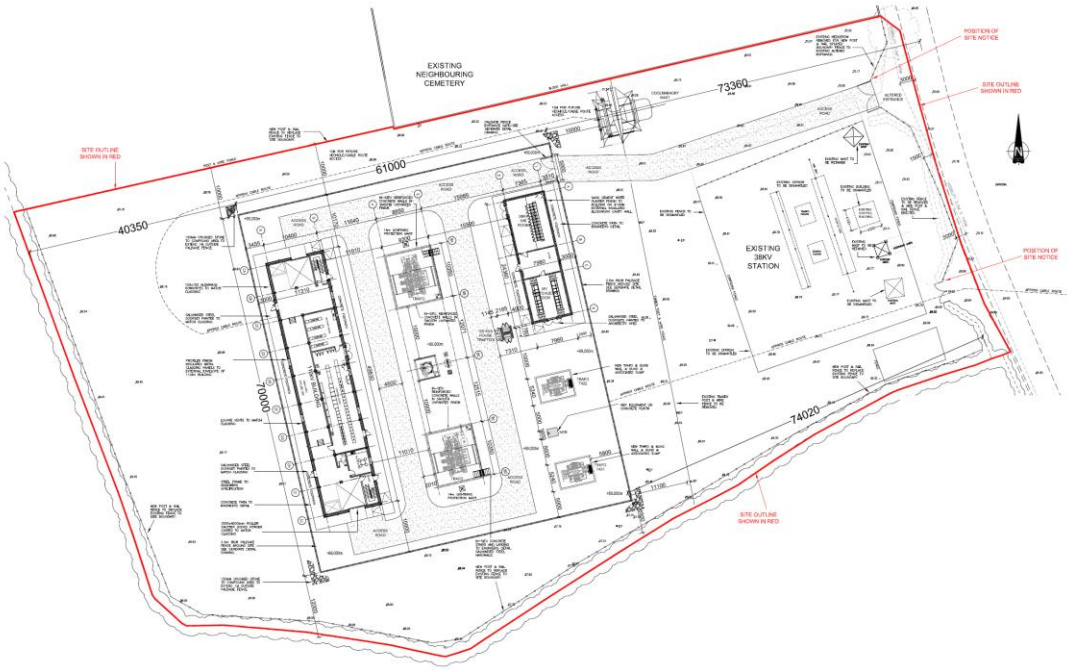

Figure 8.5: Photomontage and Site Layout of the Proposed Ballyragget 110 kV/38 kV/ MV substation

Figure 8.6: Aerial View of the Ballyragget Substation Location

(Note: The nearby Glanbia plant is a significant industrial feature in this area and provides a context for the proposed substation which is significantly smaller in scale.

8.2.5 Unit 5 - A new 110 kV overhead line between Ballyragget and Coolnabacky

This 110 kV circuit will consist of 26km of overhead line and 2 short lengths of cable at Ballyragget and Coolnabacky substations. The overhead line will consist of 143 double wood polesets with height above ground level ranging from 13.7m to 21.7m and 17 lattice steel angle masts with height above ground level ranging from 18m to 24.5m supporting three electrical conductors and two earthwires.

Figure 8.7: Photograph of a 110 kV Earthwire Angle Mast

Figure 8.8: Photograph of a 110 kV Earthwire Poleset

The following is a description of the line route from Ballyragget to Coolnabacky (straight by straight). All straights were established taking into account the preceding and succeeding straights along with the constraints in the straights vicinity. This section can be read with eight aerial maps (drawings numbers PE687-D261-026-001-001 to PE687-D261-026-008-001) submitted with the planning application in Volume 1 – Statutory Particulars.

Ballyragget 110 kV Building- Angle Mast BC1

Approximately 160m of underground cable connects the Ballyragget 110 kV building to the line/cable interface mast on the Ballyragget substation site (BC1).

Angle Mast BC1-BC3

The overhead line runs in a south-northeast direction from BC1 for approximately 270m over arable land to BC3 crossing the R432 public road. This straight closely parallels an existing 38 kV line. One poleset is located along this straight.

Angle Mast BC3-BC7

The overhead line turns to run in a northeast direction from BC3 for approximately 777m over arable land to BC7. This straight closely parallels an existing 38 kV line. Three polesets are located along this straight.

Angle Mast BC7-BC10

The overhead line turns away from paralleling an existing 38 kV line due to the presence of a farmstead which causes the route to run in a northerly direction from BC7 for approximately 623m over arable land to BC10 crossing over a local public road. Two polesets are located along this straight.

Angle Mast BC10-BC18

To avoid housing the overhead line turns to run in a northeast direction from BC10 for approximately 1.4km over arable land to BC18. Seven polesets are located along this straight. This places the line route in the transition area between the lowlands and highlands of an area described as Zone A in the Landscape section of the Environmental Report – this area is considered to have the best absorption capacity for the proposed development both from lowlying and high vantage points, while keeping out of the Special Protection Area as defined by Kilkenny County Council.

The high absorption capacity arises from the existence between BC 27 and BC 39 of conditions that are very favourable for minimising visual effects – namely paralleling the treeline of established forestry and following a 'breakline' of concavity in the topography which ensures that the line will be minimally visible from the sensitive Scenic Route V19.

Angle Mast BC18-BC27

Again to avoid housing and get to suitable road crossings the overhead line turns to run in a north-northeast direction from BC18 for approximately 1.6km over arable land to BC27 crossing over two local public roads. Eight polesets are located along this straight.

Angle Mast BC27-BC32

The overhead line turns to run in a north direction to avoid a Scenic Amenity Area from BC27 for approximately 806m over arable land to BC32. Four polesets are located along this straight.

Angle Mast BC32-BC41

The overhead line turns to run in a north-northwest direction from BC32 for approximately 1.4km over arable land to BC41 crossing over a local access road whilst continuing to avoid a Scenic Amenity area and housing. Eight polesets are located along this straight.

Angle Mast BC41-BC46

The overhead line turns to run in a northeast direction from BC41 for approximately 952m over arable land to BC46 crossing an access road. This straight encroaches upon the Scenic Amenity area to avoid a cSAC and housing. Four polesets are located along this straight.

Angle Mast BC46-BC53

The overhead line turns to run in a north-northeast direction from BC46 for approximately 1.16km over arable land to BC53 crossing over three local public roads and crosses the county border from Co. Kilkenny to Co. Laois. The straight avoids a cSAC and several houses. Seven polesets are located along this straight.

Angle Mast BC53-BC72

The overhead line turns to run in a northeast direction from BC53 for approximately 3.29km over mainly arable land with the exception of approximately 50m of commercial forestry to BC72 crossing 1 public road. The straight avoids a cSAC and a privately owned Heliport leading it to higher ground. Eighteen polesets are located along this straight.

Angle Mast BC72-BC85

The overhead line turns to run in a north direction from BC72 for approximately 2.03km over mainly arable land with the exception of approximately 800m of commercial forestry to BC85 crossing two local public roads and thereby avoiding crossing the higher ridgelines. Twelve polesets are located along this straight.

Angle Mast BC85-BC90

The overhead line turns to run in a northwest direction from BC85 for approximately 926m over arable land to BC90 crossing the R430 public road, a further local public road and a cSAC. This straight crosses the SAC over a road bridge in order to minimise impact on the cSAC. Four polesets are located along this straight.

Angle Mast BC90-BC112

The overhead line turns to run in a north-northeast direction from BC90 for approximately 4.13km over mainly arable land with the exception of approximately 940m of commercial forestry to BC112 crossing one local road. This straight has a low amount of constraints which allows for a long straight. Twenty one polesets are located along this straight.

Angle Mast BC112-BC117

The overhead line turns to run in a northwest direction from BC112 for approximately 770m over arable land to BC117 crossing a regional public road. This straight establishes a suitable road crossing point while avoiding housing associated views towards the Special Area of Development Control. Four polesets are located along this straight.

Angle Mast BC117-BC141

The overhead line turns to run in a north-northeast direction from BC117 for approximately 4.28km over mainly arable land with the exception of approximately 835m of commercial forestry to BC141 crossing two public roads. This straight has a low amount of constraints which allows for a long straight and is influenced by housing at road crossings. Twenty three polesets are located along this straight.

Angle Mast BC141-BC150

The overhead line turns to run in an east direction from BC141 for approximately 1.6km over arable land to BC150 (in the Coolnabacky substation site) crossing the R426 public road. This straight also has a low amount of constraints which allows for a long straight and is influenced by housing at road crossings. Eight polesets are located along this straight.

Angle Mast BC150-Coolnabacky 110 kV Building

Approximately 190m of underground cable connects the line/cable interface mast on the site (BC150) to the 110 kV building in the Coolnabacky compound.

8.2.6 Unit 6 – Uprate of the Existing Ballyragget - Kilkenny 110 kV OHL

This section will consist of the replacement of all the structures along the existing line with similar structures along the same alignment. The 110 kV circuit will consist of 21.9km of overhead line and 2 short lengths of cable at Ballyragget and Kilkenny substations.

The overhead line will consist of 90 double woodpole structures with height above groundlevel ranging from 13.7m to 21.7m and 14 lattice steel angle masts with height above groundlevel ranging from 13m to 24.5m supporting three electrical conductors. For approximately the first 1.73km out of Ballyragget and approximately the first 1.84km out of Kilkenny the structures will support three electrical conductors and two earthwires.

Figure 8.9: Photograph of a 110 kV Non-Earthwire Angle Mast

Figure 8.10: Photograph of a 110 kV Non-Earthwire Poleset

The following is a description of the line route from Ballyragget to Kilkenny (straight by straight). The majority of this line route is on the existing Ballyragget – Kilkenny alignment. This section can be read with eight aerial maps (drawings numbers PE687-D261-026-001-001 to PE687-D261-026-008-001) submitted with the planning application in Volume 1 – Statutory Particulars.

Ballyragget 110 kV Building-Angle Mast BK1

Approximately 215m of underground cable connects the Ballyragget 110kV building to the line/cable interface mast (BK1) proposed in private lands across the R432 public road. Approximately 35m of the cable will be outside the ESB owned site. The end mast is located outside the compound as it would conflict with an existing telecoms mast and a 38 kV line if located within the compound.

Angle Mast BK1-BK4

The overhead line runs in an east direction from BK1 for approximately 580m over arable land to BK4 crossing over an abandoned railway line. Two polesets are located along this straight. This straight is first of two straights that do not follow the original alignment.

Angle Mast BK4-BK11

The overhead line turns clockwise to run in a southeast direction from BK4 for approximately 1.14km over arable land to BK11 crossing over a local public road and the R694 public road. Six polesets are located along this straight.

Angle Mast BK11-BK19

The overhead line turns clockwise to run in a south direction from BK11 for approximately 1.42km over arable land to BK19 crossing over a local public road. Seven polesets are located along this straight.

Angle Mast BK19-BK40

The overhead line turns anticlockwise to run in a south-southeast direction from BK19 for approximately 4.67km over arable land to BK40 crossing over four local public roads and two access roads. Twenty polesets are located along this straight.

Angle Mast BL40-BK46

The overhead line turns anticlockwise to run in a southeast direction from BK40 for approximately 1.21km over arable land to BK46. Five polesets are located along this straight.

Angle Mast BK46-BK51

The overhead line turns clockwise to run in a south-southeast direction from BK46 for approximately 1.23km over arable land to BK51 crossing over a local public road, the N78 public road, the Dinin River and an SAC at two locations. Four polesets are located along this straight.

Angle Mast BK51-BK62

The overhead line turns clockwise to run in a south-southeast direction from BK51 for approximately 2.62km over arable land to BK62 crossing one local public road. Ten polesets are located along this straight.

Angle Mast BK62-BK71

The overhead line turns anticlockwise to run in a southeast direction from BK62 for approximately 1.99km over arable land to BK71 crossing two local public roads and a local access road. Eight polesets are located along this straight.

Angle Mast BK71-BK79

The overhead line turns clockwise to run in a south-southeast direction from BK71 for approximately 1.72km over arable land to BK79. Seven polesets are located along this straight.

Angle Mast BK79-BK89

The overhead line turns anticlockwise to run in a south-southeast direction from BK79 for approximately 2.3km over arable land to BK89 crossing two local public roads. Nine polesets are located along this straight.

Angle Mast BK89-BK94

The overhead line turns anticlockwise to run in a southeast direction from BK89 for approximately 1.19km over arable land to BK94. Four polesets are located along this straight.

Angle Mast BK94-BK102

The overhead line turns clockwise to run in a south-southeast direction from BK94 for approximately 1.57km over arable land to BK102 crossing one local public road, one access road and the N10 public road. Four polesets are located along this straight.

Angle Mast BK102-BK104

The overhead line turns clockwise to run in a southeast direction from BK102 for approximately 275m over arable land to BK104 in the Kilkenny substation site. One poleset is located along this straight. This straight is second of two straights that do not follow the original alignment.

Angle Mast BK104-Kilkenny 110 kV substation

Approximately 50m of underground cable connects the line/cable interface mast on the site (BK104) to the 110kV equipment in the Kilkenny 110 kV substation compound.

8.2.7 Unit 7 - A New Bay in the Existing Kilkenny 110 kV Substation

Kilkenny 110 kV substation is located in the townland of Scart, Co. Kilkenny. This works consist of the installation of outdoor air insulated equipment including, circuit breaker, disconnects and instrument transformers mounted on concrete plinths along with the removal of the existing Ballyragget – Kilkenny 110kV endmast.

Figure 8.11: Photograph of the Existing Kilkenny Substation

(Note: The approximate location of the proposed development is at the furthest bottom left corner of the compound indicated in red)

8.2.8 Unit 8 - Modifications to Existing Athy - Portlaoise 110 kV Line

The modification is the retrofitting of earthwire onto the existing Athy – Portlaoise 110 kV line from Coolnabacky towards Athy (AP98 to AP85) for 2.32km and from Coolnabacky towards Portlaoise (AP 99 to AP105) for 1.29km. The purpose of earthwire is to provide lightening protection and it is used by EirGrid in the following circumstances:

- Install earthwires on the entire length of all new station-to-station transmission lines;
- Where a new line (or lines) is required to connect a new station to an existing transmission line, install earthwire on the entire length of the new line section(s); and
- Where a new line is not required or where only a short section of new line is required to connect a new station to the existing transmission system, earthwire should be retrofitted, where feasible on the last two km of each existing line into the new station.

To achieve this all structures will be replaced by similar structures except for structure AP105 which is a poleset and will be replaced with a lattice steel angle mast. The overhead line in this unit will consist of 17 double wood polesets with height above groundlevel ranging from 13.7m to 21.7m and lattice steel angle masts with height above groundlevel ranging from 18m to 24.5m supporting three electrical conductors and two earthwires (2 of these lattice steel towers are already mentioned in section 8.2.3).

Angle Mast AP99-AP105

The overhead line runs in a northwest direction from AP99 for approximately 1.29km over arable land to AP105. Five polesets are located along this straight.

Angle Mast AP98-AP85

The overhead line runs in a southeast direction from AP98 for approximately 2.32km over arable land to AP85 crossing over one local public road. Twelve polesets are located along this straight.

8.3 Engineering Design

8.3.1 OHL

The proposed new 400 kV overhead line circuits will have a normal conductor rating of 2473 Amps which equates to line design standard 600mm2 ACSR conductor (Bison or equivalent) operating at 80°C.

The Ballyragget - Coolnabacky and Ballyragget - Coolnabacky 110 kV overhead line circuits will have a normal conductor rating of 1170 Amps which equates to line design standard 430mm2 ACSR conductor (Bison or equivalent) operating at 80°C.

The Athy - Coolnabacky and Coolnabacky - Portlaoise 110 kV overhead line circuits will have a normal conductor rating of 661 Amps which equates to line design standard 200mm2 ACSR conductor (Wolf or equivalent) operating at 80°C.

The engineering design has been significantly influenced by many factors including landuse, environmental and other factors as previously described previously in this section.

8.3.2 Stations

The engineering designs of all stations are based around the electrical equipment which is required at each station and the type of station technology being used. Full descriptions of each station have been previously described previously in this section.

8.4 Context for Angle Masts

The location of angle masts (AM) is a significant feature of the engineering design. One of the objectives in overhead line design is to reduce the number of such structures to a minimum (i.e. to keep the alignment as straight as possible), having regard to the requirement to design around identified constraints. The section of overhead line between angle masts is referred to in technical terms as a “straight”. The rationale for each straight has been previously explained. Units 6 and 8 are existing overhead lines so no further explanation of these straights are required.

8.5 Underground Cable

The technical design standards for connection of 110 kV circuits to 110 kV GIS buildings require a short underground link directly into the building. In the case of Kilkenny which is an AIS substation due to station congestion, the optimal technical solution is a short length of underground cable.

8.6 Construction Methodology

A detailed construction methodology statement has been prepared and is included in Volume 3 Environmental Report. This outlines processes to be undertaken as part of the construction of the project and potential construction impacts have been considered as part of the Environmental Report.

Where possible, structures and cables will be constructed using existing tracks and on the edge of field boundaries. Generally access to structure sites takes place using existing farm entrances off the public road and along existing farm tracks to the location. The type of machinery used is similar in scale to normal agricultural machinery. Construction of angle masts typically takes no longer than three weeks with polesets taking less time, with the lands being re-instated on completion. Prior to commencement of construction there is engagement with the landowner in relation to the schedule of works.

Every effort will be made to avoid removal of hedgerow and tree lines for both the overhead lines and the foundations for the structures. Careful management of the construction process to adhere to the requirements of the National Parks and Wildlife Service and Inland Fisheries Ireland will protect fisheries and river edge habitats.

Dust and emissions will arise from the construction process, these impacts will be short term in nature and will be controlled using good site practice and are not expected to result in significant impacts.

Construction noise levels will be confined to daylight hours and for short durations; they will be in compliance with the NRA Guidelines for construction related noise – ‘Guidelines for the Treatment of Noise and Vibration in National Road Schemes’, NRA 2004.

For construction in proximity to cultural heritage sites, all such sites along the route corridor will be clearly demarcated with appropriate buffer zones, so as to ensure no damage from construction activities. Information regarding the location and extent of these demarcated

sites will form part of the site induction for all site personnel. Under the agreed Code of Practice between the EirGrid and the Minister of Environment, Heritage and Local Government, EirGrid will appoint a Project Archaeologist. The Project Archaeologist will liaise with the Development Applications Unit of the Department of Arts, Heritage and Gaeltacht (formally in the Department of the Environment, Heritage and Local Government), relevant authorities and stakeholders. The impacts associated with the construction phase of the proposed overhead line will be short term and are not predicted to be significant. Almost all of these can be mitigated through implementation of a Construction Environment Management Plan (CEMP) which is normal for construction projects of this nature. More details of what will be contained in the CEMP is included in Volume 3 – Environmental Report.

Construction of the Laois Reinforcement Project can be summarised as follows:

- The substation construction activities will take place at a fixed construction site. For both Coolnabacky and Ballyragget in particular, the works, although on contained sites, will be large scale construction works whilst the scale at Kilkenny substation will be lower.
- OHL and UGC construction will take place at localised locations along the linear alignment.
- OHL and UGC construction is low density in terms of traffic and intensity at both farm and local level.
- OHL and UGC construction uses small scale machinery – farm equipment would be very comparable in terms of size and scale.
- Work will generally only be carried out during normal working hours.
- All planning conditions and mitigation measures will be implemented and contractor will be supervised and managed closely to ensure full compliance.
- Any temporary access roads required will be constructed under the guidance of environmental experts and will be removed upon completion of works.
- Suitable mats and/or other construction methodology to be used in wetland and/or sensitive habitats.
- Duration of work at any tower location is usually between 5 and 10 working days.

9 Environmental Evaluation

9.1 Background

Pre-application consultations with An Bord Pleanála and the preparation of an EIA Screening Considerations Report have indicated that the Laois–Kilkenny Reinforcement Project is below the threshold of projects requiring an EIS, as set out in the Planning and Development Regulations 2001-2012. However, whilst a statutory EIS is not required, as indicated in the preliminary view of An Bord Pleanála, for the purpose of assessing if the Laois-Kilkenny Reinforcement project is likely to have significant effects on the environment an Environmental Report, contained in Volume 3, has been prepared and is being submitted with this application.

This submission of an Environmental Report (ER) was anticipated from the start of the project and separate environmental reports have been prepared for each stage of the project as set out in the EirGrid Project Development and Consultation Roadmap. The reports have been prepared on an ongoing and iterative basis and have informed design changes. Whilst Volume 3 - Environmental Report does not constitute a statutory EIS, its preparation has generally followed the *EPA Guidelines on Information to be Contained in Environmental Impact Statements*, so that the report is consistent with best practice, and provides a comprehensive environmental assessment of the proposed development.

Issues which are not directly related to environment such as farming practices, land use planning and employment have been considered by the project team but are not specifically addressed in the ER, as they are addressed by more specific policies, guidelines or codes of practice. For example, the implications for farming practices as a result of overhead lines is addressed specifically in the long established guidelines contained in the ESB Networks publication *Farm Well Farm Safely*.

A *Construction and Environmental Management Plan (CEMP)* will be prepared. A broad outline of the contents is included in the Environmental Report.

The key findings and conclusions of the Environmental Report, including, in relation to both the operation and construction phases of the project, are summarised in this section.

9.2 Human Beings and Population

The proposed project travels through a region that has experienced continued population growth over the last few years. The route is proximate to the towns and villages of Abbeyleix, Ballinakill, Ballyragget and Ballyroan. The route has, in the main, avoided centres of population.

Economic activity in the general area is principally based around agricultural activities with urban related economic activity occurring in Portlaoise and Kilkenny City. To continue to attract investment (both domestic and foreign) and to support agricultural and rural enterprise, physical infrastructure will continue to play a key role including energy, broadband, and transport.

In addition to the urban areas of Laois and Kilkenny, which have buildings and features of tourism interest, local amenities near the proposed route include; heritage towns, scenic landscape, scenic routes, significant tree groups, high amenity zones, outdoor activities, forestry, rivers and lakes.

There are no significant constraints in relation to human beings. The implementation of appropriate mitigation measures (as described in the sections on Ecology, Landscape and Visual Impact and Cultural Heritage) will ensure there will be no significant residual impact on the environment from the proposed development with regards to Human Beings.

9.3 Landscape and Visual Impact

The renewal of the line south of Ballyagget will give rise to a localised increase in the intensity of the established effect of the existing 110kV line.

The new project will give rise to significant localised changes to the appearance of the immediate vicinity of the substation at Ballyragget.

North of Ballyragget the project will cause localised changes that will be intermittently visible from roads close to the development with limited impacts on the wider landscape. Visibility against the skyline, will be very localised on account of topography and vegetation, particularly from the R342, the environs of Ballinakill or Haywood Demesne.

North of Ballinakill the route crosses some elevated areas that will give rise to some skyline views affecting small numbers of houses or roads. There will be localised effects around Bolybeg Cross Roads after which the route crosses elevated and afforested lands that contain low levels of roads or dwellings. There will be no significant landscape or visual effects on the historic settlement of Timahoe or its environs.

In the general vicinity of Loughteeog and Coolnabacky there will be a locally significant landscape effects due to the combination of the existing 400kV and 110kV lines, the proposed substation and the proposed 400kV link.

9.4 Cultural Heritage

Emphasis was placed on the avoidance of cultural heritage constraints when selecting the location for the substations and designing the proposed overhead line routes.

The design and associated assessment of the archaeology and cultural heritage was carried out having regard to the *Code of Practice between EirGrid and the Department of the Environment, Heritage and Local Government (DoEHLG) (2009)*.

No profound or significant impacts on the archaeological, architectural or cultural heritage along the proposed reinforcement project have been identified. Where potential impacts have been identified they are mainly categorised as ‘slight’ and appropriate mitigation has been recommended in order to minimise any such impact.

9.5 Ecology

A number of ecological reports and surveys have been carried out during the constraints identification and route evaluation stages of the proposed development that have enabled an assessment of the potential ecological impacts of the proposed scheme. These reports and surveys include:

- Ecological constraints report;
- Winter bird surveys undertaken over two seasons (January 2010 – April 2010 and October 2010 - April 2011);
- Ecological assessment of potential route corridors and route selection;
- Ecological Assessment of potential substation site options and site selection; and

- Assessment of preferred route corridor which included multidisciplinary walkover surveys of line routes and substation sites associated with the development.

A description of the existing ecological environment surrounding the proposed development (divided into eight individual components or units) is presented, paying particular attention to features of ecological interest.

Most of the lands that are present within the substation sites and along the line routes are of low ecological value with few areas of semi-natural habitat recorded. The ecological characteristics of the four line routes, substation sites and surroundings are evaluated and features and areas of particular ecological sensitivity identified.

Those features of particular interest in the surrounding area are associated with the River Barrow and River Nore candidate Special Area of Conservation (a designated site).

The potential impacts of the proposed development on this and other European sites in the surrounding area have been assessed in the form of a Natura Impact Statement (NIS). The NIS concluded that should the proposed mitigation measures be adhered to throughout the project, the ecological integrity of the European site will not be adversely affected by the proposed development.

The potential impacts of the project on the ecology of the study area are likely to be imperceptible if proposed mitigation measures are implemented during the construction and operation phases..

9.6 Soils and Geology

The assessment was carried out according to the methodology specified by the Environmental Protection Agency (EPA) and the Institute of Geologists of Ireland (IGI).

According to the GSI, there is 1 no. site of geological interest that lies within the vicinity of the proposed Coolnabacky substation (located 250m to the south) - Timahoe Eskers, Co. Laois - Esker ridges.

There are three sites of geological interest in the vicinity of the proposed line route. These are Ballyragget Quarry, Dunmore Cave and the Kyle Spring.

Potential short term impacts during the construction phase include activities associated with the excavation, handling, storage, transport and re-use of soils, subsoils, bedrock and contaminated materials (if present), foundations for substations, temporary paving or compaction of soils, temporary construction of tracks and traffic management procedures.

The design of the proposed substations and line routes has taken account of the potential impacts on the soils and geology local to the area where construction is taking place. Measures have been incorporated into the design to mitigate the potential effects on the surrounding soils and geology. A broad outline of the contents of the Construction and Environmental Management Plan (CEMP) is provided in the Environmental Report.

The implementation of the mitigation measures will ensure that the soils and geology environment is not adversely impacted during normal and/or emergency conditions and that the impact will be short term - imperceptible.

9.7 Hydrology and Hydrogeology

The assessment was carried out according to the methodology specified in Environmental Protection Agency (EPA) guidance documents and included a review of all necessary site investigation reports, water related guidance, policy documents, legislation and databases.

The key civil engineering works involve the excavation of material for foundations and deliveries of imported engineering fill, crushed stone, concrete, reinforcement and other construction materials. Other construction activities will include site storage of cement and concrete materials, oils and fuels. Existing access tracks will be utilised. The potential impacts in relation to water include the following:

- Increased runoff and sediment loading
- Contamination of local water courses and groundwater
- Diversion/Erosion of local watercourses
- Flood Risk
- Dewatering/localised alteration of groundwater flow, rate and direction

The design of the proposed substations and line routes has taken account of the potential impacts of the developments on the water environment local to the area where construction is proposed. Measures have been incorporated in the design to mitigate the potential effects on the surrounding water environment and these are described in the ER. A broad outline of the contents of the Construction and Environmental Management Plan (CEMP) is provided in the Environmental Report.

The implementation of the mitigation measures will ensure that the water environment is not adversely impacted during normal and/or emergency conditions and that the impact will be short term - imperceptible.

9.8 Material Assets

9.8.1 Traffic

Transportation consultants were commissioned to carry out a Haulage Assessment Report for the transportation of abnormal loads of two transformers to the site at Coolnabacky. A feasibility study was also carried out on the entrance and access routes to site at Coolnabacky and also at Ballyragget station.

The percentage increase in traffic due to development is low in relation to current traffic volumes. In general, it is not anticipated that there will be any significant impacts on the existing traffic flow as a result of this development. Predicted impacts will primarily occur during the construction phase of the project but these will be short-term in nature.

To facilitate electricity cable laying under the R432 to Ballyragget substation, temporary disruption of traffic flow will be required and a Traffic Management Plan will be put in place to minimise potential impacts on road users and ensure safety. A Traffic Management Plan will be prepared and included as part of the Construction Environmental Management Plan (CEMP). This will document traffic activities surrounding any potential part closure of roads and govern site access activities and abnormal loads.

It is not anticipated that the presence of additional heavy vehicles associated with the construction of the development will decrease road safety, from current trends, along the roads surrounding proposed development sites. The impact of overhead line construction on traffic flows generally is not significant. Construction impacts will be short term and peaks in activity will be for short durations only. Additional traffic volumes for the construction of each angle mast and poleset will be very low and for a very limited duration.

At operational phase, the substations will generally be unmanned therefore traffic will be limited to a relatively small number of personnel for maintenance and servicing requirements at substations with infrequent visits to the sites.

The implementation of the mitigation measures will ensure that traffic is not adversely impacted during normal and/or emergency conditions and that the impact will be short term - imperceptible.

9.8.2 Water Supply and Effluent Treatment

Water requirements will be imported by tanker for construction works at Coolnabacky substation. It is proposed to meet the long term water demand from the substation from the local groundwater resource through a bored well. As the substation is unmanned, except for routine maintenance works, the expected demand will be significantly lower than domestic demands. At the site in Ballyragget, the proposal is to connect to the existing water mains along the R432 road adjacent to the site subject to permission from the Local Authority.

A holding tank is proposed to collect sewage effluent from sanitary facilities at Coolnabacky. This will be emptied and disposed off by a licensed waste contractor at regular intervals. During construction works at the Ballyragget site, foul sewage tanks/facilities will be made available by the contractor. These will be emptied and disposed off by a licensed waste contractor at regular intervals. A wastewater treatment system comprising septic tank and percolation area is proposed at Ballyragget as a permanent system for the station.

9.8.3 Waste

Waste generated from construction activities will be sent to licensed facilities where recycling will occur where possible. Waste generated in the operational phase will be removed off site by licensed contractors for appropriate treatment/disposal at licensed facilities.

The implementation of the mitigation measures will minimise waste generation and ensure it is disposed of by licensed waste contractors.

9.9 Air and Climate

9.9.1 Air Emissions

The primary existing source of air emissions at substation sites comes from passing traffic, including farm machinery, natural land use and HGV's with the exception of Ballyragget, where an additional source of air emissions is the Glanbia plant.

Short term impacts on local air quality will arise from construction related emissions but the overall impacts on air quality will be negligible both in the national context and in the immediate receptor area.

The main potential impact to air quality at construction sites will come from dust which could potentially have an effect on aesthetic surroundings or cause a nuisance due to reduced visibility, soiling of gardens, buildings or vegetation and impairment of air quality.

During the construction phase site works for the substations, dust and emissions associated with construction vehicles and equipment will be short term and can be controlled using good site practice during the construction phase.

The implementation of the mitigation measures will ensure minimisation of potential sources of dust and air emissions from construction vehicles.

9.9.2 Noise

The construction phase will involve earthworks on sections of the site and the erection of new buildings which will give rise to localised elevated noise levels. This impact is considered relatively short-term in nature. The primary source of noise in the operational context will be the noise emission from the mechanical and services plant associated with the development, i.e. transformer noise and other mechanical and electrical services.

During erection of the lines, there may be additional noise on a small scale at localised pole sites or tower sites along the line route, however, since such activities are confined to daylight hours and are for a short duration and in compliance with the NRA Guidelines, these temporary increases in noise levels will not be excessively intrusive.

Once the substations have been commissioned, noise is emitted by much of the equipment in the station such as switchgear (circuit breakers and disconnects) and alarms. Many of the noises associated with this equipment are typically of short duration and individually they would be unlikely to cause significant annoyance.

Measured noise levels at the nearest noise locations in the area indicate that these levels are generally higher than currently existing levels at the proposed substation site. This is due to existing road traffic near the residences whereas the proposed substation site is more remote. Noise modelling of the substation site indicates the noise from the substation will not increase the existing background level at the residences and no significant impact is predicted to occur.

Noise from overhead lines can be generally classed as either aeolian (wind-induced) noise, corona (electrically-induced) noise or from gap sparking. Gap sparking occurs at tiny electrical separations (gaps) that develop between mechanically connected metal parts which give rise to electrical noise. Gap sparking can develop at any time on power lines at any voltage and is monitored by the network. Corona noise is not expected to give rise to complaints. Aeolian noise rarely occurs on overhead lines and in the unlikely event of it occurring, appropriate mitigation measures will be applied.

Overall the predicted noise impact from the development will be low and is not expected to impact significantly on local dwellings.

9.9.3 Electric and Magnetic Fields

International guidelines for both public and occupational exposure to extremely low frequency (ELF) EMF were issued by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) in 1998 and updated in 2010 (ICNIRP 1998, 2010) and by the International Committee on Electromagnetic Safety (ICES) in 2002. In Ireland, the Communications Regulator and the Commission for Energy Regulation have adopted the 1998 ICNIRP guidelines (DCMNR, 2007). The EMF produced by transmission lines in this project are all below the limits, i.e., the Basic Restriction Levels, recommended by these international organisations.

9.10 Conclusions

The Environmental Report has identified potential adverse environmental impacts. Many of these arise at construction stage. Almost all of these can be mitigated through implementation of a detailed Construction and Environment Management Plan (CEMP), which will be prepared in respect of the proposed development, in the event that planning

approval is granted. A broad outline of the contents of the CEMP is provided in the Environmental Report.

Impacts which remain following implementation of mitigation measures are referred to as residual impacts. These relate mainly to visual impacts with some negligible ecological impacts. The purpose of identifying residual impacts allows the consenting authority to determine whether all reasonable efforts have been made to minimise adverse effects, having regard to the stated need to develop this strategic transmission infrastructure in the area, and whether the residual effects are compatible with the proper planning and sustainable development of the area. In this regard, it must be noted that the extensive process of determining the final proposed development, following the stages of the Project Development and Consultation Roadmap, and including significant public, landowner and stakeholder consultation and engagement, is in itself a key mitigation measure, as it allows for the identification and avoidance of potentially sensitive receptors.

Finally, it allows the consenting authority to decide whether any remaining environmental impacts are proportionate to the benefits of the project.

10 Planning Assessment

10.1 Introduction

This section provides the applicant's assessment of the proposed development in relation to national, regional and local planning policies and objectives, in order to ascertain whether it is consistent with the proper planning and development of the area. The key areas of the assessment relate to visual and landscape impacts, human health, ecology and cultural heritage.

10.2 National

The relevant sections of the National Development Plan 2007 – 2013, The National Spatial Strategy 2002 – 2020, the Government White Paper "Delivering a Sustainable Energy Future for Ireland" and Grid25 have been outlined in Chapter 4 of this report.

Planning policies and objectives at national level generally support the development of the energy transmission grid as it is recognised that this is a key element of infrastructure and is necessary for economic growth.

The proposed Laois-Kilkenny Reinforcement Project is therefore consistent with national policies and objectives.

10.3 Regional

The relevant sections of the Regional Planning Guidelines for the South-East Region 2010 – 2022 and the Regional Planning Guidelines for the Midland Region 2010 – 2022 have been outlined in Chapter 4 of this report.

Planning policies and objectives at a regional level generally support the development of the energy transmission grid in the midlands and south east, as it is recognised that this is a key element of infrastructure necessary for economic growth. The policies of the midland RPG also note the importance of the sustainable development of infrastructure required to assist the region to make the transition from peat to renewable energy.

The proposed Laois-Kilkenny Reinforcement Project is therefore consistent with regional policies and objectives.

10.4 Local

County Development Plans (CDP) are the most relevant plans in terms of assessing whether the proposed development is consistent with the proper planning and sustainable development of the area. The proposed development will be located in Laois and Kilkenny therefore it is important to note the planning policy and objectives contained in both CDP.

10.4.1 Laois County Development Plan 2011 – 2017

The relevant sections of the Laois County Development Plan 2011 – 2017 have been outlined in Chapter 4 of this report.

Specific policies and objectives relating to energy networks, energy transmission and power lines are included in the CDP. A number of policies and objectives outline that the council

will encourage and facilitate the development of energy infrastructure where it is consistent with the proper planning and sustainable development of the County subject to compliance with environmental legislation.

The Stage 1 and Stage 2 Lead Consultants Reports and the Environmental Report have outlined why this development is required, how the route proposed has been chosen with due regard for social, economic environmental and cultural impacts. The Environmental Report describes the potential impacts on the environment arising from the proposed development, that the proposed development will not have any negative impacts on the environmental vulnerabilities and sensitivities outlined in the plan.

The proposed development is in accordance with the relevant policies and objectives contained in the Laois County Development Plan 2011 – 2017.

10.4.2 Kilkenny County Development Plan 2008-2014 and

The plan recognises the importance of energy availability to facilitate development in its functional area. The CDP outlines the support of the County Council for infrastructure renewal and the development of electrical networks such as overhead lines in the region subject to amenity and health considerations.

The proposed Laois-Kilkenny Reinforcement Project development has been designed to ensure environmental impacts are minimised and the Environmental Report describes this process.

The proposed development is in accordance with the relevant policies and objectives contained in the Kilkenny County Development Plan 2008 – 2014.

10.4.3 Kilkenny City and Environs Development Plan 2008-2014

The proposed development will be located adjacent to the boundary of the Kilkenny City and Environs Development Plan. The City and Environs Development Plan recognises the importance of energy availability to facilitate proposed development in the plan area. The plan also outlines that the Councils recognise and support the development of a suitable network in the South-East region which is suitable for planned and proposed development in the region subject to amenity and health considerations.

The proposed Project development has been designed to ensure environmental impacts are minimised and the Environmental Report describes this process.

The proposed development is in accordance with the relevant policies and objectives contained in the Kilkenny City and Environs Development Plan 2008 – 2014.

10.5 Need for the Project and Alternatives

10.5.1 Need

The need for the project has been outlined in the Stage 1 – Lead Consultants Report and in this Planning Report in Chapter 2. The project is required to address future impending constraints on the transmission network in the Midlands and South-East region.

10.5.2 Alternatives

Alternative project solutions have been examined at both a strategic level and a local level, these are detailed in Chapter 2 and 7 of this report. Strategic and local level project alternatives have also been examined in the Stage 1 and Stage 2 Reports of the EirGrid

Project Development and Consultation Roadmap which are attached to Appendix 1 and 2 of this report.

10.5.2.1 Technical

Consideration has been given to:

- A combination 400 kV and 110 kV reinforcement option - A 220/110 kV injection point at Dunstown 400/220 kV station. New 110 kV circuits: Dunstown Monread 110 kV circuit; Dunstown Pollaphuca 110 kV circuit; and Carlow – Kilkenny 110 kV circuit.
- 110 kV reinforcement option - New 110 kV circuits: Maynooth Monread 110 kV circuit; Carlow Kilkenny 110 kV circuit; and Kilkenny Lisheen via Ballyragget 110 kV circuits.
- A combination of 220 kV and 110 kV reinforcements - a new 220/110 kV station in Kilkenny looped into the existing Great Island Kellis 220 kV line; new 110 kV circuits: Carlow Portlaoise 110 kV circuit; and Maynooth Monread 110 kV circuit. The proposed development being submitted for planning approval emerged from the strategic assessment of alternatives as being the most viable option. The sites were evaluated against a wide range of topics to determine the best location for the proposed substation.

10.5.2.2 Substation Locations

Nine potential candidate sites within the substation study area were considered for proposed Coolnabacky substation. The candidate sites were environmentally assessed and Site No.4 (the proposed site) emerged from the assessment process as being the optimal site to meet the requirements of the project whilst having the lowest potential impacts on the environment.

10.5.2.3 Overhead Lines

Overhead line design is an iterative process. In line routing terms, whilst the shortest distance between two points would be theoretically preferable, environmental and technical constraints generally make this difficult to achieve.

A study area was initially identified where the proposed development could be located. A number of potential corridors were identified within the study area where the line could be located.

These potential corridors were subjected to environmental and technical assessment. A route corridor emerged as the preferred corridor as it would create the least environmental impacts.

This corridor was the subject of extensive consultation with stakeholders including the public and statutory agencies. Amendments were made to this corridor in response to consultation. An overhead line route within this corridor was initially designed having regard to environmental issues and issues which were raised in consultation. Refinements were made to this line route as design and consultation progressed.

10.5.2.4 Conclusions in Relation to Circuit Design

Having regard to achieving the technical objectives for the project and the alternatives considered, the final circuit design which is being submitted for approval is considered to represent the best balance between all competing constraints.

11 Conclusions

Having regard to the following:

a) the provisions of the National Development Plan 2007 – 2013;

b) the provisions of the National Spatial Strategy for Ireland 2002-2020, which seeks to strengthen electricity networks in the region;

c) the provisions of the Government White Paper "Delivering a Sustainable Energy Future for Ireland – The Energy Policy Framework 2007 – 2020";

d) the provisions of GRID 25, EirGrid's transmission network development policy;

e) the provisions of South-East Regional Authority, Regional Planning Guidelines for the South-East Region 2010 – 2022;

f) the provisions of the Midland Regional Authority, Regional Planning Guidelines for the Midland Region 2010 – 2022;

g) the provisions of the Laois County Development Plan 2011 – 2017;

h) the provisions of the Kilkenny County Development Plan 2008 – 2014;

i) the provisions of the Kilkenny City and Environs Development Plan 2008 – 2014;

j) the demonstrated need for the proposed development in improving infrastructure provision in the region; and

k) the mitigation measures identified in documentation submitted with the application, including the Environmental Report and the Natura Impact Statement.

It is considered that the need for the proposed development has been demonstrated and that, subject to compliance with the mitigation measures and any conditions attached by An Bord Pleanála, the proposed development would not seriously injure the amenities of the area or of property in the vicinity, would not be prejudicial to public health or safety, would be acceptable in terms of traffic safety and convenience, would be acceptable in terms of visual amenity and would not be detrimental to the setting of any recorded archaeological monuments. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Appendix No. 1 - Stage 1 Lead Consultant's Report

Report No.: PE687-F0261-R261-007-000

Appendices to this Stage 1 Report are Contained on the CD Version of this Application.

These should be read for a full understanding of the project.

Appendix No. 2 - Stage 2 Lead Consultant's Report

Report No.: PE687-F0261-R261-010-002

Appendices to this Stage 2 Report are Contained on the CD Version of this Application.

These should be read for a full understanding of the project.