

# LAOIS-KILKENNY REINFORCEMENT PROJECT

## STAGE 2 LEAD CONSULTANT'S REPORT

IDENTIFICATION OF PREFERRED SUBSTATION SITE,  
PREFERRED ROUTE CORRIDOR AND INDICATIVE LINE ROUTE



FEB 2012





**File Reference:** PE687-F261

**Client / Recipient:** EirGrid

**Project Title:** Laois - Kilkenny Reinforcement Project

**Report Title:** Stage 2 - Lead Consultant's Report – Identification of preferred substation site, preferred route corridor and indicative line route

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

**Rev. No.:** 002

**Volume** 1 of 1

**Prepared By:** S. McLoughney

**Title** Consultant Project Manager, MSc Spatial Planning

**Verified By:** B. Allen

**Title** Senior Overhead Line Planner

**Approved** B. Dee

**Title** Team Leader, Spatial Planning Unit

**Date** Feb 2012

COPYRIGHT © ESB INTERNATIONAL LIMITED  
ALL RIGHTS RESERVED, NO PART OF THIS WORK MAY BE MODIFIED OR REPRODUCED OR COPIES IN ANY FORM OR BY ANY MEANS - GRAPHIC, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, TAPING OR INFORMATION AND RETRIEVAL SYSTEM, OR USED FOR ANY PURPOSE OTHER THAN ITS DESIGNATED PURPOSE, WITHOUT THE WRITTEN PERMISSION OF ESB INTERNATIONAL LIMITED.



**CONTENTS**

<b>1.0</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	REPORT CONTEXT	1
1.2	THE PURPOSE OF THIS REPORT	3
1.3	SUMMARY OF THE STAGE 1 PROCESS	3
	<b>PART A</b>	
<b>2.0</b>	<b>CONSULTATION ON THE STAGE 1 REPORT</b>	<b>6</b>
2.1	STATUTORY & NON STATUTORY STAKEHOLDERS & AGENCIES	7
2.2	PUBLIC	7
2.3	FEEDBACK RECEIVED	8
2.4	RESPONSES FROM KEY STAKEHOLDERS AND AGENCIES	8
2.5	THE PUBLIC	10
<b>3.0</b>	<b>PROPOSED SUBSTATIONS</b>	<b>11</b>
3.1	PROPOSED TECHNOLOGY	11
3.2	PROPOSED 400/110 KV SUBSTATION SITE	11
3.3	PROPOSED 110 KV SUBSTATION SITE AT BALLYRAGGET	12
3.4	PROPOSED AMENDMENTS TO KILKENNY 110 KV SUBSTATION	13
<b>4.0</b>	<b>MODIFICATIONS TO ROUTE CORRIDORS</b>	<b>14</b>
4.1	MODIFICATION 1	14
4.2	MODIFICATION 2	16
4.3	OTHER CONSIDERATIONS	16
<b>5.0</b>	<b>ROUTE CORRIDOR EVALUATION</b>	<b>19</b>
5.1	METHODOLOGY	19
5.2	ROUTE CORRIDOR CLASSIFICATION	20
5.3	COMPARATIVE EVALUATION CRITERIA	22
<b>6.0</b>	<b>LEAD CONSULTANT'S CONCLUSION (PART A)</b>	<b>25</b>
	<b>PART B</b>	
<b>7.0</b>	<b>CONSULTATION AND LANDOWNER ENGAGEMENT</b>	<b>27</b>
7.1	SELECTION OF AN INDICATIVE LINE ROUTE	27
7.2	PUBLIC CONSULTATION AND LANDOWNER ENGAGEMENT	27
7.3	MODIFICATIONS MADE TO THE PRELIMINARY INDICATIVE LINE	28
<b>8.0</b>	<b>400 AND 110 KV CONNECTIONS TO COOLNABACKY SUBSTATION</b>	<b>30</b>
8.1	400 KV CIRCUITS INTO THE PROPOSED COOLNABACKY SUBSTATION	30
8.2	110 KV CIRCUITS INTO THE PROPOSED COOLNABACKY SUBSTATION	33
<b>9.0</b>	<b>LEAD CONSULTANT'S CONCLUSIONS (PART B)</b>	<b>35</b>
<b>10.0</b>	<b>ENVIRONMENTAL IMPACT ASSESSMENT AND APPROPRIATE ASSESSMENT SCREENING REPORTS</b>	<b>36</b>
10.1	SCREENING REPORT FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA)	36
10.2	SCREENING REPORT FOR APPROPRIATE ASSESSMENT (AA)	36
<b>11.0</b>	<b>NEXT STEPS</b>	<b>37</b>

## Figures

Figure 1.1	Laois-Kilkenny Reinforcement Project Planning Application - Project Roadmap
Figure 1.2	Coolnabackey 400/110 kV Substation Site
Figure 1.3	Single Circuit 110 kV Overhead Line Design
Figure 1.4	Emerging preferred 110 kV Line Route Corridor
Figure 3.1	Illustration of a 400/110 kV GIS substation
Figure 3.2	Proposed 400/110 kV substation site
Figure 3.3	Ballyragget 110 kV proposed substation site
Figure 3.4	Kilkenny 110 kV substation site
Figure 4.1	Line route corridor before and after modification
Figure 4.2	Map issued by the GSI showing the extent of Timahoe Esker
Figure 4.3	Line route corridor before and after modification
Figure 4.4	Proposed 400 and 110 kV route corridors before modifications (Emerging Preferred Corridors)
Figure 4.5	Proposed 400 and 110 kV line route corridors (Preferred Route Corridors)
Figure 5.1	Route Corridor Alternatives identified in the Stage 1 Report
Figure 6.1	Preferred Route 400 and 110 kV Route Corridors
Figure 7.1	Preliminary Indicative Overhead line route
Figure 8.1	Typical Line/Cable Interface Compound
Figure 8.2	An existing 400 kV double circuit line close to Moneypoint generating station in County Clare
Figure 8.3	An existing 110 kV single circuit line
Figure 8.4	110 kV line lattice steel angle tower
Figure 11.1	The indicative 400 and 110 kV line routes to progress to Stage 3

## Tables

Table 2.1	Stage 1 Consultation Milestones
Table 2.2	Breakdown of the feedback received from the general public since the launch of the Stage 1 Report up to December 2011
Table 5.1	Route Corridor Appraisal Ratings
Table 5.2	Primary Appraisal for all Route Corridors and Sub-Route Corridors
Table 8.1	Overall comparison of all four methods reviewed for the connecting the Dunstown – Moneypoint 400 kV line

## Appendices

Appendix A	List of Key Stakeholders issued with Consultation Pack
Appendix B	Newspaper Notice
Appendix C	Project Stage 1 Briefing Document
Appendix D	Final winter bird survey
Appendix E	Preliminary Indicative Overhead line route as issued to landowners on August 8th, 2011
Appendix F	Sample of documentation issued to landowners on August 8th, 2011
Appendix G	Pre-Survey Interview Form
Appendix H	Sample of letter issued to landowners who refused access for walkover surveys on initial pre-survey interview
Appendix J	400 kV Overhead Line v Underground Cable Feasibility Study
Appendix K	Line Route to Progress to Stage 3 (Design Stage) without Constraints
Appendix L	Line Route to Progress to Stage 3 (Design Stage) with Constraints
Appendix M	Stage 1 Screening Natura Impact Statement Report

## 1.0 INTRODUCTION

### 1.1 REPORT CONTEXT

EirGrid, the statutory Transmission System Operator, require the Laois - Kilkenny Reinforcement Project in order to reinforce the transmission network in the South East and Midlands regions.

The Transmission System or National Grid is the high voltage electricity system and is made up of a network of lines, cables and substations operating at voltages of 110 kV, 220 kV and 400 kV.

The project is required in order to improve the quality and security of the electricity supply to the region thereby ensuring continued compliance with the Transmission Planning Criteria (the technical standards to which the grid must comply).

The project consists of the following components:

- A new 400/110 kV substation near Portlaoise, County Laois. The existing Athy-Portlaoise 110 kV and Dunstown-Moneypoint 400 kV overhead lines will connect to this new substation.
- A new 110 kV extension to the existing 38 kV substation in Ballyragget, County Kilkenny.
- A new 110 kV circuit between the new 400/110 kV substation near Portlaoise and the new 110 kV substation extension in Ballyragget, Co. Kilkenny.
- Change in operational voltage of the existing Ballyragget-Kilkenny overhead line from 38 kV to 110 kV including necessary works at Kilkenny 110 kV substation.

The process from project initiation through to lodgement of a planning application has been broken into 4 distinct stages, as per the project roadmap shown in Figure 1.1, with each stage having its own principal objective.

It is not intended to rewrite the contents of the Stage1 Report<sup>1</sup> in this Stage 2 Report, other than to present its key findings. As such, for a complete and thorough understanding, this Stage 2 Lead Consultant's Report, prepared by ESB International, should be read in conjunction with the Stage 1 Report available on EirGrid's project webpage:

[www.eirgridprojects.com/projects/laoiskilkenny](http://www.eirgridprojects.com/projects/laoiskilkenny)

Hard copies are also available on request.

This report outlines the key findings since the publication of the Stage 1 Report.

<sup>1</sup> When referring to the Planning Roadmap and associated reports, the term 'Stage' will be used henceforth instead of 'Phase'.

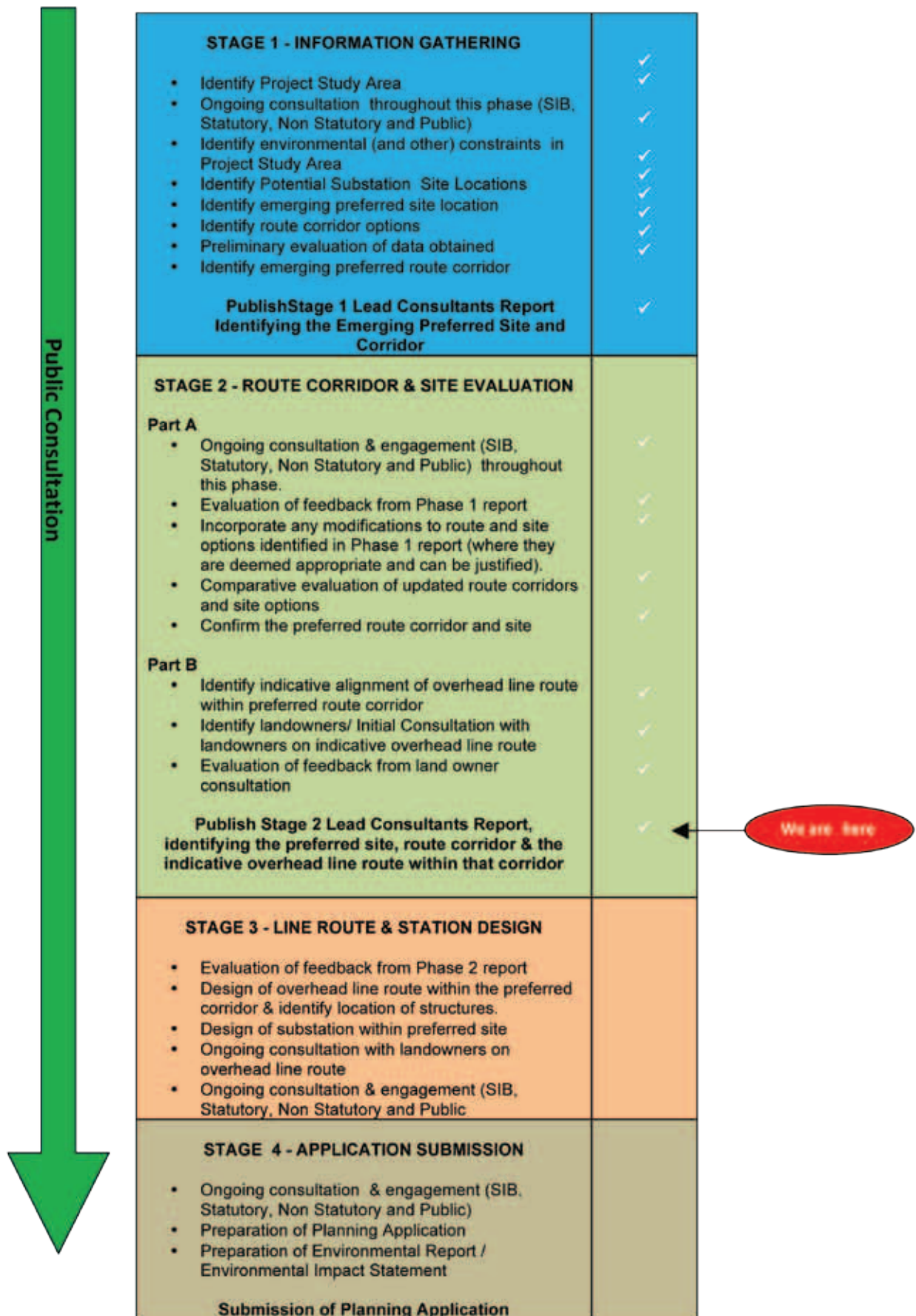


Figure 1.1: Laois-Kilkenny Reinforcement Project Planning Application - Project Roadmap

## 1.2 THE PURPOSE OF THIS REPORT

As can be seen from the Project Roadmap in Figure 1.1, Stage 2 of this project is split into two distinct parts, A & B.

### 1.2.1 PART A

The primary objective of Part A of this Stage 2 report is 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 and the general public) were given the opportunity to review and comment on the Stage 1 process, procedures and conclusions. The Stage 1 report referred to above was published in late May 2011 and was the primary context within which this consultation 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 Part A is that the emerging preferences identified in Stage 1 become preferences.

### 1.2.2 PART B

The primary objective of Part B of this report is to present an indicative line route within the preferred corridor and to outline 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 indicative line route. The indicative line route identified in Section 9 of this Stage 2 Report represents what the project team consider to be the most appropriate option, having regard to all technical, environmental and community criteria and to public and landowner consultation and engagement.

## 1.3 SUMMARY OF THE STAGE 1 PROCESS

The Stage 1 process of information gathering consisted of the following steps:

- Presented the need for the project;
- Established a study area for the project;
- Identified environmental and other constraints within the defined study area;
- Identified the preferred substation technology for the 400/110 kV substation;
- Identified an emerging preferred 400/110 kV substation site;
- Identified potential route corridor options for the project within the defined study area;
- Evaluated the various corridor options, having regard to environmental and engineering constraints;
- Identified an emerging preferred corridor for the project within which to route the proposed 110 and 400 kV circuits; and
- Provided the opportunity for public and stakeholder consultation throughout this stage.

The conclusion of the Stage 1 Lead Consultant's Report identified the Lead Consultant's emerging preferred substation site for the 400/110 kV substation and also identified the emerging preferred route corridor for the 110 kV circuit between Laois and Ballyragget.

In summary, the key findings of the Stage 1 report are as follows:

- The **emerging preferred** substation technology for the 400/110 kV substation is GIS (Gas Insulated Switchgear) – built primarily indoors, this is the smallest and most compact substation type. The station compound would be of the order of 3 acres in overall size<sup>2</sup> - see Chapter 3 for further details.
- The **emerging preferred** location for the 400/110 kV site is in the townland of Coolnaback on the southern boundary of the substation study area. It is adjacent to the existing 110 kV overhead line and approximately 1.4 km from the existing 400 kV overhead line (see Figure 1.2).

<sup>2</sup> The size of the compound has been determined following consultations with the GIS equipment manufacturers on the size of the buildings required.





Figure 1.2: Coolnabackey 400/110 kV Substation Site (see red marker on map)

- The **emerging preferred** connection methodology for the 110 kV circuit from Coolnabackey to Ballyragget is single circuit overhead line design (see Figure 1.3).



Figure 1.3: Single Circuit 110 kV Overhead Line Design

The emerging preferred route corridor for the 110 kV overhead line between Coolnabacky and Ballyragget stations is identified in Figure 1.4.



Figure 1.4: Emerging preferred 110 kV Line Route Corridor

## PART A

### 2.0 CONSULTATION ON THE STAGE 1 REPORT

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

The output of these consultations was that the project team were fully informed of key issues and constraints in respect of the **emerging preferences** identified in Stage 1.

The consultation can be broadly categorised as statutory and non statutory stakeholder agencies/bodies and the general public. The principles behind the consultation remain the same for all groups, i.e. to engage in open, honest and meaningful discussion and evaluating and incorporating where possible or appropriate, all suggestions and modifications brought to the attention of or indeed identified by the project team.

Table 2.1 summarises the primary milestones of consultations to date.

Milestone	Date	Purpose	Venue / Newspaper
Newspaper Notice No. 1	26th Oct 2009	Description of Proposed Project & Definition of Study Area	Kilkenny People, Leinster Express, Laois Nationalist, Carlow Nationalist, Kildare Nationalist, Leinster Leader
Newspaper Notice No. 2	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	June 17th & 18th 2010	Provide information to the general public, their public representatives and the media on the proposed project Answer any questions from the public Information gathering	Heritage Hotel Portlaoise & The River Court Hotel Kilkenny
<b>Stage 1 Report Published (May 20th, 2011)</b>			
Newspaper Notice No. 3	May 31st to June 6th 2011	Description of Proposed Project. Advertising Stage 1 Report Advertising Open Days	The Kilkenny People, The Leinster Express, The Offaly Express and The Laois Nationalist.
Open Days 2	June 9th, 10th, 24th & 30th 2011	Provide information to the general public, their public representatives and the media on the proposed project Answer any questions from the public Information gathering	Heritage Hotel Portlaoise, The River Court Hotel Kilkenny & Canon Malone Hall, Ballyragget
Newspaper Notice No. 4	June 22nd to 24th 2011	To promote awareness of project To thank people for inputs received during the consultation on the Stage 1 Report	The Kilkenny People, The Leinster Express The Offaly Express and The Laois Nationalist

Table 2.1: Stage 1 Consultation Milestones<sup>3</sup>

<sup>3</sup> 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

## 2.1 STATUTORY & NON STATUTORY STAKEHOLDERS & AGENCIES

The project team endeavoured to work with key stakeholders and agencies with a view to ensuring that the process of identifying the preferred route corridor and site took into account their particular area of expertise and responsibility.

A consultation pack including cover letters, a project briefing document and a copy of the Stage 1 Lead Consultants report (with associated maps) was issued on May 20th 2011. These letters were followed up with phone calls, e-mails and meetings where appropriate.

A list of all those who were issued this documentation is available in Appendix A.

The feedback received is outlined in sections 2.4 and 2.5.

## 2.2 PUBLIC

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, to come up with an optimum solution.

The Stage 2 public consultation process for this project took the form of:

### Newspaper Notices

Upon completion of the Stage 1 Report newspaper notices were taken out in *The Kilkenny People*, *The Leinster Express*, *The Offaly Express* and *The Laois Nationalist* newspapers. The purpose of these newspaper notices was to announce the availability of the report and its key messages, to provide contact details for the project team and also to announce forthcoming Open Days (see Appendix B).

### Briefing Document

A project specific briefing document (May 2011) (see Appendix C) which provided key findings of the Stage 1 report, key dates and also the contact details of the project team was produced.

The briefing document was made available online and was also posted directly to any member of the public that left contact details with EirGrid or any of the project team during the Stage 1 consultations.

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.

### Telephone, Email, Website and Postal

A project specific website [www.eirgridprojects.com/projects/laoiskilkenny](http://www.eirgridprojects.com/projects/laoiskilkenny) is maintained which facilitated access to project data as well as providing updates as and when they occurred. A dedicated email address was established for the project and a telephone number and postal address was provided for people to contact the project team directly.

### Public Information Days

Public information days were held in the River Court Hotel in Kilkenny City on 9th June 2011, the Heritage Hotel in Portlaoise on 10th June 2011, and in Canon Malone Hall in Ballyragget on the 24th and 30th of June 2011.

The public information days were advertised in *The Kilkenny People*, *The Leinster Express*, *The Offaly Express* and *The Laois Nationalist* newspapers published between 31st May and 6th June 2011. A copy of the newspaper notice is contained in Appendix B. Hard copies of project reports and maps were available at this open day, and remain available on request.

Members of the project team were available at the Open Days to discuss any aspect of the project including such issues as justification, route selection, environmental, health and EMF.

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

- Contact made through e-mail, by letter or telephone.
- All information received made available to all members of the project team for review.
- The Lead consultant liaised with the EirGrid Project Manager to decide on the appropriate course of action.
- A member of the project team contacted the individual concerned and is their personal point of contact for the duration of the project.
- The project team were (and continue to remain) available to meet on request.

## 2.3 FEEDBACK RECEIVED

Following the publication of the Stage 1 Report in late May a period of approximately 5 weeks (up to the 24th June 2011) was allocated for all stakeholders to make submissions to the project team. Meetings were also held with various statutory and non statutory stakeholders during this time.

The review and analysis of all feedback received throughout the consultation period is important for the project team.

The project team must assess if any of the feedback causes:

Need for alternatives to, or modification of the project; or

Evaluation of proposed network i.e. minor deviations or the use of alternative routes submitted.

Table 2.2 is a breakdown of the feedback received from the general public since the launch of the Stage 1 Report up to December 2011.

Open Day Kilkenny	Open Day Portlaoise	Open Days Ballyragget	E-mails	Letters	Phone Calls
8 Visitors	24 Visitors	8 Visitors	28	2	4

Table 2.2: Breakdown of the feedback received from the general public since the launch of the Stage 1 Report up to December 2011

Section 2.5 describes a more detailed description of the response from the general public.

## 2.4 RESPONSES FROM KEY STAKEHOLDERS AND AGENCIES

Fifty stakeholder agencies were issued copies of the consultation pack on May 20th, 2011. EirGrid and ESBI received replies from 10 of these agencies. The following is a brief description of their replies.

### 2.4.1 AN BORD PLEANÁLA

An Bord Pleanála acknowledged receipt of the Stage 1 Report (by letter dated 30th May 2011) and advised that it was their opinion that *“the next pre-application consultation meeting should take when a preferred route option has been identified”*.

### 2.4.2 KILKENNY COUNTY COUNCIL

A meeting was held with Kilkenny County Council planners in the County Council offices on June 28th 2011. EirGrid and ESBI gave the Kilkenny County Council planners an overview of the project. Kilkenny County Council requested that they are to be kept informed of the proposed development.

### 2.4.3 KILDARE COUNTY COUNCIL

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”*.

### 2.4.4 NATIONAL PARKS AND WILDLIFE SERVICE (NPWS)

The NPWS were contacted by the project ecologist. From this correspondence the project team were made aware that the River Nore was recently 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 information on this can be seen in section 4.3.2.

### 2.4.5 NATIONAL ROADS AUTHORITY (NRA)

A letter was received from the National Roads Authority (dated 29th 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.

### 2.4.6 INLAND FISHERIES IRELAND

A letter from Inland Fisheries Ireland (formally Central Fisheries Ireland) 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.

### 2.4.7 FÁILTE IRELAND

A meeting was held with Fáilte Ireland on June 16th 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.

### 2.4.8 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."*

### 2.4.9 KILKENNY STRATEGIC POLICY COMMITTEE

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.

#### **2.4.10 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 (see Figure 4.2).

#### **2.4.11 OFFICE OF THE MINISTER FOR AGRICULTURE, FISHERIES AND FOOD**

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

### **2.5 THE PUBLIC**

There has been a steady response from the general public which has continued past the official consultation period end date of the 30th June 2011. In addition to general queries, expressions of objection were received. Table 2.2 lists the correspondence received to date. 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.

Contact with the project team was in most cases initially made through the project e-mail, details of which were publicised on the project briefing document. Phone calls were the next preferred method of communication. Post was the least used method.

The main submission themes from the public were:

- Health and Safety issues, including electromagnetic fields (EMF);
- Landscape and visual impact;
- Need for the project; and
- Undergrounding the 400 and 110 kV connections.

### 3.0 PROPOSED SUBSTATIONS

#### 3.1 PROPOSED TECHNOLOGY

The Stage 1 report identified Gas Insulated Switchgear technology (GIS) as the emerging preferred technology for the 400/110 kV substation. This technology allows for a smaller compound which generally has less visual impact in its setting. The substation compound will be approximately 3 acres in overall area with the 400 kV and 110 kV switchgear being housed in moderately sized buildings as can be seen in Figure 3.1.

It is planned to use Mixed Technology Switchgear (MTS) as the preferred technology for the Ballyragget 110 kV substation. This technology is a form of outdoor GIS technology and takes up less space than the more commonly used Air Insulated Switchgear technology (AIS). Kilkenny is an AIS station and the bay used here will be AIS.

No submissions were made in relation to the planned technology and currently EirGrid and ESB International are in consultations with manufacturers in relation to finalising the layout of the planned substation.



Figure 3.1: Illustration of a 400/110 kV GIS substation

#### 3.2 PROPOSED 400/110 KV SUBSTATION SITE

After the iterative site selection process which is documented in the Stage 1 report, the emerging preferred (considered the least constrained) site was established in the southern portion of the substation study area (see Figure 3.2), in the townland of Coolnaback. It is approximately 1.4km southeast of the existing 400 kV overhead line and is located in an isolated area close to a disused quarry. The landholding has good topographical enclosure and good screening vegetation. There are a low number of dwellings in the immediate vicinity and the site is accessed from an existing quarry road, with good screening from the R426 and R427 roads.





Figure 3.2: Proposed 400/110 kV substation site (see red marker on map)

The site is the starting point for the line route corridors to Ballyragget (for the 110 kV route corridors) and to the existing Dunstown – Moneypoint 400 kV line (for the 400 kV route corridor).

### 3.2.1 PROPOSED 400/110 KV SUBSTATION NAME

All substations around Ireland are given a name. Generally a name is chosen based on the substation location. In this case the proposed 400/110 kV substation is in the townland of **Coolnabacky**. This name has been chosen as the name for the substation and will be referred to as such henceforth.

### 3.3 PROPOSED 110 KV SUBSTATION SITE AT BALLYRAGGET

It is proposed to construct a 110 kV substation behind the existing 38 kV substation in Ballyragget. The land behind the existing 38 kV station is ESB owned and is of sufficient size to accommodate the proposed 110 kV MTS substation (see Figure 3.3).

Two 110 kV lines will connect to the substation extension, one proposed new line (from Coolnabacky 400/110 kV substation) and one from the existing line (the existing 38 kV line from Ballyragget to Kilkenny which is constructed to 110 kV standards). In the case of the Ballyragget – Kilkenny line approximately 600 metres of this line out of Ballyragget substation will need to be realigned as this section is not designed to 110 kV standards.



Figure 3.3: Ballyragget 110 kV proposed substation site

### 3.4 PROPOSED AMENDMENTS TO KILKENNY 110 KV SUBSTATION

A new 110 kV bay and associated works to accommodate the Ballyragget connection is planned for Kilkenny 110 kV substation (see Figure 3.4). This work will primarily be carried out within the substation. This work will include the realignment of part of the existing Ballyragget 38 kV line close to the substation and some decommissioning work.



Figure 3.4: Kilkenny 110 kV substation site

## 4.0 MODIFICATIONS TO ROUTE CORRIDORS

The purpose of this section is to describe modifications made to any of the route corridors subsequent to publication of the Stage 1 Report. Minor modifications to the route corridor at this stage of the project are normal and typically arise as a result of a number of factors including:

- 1 Aerial survey and roadside review of the route corridor selected in Stage 1 of the project by the Lead Consultant;
- 2 Feedback received from key stakeholders, agencies or the general public participation in the consultation processes; and
- 3 Any modifications required to the emerging preferred corridor following preliminary identification of an overhead line route.

As mentioned above, as part of the consultation process the project team were open to feedback from local residents and landowners regarding the routing of the corridor in their locality. It was however stated clearly in all discussions that no route corridor modification would be likely to occur if the move would have a greater negative environmental effect, i.e. no route corridor would be modified without the modification making a neutral or positive and beneficial contribution to the overall project.

Two modifications were made to the emerging route corridor subsequent to the publication of the Stage 1 Report.

### 4.1 MODIFICATION 1

Modification to the width of the emerging preferred corridor between nodes 9-10. The corridor was widened by approximately 600 metres to accommodate a route of the 110 kV overhead line out of the 400/110 kV station location. This line route was influenced by the extent of Timhoe Esker proposed Natural Heritage Area (pNHA), which is also a Nature Reserve as well as the proximity of Timahoe town and the ribbon development associated with that town. The Geological Survey of Ireland (GSI) identified the area between nodes 9 and 10 as an area of geological significance due to the extent and presence of Timahoe Esker, see section 4.1.1. Figure 4.1 shows the line route corridor before and after the modification – the amendment arising from the modification is illustrated in purple.

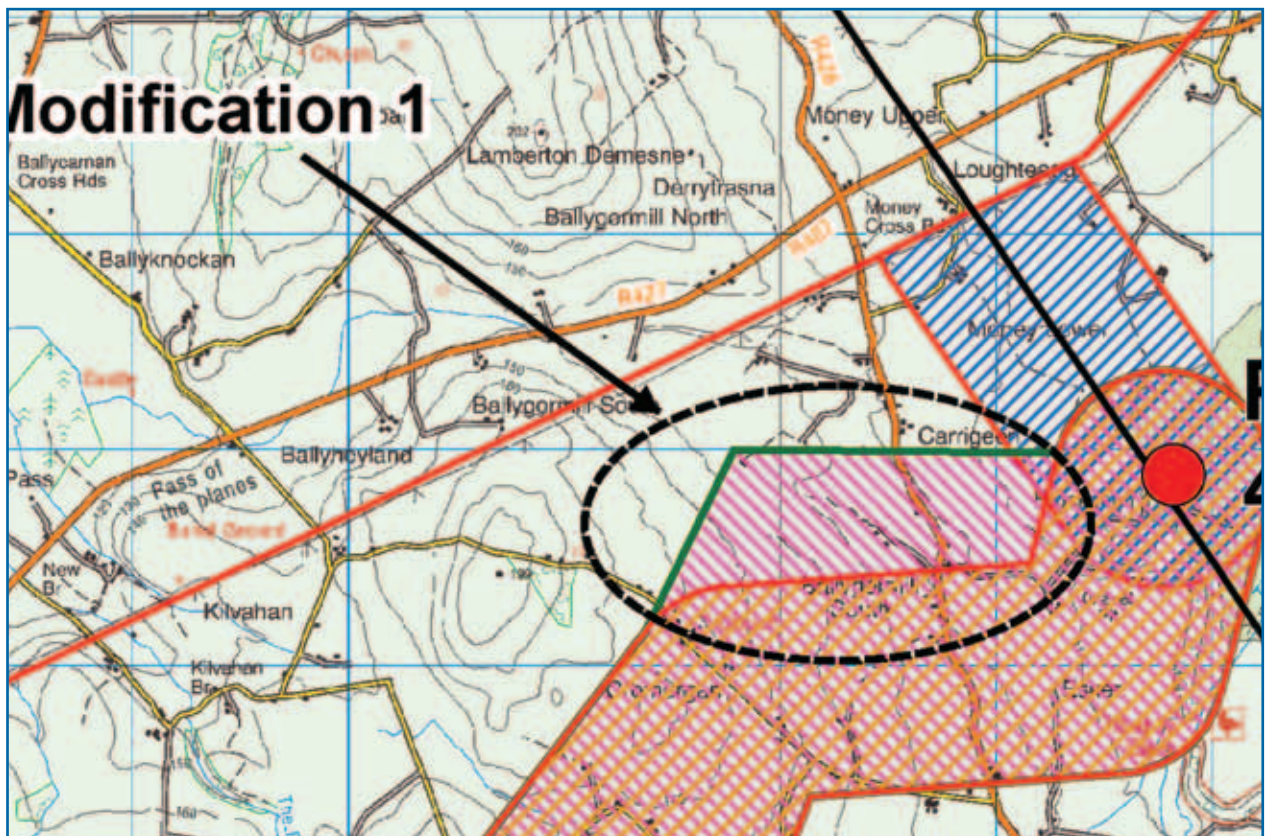


Figure 4.1: Line route corridor before and after modification

### 4.1.1 ROUTE CORRIDOR MODIFICATION DUE TO TIMAHOE ESKER

The Geological Survey of Ireland (GSI) submitted a map (Figure 4.2) which identified the Timahoe Esker as an area of geological significance as part of the GSI's Irish Geological Heritage Programme. ESB had previously identified the Esker, however the extent and significance of it was not fully defined. The route corridor was reviewed and expanded to allow for the routing of a line that could avoid the Esker.



Figure 4.2: Map issued by the GSI showing the extent of Timahoe Esker

### 4.1.2 ENVIRONMENTAL CONSULTANTS REVIEW OF MODIFICATION DUE TO TIMAHOE ESKER

As this modification represented a change to the original emerging preferred corridor as identified in Stage 1 Report, the environmental consultants were asked to assess the modification at node 9-10.

#### 4.1.2.1 HUMAN BEINGS

The Human Beings consultants assessed the modification and concluded that the modification could have a positive effect as the final line route has the potential to have less impact on Timahoe town and its associated population centre and dwellings.

#### 4.1.2.2 CULTURAL HERITAGE

The Cultural Heritage consultants assessed the modification and concluded that no changes to their submitted reports were required, as the potential impacts have already been described.

#### 4.1.2.3 LANDSCAPE

The Landscape consultant assessed the modification and concluded that no changes to their submitted reports were required, as the potential impacts have already been described.

#### 4.1.2.4 ECOLOGY

The Ecology consultant assessed the modification to the line route corridor and concluded that from an ecological perspective, the modification could have a positive effect as the final line route has the potential to have less impact on Timahoe Esker part of which is a pNHA and Nature Reserve.

### 4.1.2.5 SOILS & GEOLOGY

The Soils and Geology consultant assessed the modification to the line route corridor and concluded that from a soils/geology perspective, the modification could have a positive effect as the final line route has the potential to have less impact on Timahoe Esker part of which is a pNHA. This conclusion was further reinforced having regard to the submission from the Geological Survey of Ireland.

### 4.1.5.6 HYDROLOGY & HYDROGEOLOGY

The Hydrology & Hydrogeology consultant assessed the modification to the line route corridor and concluded that from a Hydrology & Hydrogeology perspective, the modification could have a positive effect as the final line route has the potential to have less impact on regionally important Karstified (diffuse) bedrock aquifers, sand and gravel aquifers.

## 4.2 MODIFICATION 2

The western boundary of the emerging preferred corridor adjacent to Node 7 was widened by approximately 30m. The corridor was widened at this point so as to accommodate a preliminary 110 kV line route. This modification allows the overhead line route to continue in a straight line from Node 6 to Node 8 thereby minimising the number of changes in direction and consequently the number of angle towers necessary. Figure 4.3 shows the line route corridor before and after the modification. The modification is not discernible on the map due to its small area.



Figure 4.3: Line route corridor before and after modification

As the modification only widens the corridor by 30 metres at a localised point on the corridor, the modification was deemed insignificant in environmental terms and the original environmental assessments apply.

## 4.3 OTHER CONSIDERATIONS

### 4.3.1 MIDLANDS HELIPORT

During the course of consultations the presence of a heliport within the emerging preferred corridor near node 4 was brought to the attention of the project team (Midlands Heliport). Once a preliminary 110 kV overhead line route was identified within the corridor, the impact on the operational activities of the heliport was duly assessed and the Irish Aviation Authority (IAA) contacted and presented with the proposal and assessment. It was then confirmed that the proposed overhead line will be below or outside any obstacle limitation requirements of the heliport under IAA regulations.

### 4.3.2 REVIEW OF NEW SPECIAL PROTECTION AREA (SPA)

Further to the NPWS informing the project ecologist of the newly designated Nore SPA (site code 004233) within the project study area, 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 Special Area of Conservation (SAC) (site code 2162) which was taken into account in the original Stage 1 assessments.

On a related ecological matter, the final winter bird survey, which details the findings of a series of field surveys carried out in the winter 2010/2011, can be seen in Appendix D, previous wintering bird surveys were provided as part of the Stage 1 report.

### 4.3.3 SUMMARY OF MODIFICATIONS

Figures 4.4 and Figure 4.5 show the entire proposed 110 kV route corridor before and after the modifications.

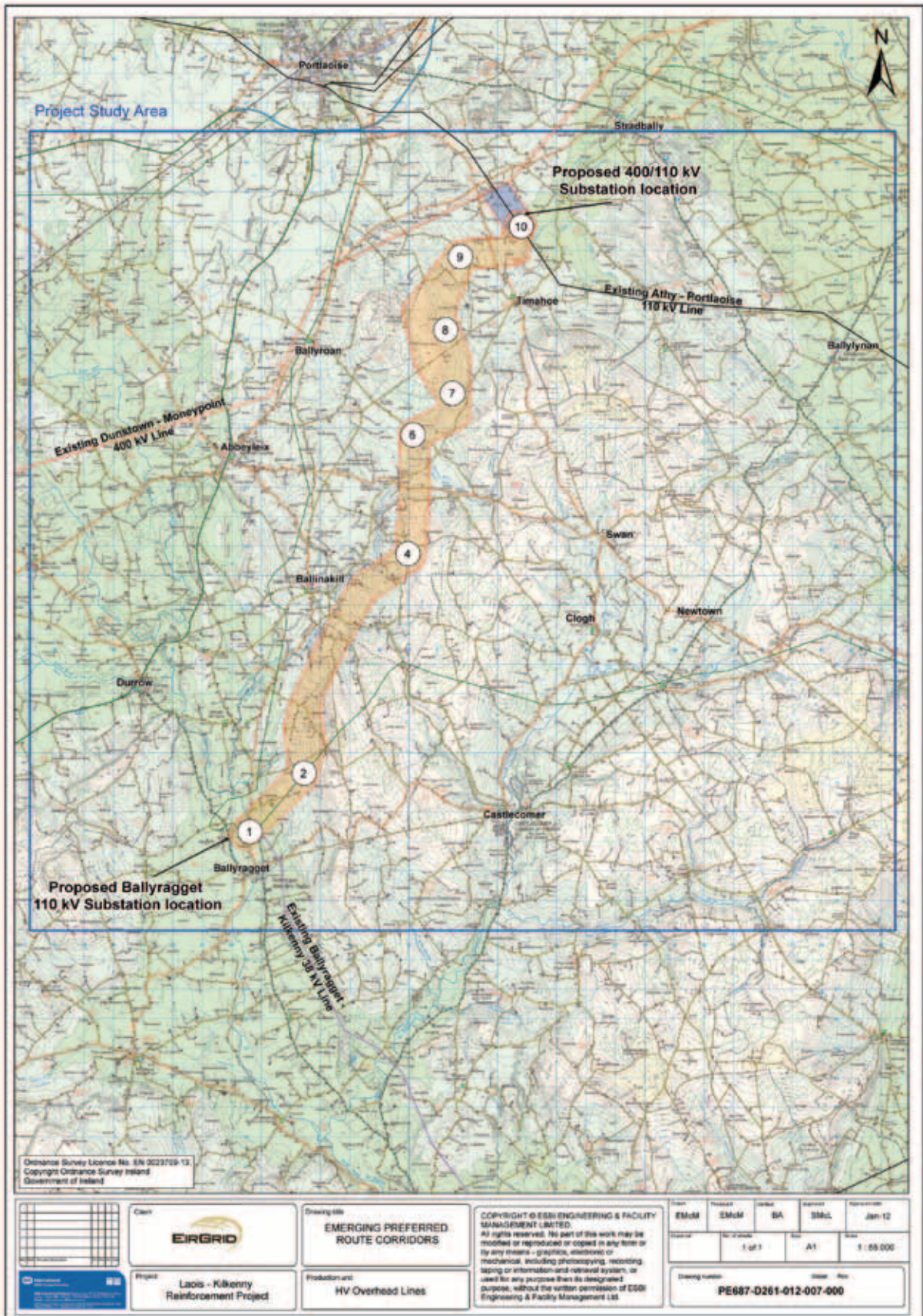


Figure 4.4: Proposed 400 and 110 kV route corridors before modifications (Emerging Preferred Corridors)

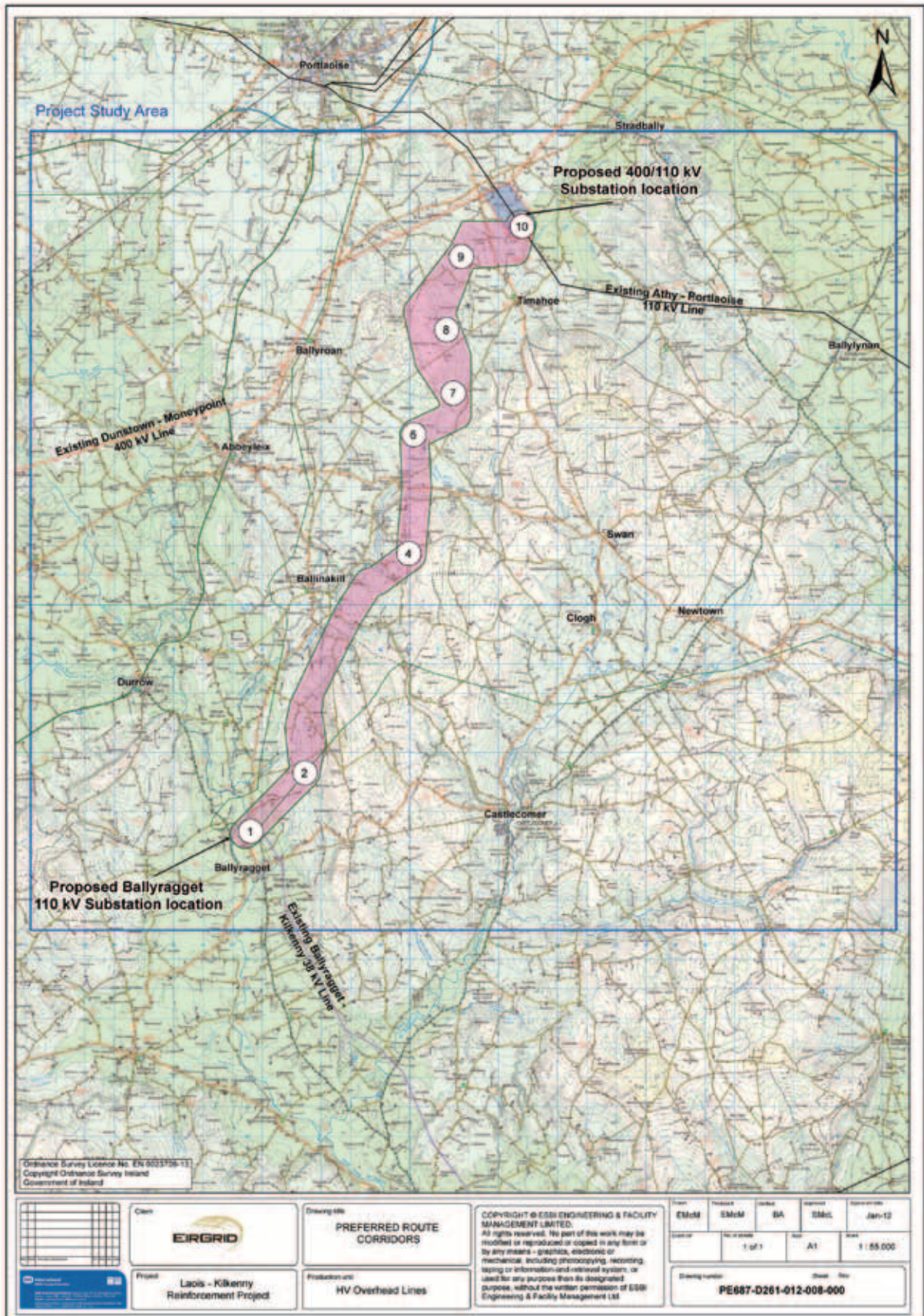


Figure 4.5: Proposed 400 and 110 kV line route corridors (Preferred Route Corridors)

## 5.0 ROUTE CORRIDOR EVALUATION

### 5.1 METHODOLOGY

As outlined in Chapter 4, there have been modifications to the emerging preferred corridor identified in Stage 1 Report, and it is now beneficial to re-evaluate all identified corridor options using the original evaluation methodology.

Feedback from the consultation process (as outlined in Chapter 2 of this report) along with further investigation/ review by the Lead Consultant on the localised impact of the route corridors has been considered.

For ease of description and comparison the route corridor alternatives have been classified by node points described in section 5.2 and illustrated in Figure 5.1 below. The following colour code is used to give a visual representation of the Lead Consultant's opinion on all route corridors, see Table 5.1. The results can be viewed in tabular format in Table 5.2.

	Preferred: Route Corridors in this group may have the least impact on the identified constraints.
	Less Preferred: Route Corridors in this group may have a greater impact on the identified constraints.
	Least Preferred: Route Corridors in this group may have the greatest impact on the identified constraints.

Table 5.1: Route Corridor Appraisal Ratings



**5.2 ROUTE CORRIDOR CLASSIFICATION**

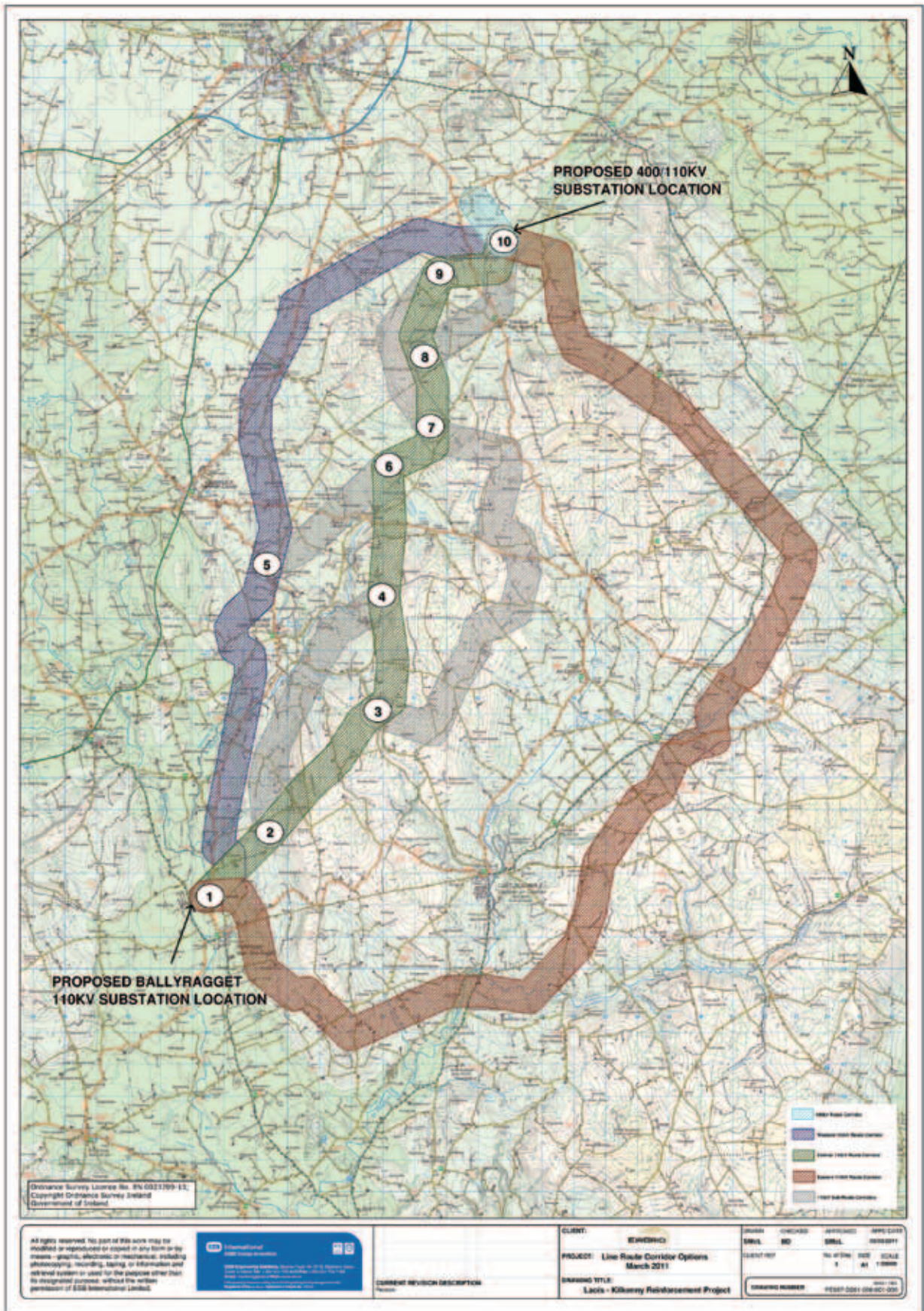


Figure 5.1: Route Corridor Alternatives identified in the Stage 1 Report

### **5.2.1 400 KV ROUTE CORRIDOR**

The 400 kV route corridor is centred along and follows the existing Athy – Portlaoise 110 kV line from its intersection with the Dunstown – Moneypoint 400 kV line to the proposed Coolnabacky 400/110 kV substation site.

Approximate total length of corridor = 1.4km.

### **5.2.2 WESTERN 110 KV ROUTE CORRIDOR**

The western 110 kV route corridor exits Ballyragget substation at node 1, travels through node 5 and then on to the proposed Coolnabacky 400/110 kV substation at node 10.

Approximate total length of corridor = 28km.

### **5.2.3 CENTRAL 110 KV ROUTE CORRIDOR**

The central 110 kV route corridor exits Ballyragget substation at node 1, travels through nodes 2,3,4,6,7,8 & 9 and then on to the proposed Coolnabacky 400/110 kV substation at node 10.

Approximate total length of corridor = 26km.

### **5.2.4 EASTERN 110 KV ROUTE CORRIDOR**

The eastern 110 kV route corridor exits Ballyragget substation at node 1 and travels directly to the proposed Coolnabacky 400/110 kV substation at node 10.

Approximate total length of corridor = 44km.

### **5.2.5 110 KV SUB-ROUTE CORRIDORS**

#### **5.2.5.1 NODE 2 TO NODE 4**

Approximate total length of corridor = 9km.

#### **5.2.5.2 NODE 3 TO NODE 7**

Part of the corridor on its west side at node 7 was widened by 30m for a short distance along the corridor.

Approximate total length of corridor = 15km.

#### **5.2.5.3 NODE 5 TO NODE 6**

Approximate total length of corridor = 5km.

#### **5.2.5.4 NODE 7 TO NODE 9**

Approximate total length of corridor = 5.5km.

#### **5.2.5.5 NODE 9 TO NODE 10**

Part of the corridor between these nodes was widened by approximately 0.6km as a result of feedback from the Stage 1 process increasing from 1km to 1.6km wide.

Approximate total length of corridor = 5km.

### **5.2.6 MODIFIED EMERGING PREFERRED CORRIDOR**

Figure 4.5 shows that Modified Emerging Preferred Corridor commences at Ballyragget substation (node 1) and is a minor variant of the Central Route Corridor passing through nodes 2,4, 6, 7, 8 and 9 then on to the proposed Coolnabacky 400/110 kV substation at node 10.

## **5.3 COMPARATIVE EVALUATION CRITERIA**

All route corridors have been evaluated and compared under the following criteria having regard to feedback received throughout the consultation process. The results of the comparative evaluation are detailed in Table 5.2.

### **5.3.1 ECONOMIC**

#### **5.3.1.1 CORRIDOR LENGTH**

No new information which resulted in the alteration of the corridor lengths was identified.

### **5.3.2 ENVIRONMENT**

#### **5.3.2.1 HUMAN BEINGS**

##### **Safety**

This criterion of assessment will be the same for route corridors chosen. Some corridors may have more difficult access and civil works, particularly the eastern corridor; however thorough risk assessment and implementation of control measures established at the construction stage will make this difference negligible.

##### **Health effects due to electric and magnetic fields**

This criterion of assessment will be the same for all route corridors identified. The criteria for dealing with power frequency EMF (electric and magnetic fields) is to refer to independent internationally recognised scientific bodies in the area of non-ionising radiation (0-300GHz). For dealing with powerline EMF (50Hz) health concerns EirGrid refer to the EU 1999 recommendation on limiting public exposure to EMFs. Within this recommendation the EU use reference levels based on ICNIRP's 1998 EMF guidelines. ICNIRP are a Non Governmental Organisation (NGO) appointed by the WHO to deal with non-ionising EMF.

The proposed development is well within the recommended public exposure limits for all route corridors and for the substation sites.

##### **Localised Impact**

Some sections of route corridors upon review are deemed less preferable due to greater environmental impacts.

##### **Proximity to residential dwellings**

The central corridors are less populated than the western and eastern corridors.

##### **Noise**

No differentiation between corridors for either construction or operational noise is considered necessary as the potential impact is considered the same for all corridors.

##### **Interference with farming practice**

No differentiation between corridors is considered to occur as the potential impact is considered the same for all corridors.

#### **5.3.2.2 CULTURAL HERITAGE**

No new information regarding cultural heritage was identified, however review by the project team reinforced the Stage 1 conclusions.

#### **5.3.2.3 LANDSCAPE**

No new information regarding landscape was identified; however review by the project team reinforced the Stage 1 conclusions.

#### **5.3.2.4 ECOLOGY**

Information relating to the newly designated Nore SPA (site code 004233) has been incorporated into the route corridor assessment. It has not resulted in changes to the Stage 1 conclusions.



### **5.3.2.5 SOILS & GEOLOGY**

The full extent of the Timahoe Esker was provided by the GSI and this has been incorporated into the route corridor assessment. It has not resulted in changes to the Stage 1 conclusions.

### **5.3.2.6 HYDROLOGY & HYDROGEOLOGY**

No new information regarding Hydrology & Hydrogeology was identified; however review by the project team reinforced the Stage 1 conclusions.

## **5.3.3 EXISTING INFRASTRUCTURE**

### **5.3.3.1 NATIONAL ROADS**

No new information relating to National Roads was identified.

### **5.3.3.2 TRANSMISSION LINES**

No new information relating to Transmission Lines was identified.

### **5.3.3.3 BORD GAIS PIPELINE**

No new information relating to Gas Pipes was identified.

Please see Table 5.2 *Primary Appraisal for all Route Corridors and Sub-Route Corridors* overleaf.

Criterion	Element	Western Corridor	Central Corridor	Eastern Corridor	Node 2-4	Node 3-7	Node 5-6	Node 7-9	Node 8-10	400 kV Route Corridor	Modified Emerging Preferred Corridor	
Economic Environment	Corridor Length	28km	26km	44km	9km	15km	5km	5.5km	5km	1.8km	26km	
	Human Beings	0.5km from Ballinakill Centre. Includes Ballyroan. 2km from Abbeyfeix Centre		Crosses Special Area of Development Control	Passes close to Ballinakill				Passes through Northwest corner of Timahoe near Timahoe Round Tower and Eskers		Passes close to Ballinakill between nodes 2 and 4.	
	Cultural Heritage	Highest density of Cultural Heritage Sites – 56 for the full route corridor 1-5-10		High amount of recorded monuments	Clusters of Sites	Clusters of Sites	Clusters of Sites		Passes close to Timahoe Round Tower		Clusters of Sites between nodes 2 and 4	
	Flora and Fauna	Crosses the Owenbeg River that is part of the River Barrow and Nore cSAC	Crosses the River Barrow and Nore cSAC & Timahoe Esker pNHA	Greatest construction footprint, crosses cSACs several times	Proximity to the River Barrow and Nore cSAC and the Nore SPA	Longer route, more construction	Crosses the River Barrow and Nore cSAC		Proximity to Timahoe Eskers pNHA		Proximity to the River Barrow and Nore cSAC, and the Nore SPA	
	Landscape/Visual	Passes near and parallel to amenities and roads and close to settled areas	Traverses a High Amenity Area with associated scenic views	Route passes through upland areas with lower visual absorption, approximate to, and parallel to amenities and roads, and close to settled areas	High Ground with a number of elevated ridge line crossings							
	Soils and Geology	Presence of Blanket Peat	Timahoe Esker Site of Geological Significance	Crosses Blanket Peat and Kyle Spring					Timahoe Esker Site of Geological Significance			Timahoe Esker Site of Geological Significance
	Hydrology and Hydrogeology	Regionally important Karstified (diffuse) bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers	Regionally and locally important Karstified bedrock aquifer, Sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers	Regionally important Karstified (diffuse) Bedrock aquifer, sand and gravel aquifers
	National Roads	4	3	6	0	2	3	0	1	1	0	3
	Transmission Lines	1	0	1	0	0	0	0	1	1	1(Connection Point)	0
	Bord Gais pipeline	0	0	0	0	0	0	0	0	0	0	0

Table 5.2: Primary Appraisal for all Route Corridors and Sub-Route Corridors

## **6.0 LEAD CONSULTANT'S CONCLUSION (PART A)**

From the re-evaluation process outlined in Chapter 5, and following full consideration of feedback from the Stage 1 process, it is the recommendation of the Lead Consultant that 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 changes to the preferred route corridors to facilitate the process of identification of a feasible line route within the emerging preferred corridors. These changes will be reviewed where necessary.

The preferred route corridor is shown in Figure 6.1 below.

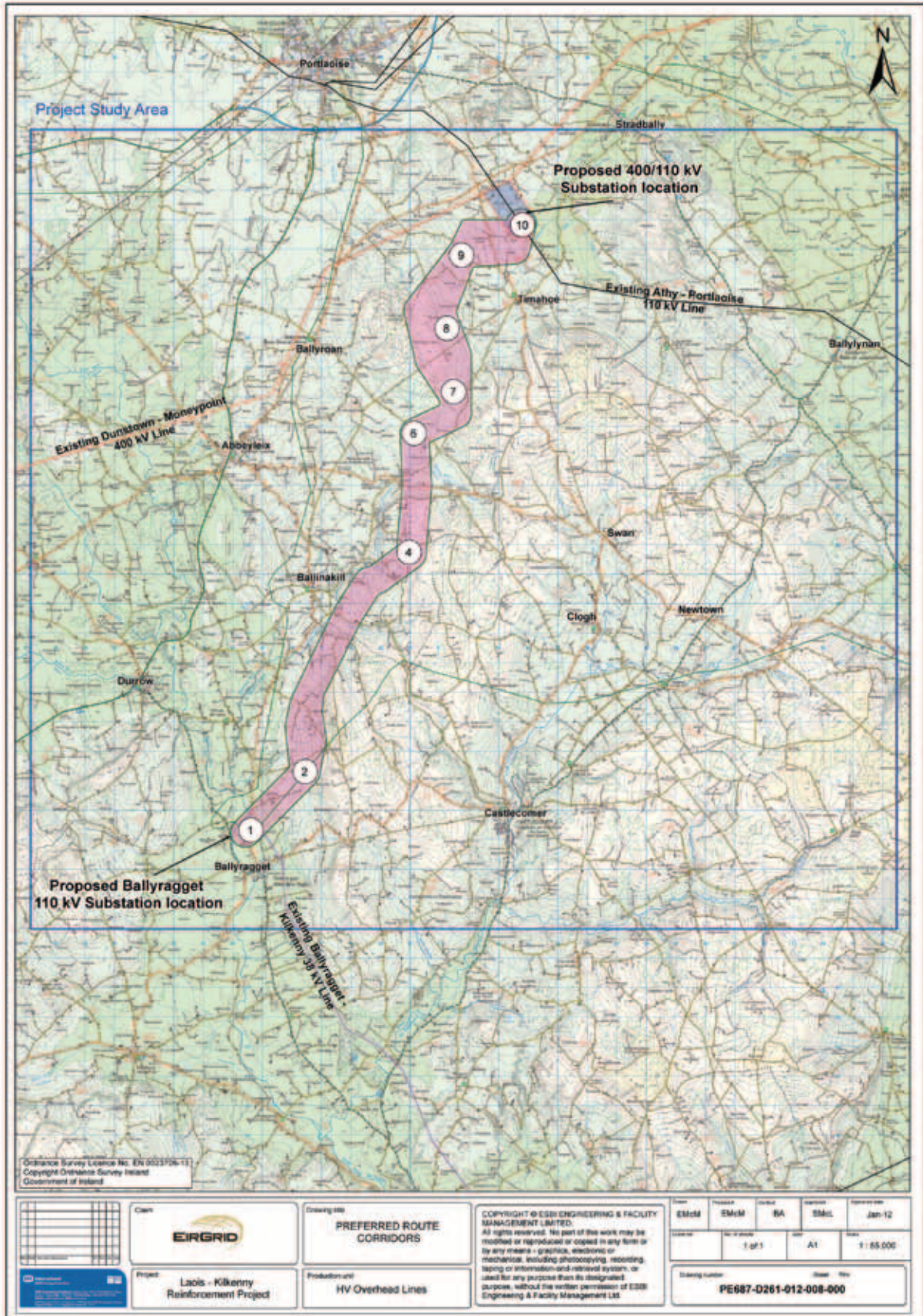


Figure 6.1: Preferred Route 400 and 110 kV Route Corridors

## **PART B**

### **7.0 CONSULTATION AND LANDOWNER ENGAGEMENT**

This section provides information in relation to the identification of an indicative line route within the emerging preferred corridor, and has particular regard to the consultation and landowner engagement stages.

#### **7.1 SELECTION OF AN INDICATIVE LINE ROUTE**

Based on the conclusions of Part A of this report, the route corridor as shown in Figure 6.1 best avoids all identified constraints within the study area. Selection of an overhead line route within this corridor is the next step and this focuses on further avoidance of residential dwellings and minimisation of the potential impact of the proposed development on land use, ecology, visual, archaeology and other localised constraints.

An initial indicative overhead line route was identified by the Lead Consultant to satisfy the criteria outlined in Section 5 with the intention that it is used as a starting point with which to liaise with directly affected landowners. This route was identified using the feedback from the environmental consultants together with up-to-date aerial photography and site surveys. The preliminary indicative overhead line route identified can be seen in Appendix E and Figure 7.1 on page 29 of this report.

#### **7.2 PUBLIC CONSULTATION AND LANDOWNER ENGAGEMENT**

It was decided for this phase of the project that public consultation on the proposed indicative line route should be approached in three distinct phases:

- Directly affected landowners were notified of the proposal. A dedicated wayleave coordinator was appointed to be a direct point of contact for this group.
- Landowners 50 metres either side of the proposed development were notified of the proposal. The dedicated wayleave coordinator was appointed to be a direct point of contact for this group.
- The wider general community were kept informed of project development, with opportunities for feedback and consultation.

##### **7.2.1 LANDOWNER IDENTIFICATION PROCESS**

Property Registration Authority (PRA) searches were conducted to identify all landowners along the indicative line route.

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 in section 7.2.3 below.

##### **7.2.2 SURVEY INTERVIEW STAGE - SURVEY INTERVIEW DOCUMENTATION**

A sample of the documentation issued to landowners can be seen in Appendix F. All landowners were sent the following 'pack' by post.

- 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 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 have not been established at this stage therefore are 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*.
- A Booklet was made available (on request) explaining electric and magnetic fields (EMF's).

This pack was issued to all landowners along the indicative line route on 8th August 2011.

### **7.2.3 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. A copy of this form is in Appendix G.

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. All of the 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 refused access and were subsequently sent a second letter on 9th January 2012 requesting permission for access to carryout surveys and discuss how impacts on farming activities could be minimised. The letter also states that the line will be designed with the information available in the event that the landowner is still not willing to facilitate the walkover surveys; a copy of this letter is in Appendix H. By the end of November 2011 the environmental consultants had gained access to approximately 72% of those landowners interviewed along the indicative line route.

### **7.2.4 CONSULTATION WITH THE WIDER COMMUNITY**

Consultation with the wider community has continued during the project through project updates published on the project website. The project team have replied to several letters, emails and telephone calls. The project team also have provided information to local media.

In September 2011 EirGrid had 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.

## **7.3 MODIFICATIONS MADE TO THE PRELIMINARY INDICATIVE LINE ROUTE**

Following feedback from landowners and from the environmental consultants as a result of walkover and desktop studies a number of 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 are significant and the environmental consultants were requested to review these further.

At this stage, intermediate poleset locations are not decided. Angle tower locations are identified and required at changes in direction. Refusal to permit the environmental consultants on to lands to do walkover surveys resulted in placing some angle masts on improved grasslands with less ecological value than hedges for example.

The modified indicitave alignment is shown in Appendix K and Figure 11.1 on page 38 of this report.

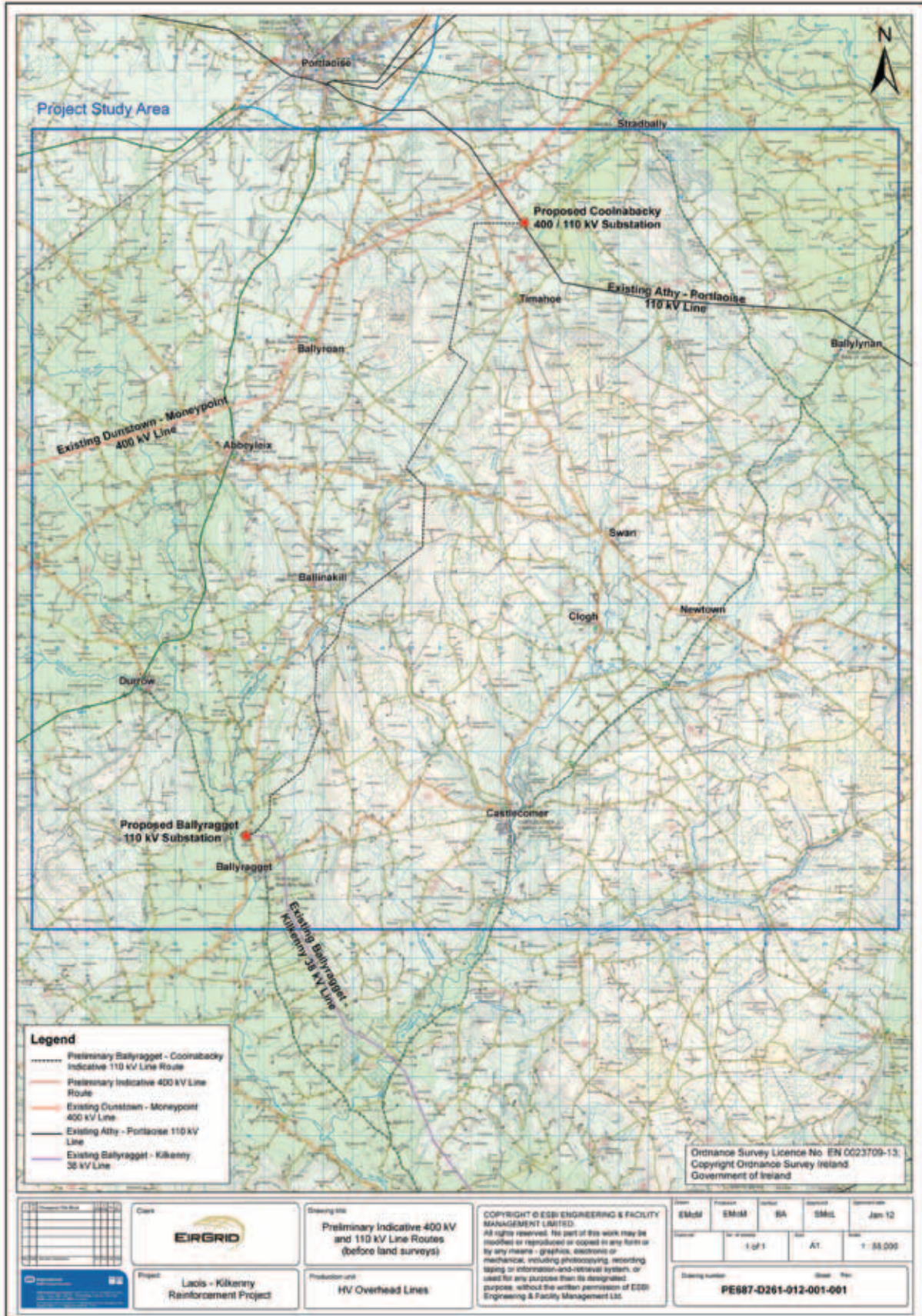


Figure 7.1: Preliminary Indicative Overhead line route

## **8.0 400 AND 110 KV CONNECTIONS TO COOLNABACKY SUBSTATION**

### **8.1 400 KV CIRCUITS INTO THE PROPOSED COOLNABACKY 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 Appendix J). The proposed substation is located approximately 1.4 km from the 400 kV line.

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, the exact arrangement of which will be determined in Stage 3.

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.

#### **8.1.1 ENVIRONMENT**

UGC and OHL both have an environmental impact. The impact of the OHL is predominantly visual, with a localised impact on the ground at individual structure locations. The UGC impact on the ground is considerably more with 1.4km of trenching required to accommodate ducting. A Line/Cable interface compound would also be required underneath the 400 kV overhead line in order to transition the overhead line circuit to underground cable. For a DC UGC it is estimated that this compound would be 35m x 70m in size, and would look not unlike a small AIS substation, see Figure 8.1.



Figure 8.1 Typical Line/Cable Interface Compound

## 8.1.2 TECHNICAL & COST

This section refers to the specific case where technology options are being considered for the loop-in of the existing Dunstown-Moneypoint 400 kV overhead line (OHL) into the new Coolnaback 400/110 kV substation.

The technology options consider implementing the loop-in using either 400 kV overhead lines (OHLs) or by using 400 kV under-ground cables (UGCs).

The Dunstown-Moneypoint 400 kV line is a strategic circuit in the Irish transmission system that directly connects generation in the west of the country with the primary load centre of Dublin. As a result, any decision that would negatively impact on the reliability of that circuit would effectively impact the reliability of supply to a broad (and strategic) area of the country.

In respect of loop-in of the existing Dunstown-Moneypoint 400 kV overhead line (OHL) into the new Coolnaback 400/110 kV substation, EirGrid's preference is to implement the loop-in by maintaining the technology of the existing circuit (i.e. OHL) for the following reasons:

- 1 The technical reliability, measured by forced outage rate, is seen to be significantly better for an OHL than that for an UGC<sup>4</sup>. The reliability of the existing Dunstown-Moneypoint 400 kV OHL would therefore be negatively impacted by the lower level of reliability that is associated with the UGC portions that are to be inserted to complete the looping in of the line into the new station.

The mean time to repair a fault on the circuit is considered to be significantly longer for a UGC than for an OHL. The result would be the reliability of a substantial part of the transmission network would be placed at risk for a significantly longer period while repairs were being carried out if UGC was to be used rather than OHL.

Long term reliability is also considered to be an issue. The expectation is that as an UGC gets older, it becomes less reliable.

- 2 Capital costs for UGC are higher than for an OHL of the same transmission capacity. For the connection to the Dunstown – Moneypoint 400 kV line considering a DC UGC costs compared to a DC OHL costs over the same route the DC UGC would be of the order of 3.7 times more expensive than the equivalent DC OHL.

The report '*Electricity Transmission Costing Study*<sup>5</sup> which was published in January 2012 in the UK, has indicated that the cost of UGC for lengths of up to 3km may be in fact up to 7.9 times more expensive than the equivalent OHL. It also acknowledges that there are many factors which influence actual costs including, required transmission capacity, terrain through which the connection runs, world metal prices, labour costs, and the prevailing transmission market itself.

The findings of this report indicate that the above ratio of 3.7 times is therefore at the lower end of the costs between OHL and UGC and that the actual ratio may therefore be significantly greater.

4 (Cigré. Update of Service Experience of HV Underground and Cable Systems, ISBN 978 -2-85873-066-7 (2009), publically available from Cigré (<http://www.cigre.org>) on request).

5 Electricity Transmission Costing Study: An Independent Report Endorsed by the Institution of Engineering and Technology, 31 January 2012, publically available from <http://www.theiet.org/factfiles/transmission.cfm>

### 8.1.3 PROPOSED 400 KV CONNECTION (FINDINGS OF FEASIBILITY STUDY)

Table 8.1 summarises the findings of the “Assessment of 400 kV Connection Methods to Coolnabackey Substation” report (the full feasibility report can be viewed in Appendix J). The comparison basis is similar to that used for the Stage 1 report using similar terminology emerging preferred, less preferred and least preferred and a similar colour scheme.

	Emerging Preferred		Less Preferred		Least Preferred
	DC UGC	SC UGC	DC OHL	SC OHL	Comments
Environmental					The overall effect results in the same rating being allocated, ohl have higher visual effects while ugc have higher impacts due to earthworks
Technical					EirGrid technical preference is for OHL connection for reasons outlined above in section 8.1.2. It should be noted however that a DC OHL could be exposed to common cause failures that a SC OHL would not be exposed to (structural).
Cost	3.7 (Relative Cost)	6.0 (Relative Cost)	1.0 (Relative Cost)	1.5 (Relative Cost)	The DCOHL is the lowest cost option and is shown as 1.0, all other costs are given as relative costs to the DC OHL i.e. DC UGC is 3.7 times the cost of DC OHL
Total	Less Preferred	Least Preferred	Most Preferred	Next Preferred	

Table 8.1: Overall comparison of all four methods reviewed for the connecting the Dunstown – Moneypoint 400 kV line

The report therefore recommends that the preferred connection option to the proposed Coolnabackey 400/110 kV substation to the existing Dunstown – Moneypoint 400 kV line is by way of a 400 kV double circuit overhead line design based on an environmental, technical and cost assessment of various UGC and OHL connection options. Figure 8.2 shows an example of this type of 400 kV double circuit overhead line design in County Clare. It is envisaged that five of these types of structures will be required for the proposed 1.4km connection with an average spacing between towers of 280 metres.



Figure 8.2: An existing 400 kV double circuit line close to Moneypoint generating station in County Clare

## 8.2 110 KV CIRCUITS INTO THE PROPOSED COOLNABACKY SUBSTATION

The proposed connection methodology of all the 110 kV circuits to the proposed Coolnabacky substation site is by way of a 110 kV single circuit overhead design. Figure 8.3 shows an existing 110 kV single circuit line. The average distance between structures is 175 metres. The 110 kV connections to Coolnabacky substation will be as follows:

- **Athy – Coolnabacky Single Circuit Overhead Line:** This is achieved by connecting to the existing Athy – Portlaoise 110 kV line. All new works will be confined to Coolnabacky Substation Site.
- **Portlaoise – Coolnabacky Single Circuit Overhead Line:** This is achieved by connecting to the existing Athy – Portlaoise 110 kV line. All new works will be confined to Coolnabacky Substation Site.
- **Coolnabacky – Ballyragget Single Circuit Overhead Line:** This is a new 110 kV overhead line.

Figure 8.4 shows a lattice steel angle tower on a 110 kV line, these structures are used where the line changes direction.



Figure 8.3: An existing 110 kV single circuit line



Figure 8.4 110 kV line lattice steel angle tower

## **9.0 LEAD CONSULTANT'S CONCLUSIONS (PART B)**

The assessment and evaluation criteria used for the project combined with the consultation process have considered the concerns of key stakeholders, agencies and the public. The review of feedback from stakeholders combined with the review of the 400 kV connection options has resulted in the following conclusions by the lead consultants.

*The indicative 400 and 110 kV line routes as shown in Appendix K and Figure 11.1 on page 38 should progress to Stage 3 (Design Stage) of the project.*

### **Summary of Project Recommendations**

- A 400/110 kV substation should be located in Coolnabacky, connected to the Dunstown - Moneypoint 400 kV overhead line by way of a 400 kV double circuit overhead line and to the existing Athy – Portlaoise 110 kV line by way of single circuit overhead 110 kV line.
- A 110 kV extension to the existing 38 kV substation in Ballyragget, Co. Kilkenny
- A 110 kV overhead line between Ballyragget and Coolnabacky.



## **10.0 ENVIRONMENTAL IMPACT ASSESSMENT AND APPROPRIATE ASSESSMENT SCREENING REPORTS**

### **10.1 SCREENING REPORT FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA)**

Screening for an EIA is the responsibility of the competent authority. In this case it is likely to comprise An Bord Pleanála. Section 176 of the Planning and Development Act 2000, as amended, refers to the Planning and Development Regulations which in turn consider Electricity Lines in Schedule 5 'Development for the purposes of Part 10', Part 1.

*"20. Construction of overhead power lines with a voltage of 220 kilovolts or more and a length of more than 15 kilometres."*

At this stage the project team are of the view that whilst the project is likely to include a section of 400 kV overhead line, an EIA does not meet the threshold of the Statutory Regulations as identified above, having regard to the short length (approximately 1.4km) of overhead line involved. Notwithstanding this, it is intended to prepare an Environmental Report (ER) of a similar standard as an EIS that will be prepared and submitted with the planning application.

In addition, in order to assist the competent authority in this matter, the project team will produce an Environmental Impact Assessment Screening Report.

### **10.2 SCREENING REPORT FOR APPROPRIATE ASSESSMENT (AA)**

Screening for an AA is the responsibility of the competent authority; in this case the likely competent authority is An Bord Pleanála. The Project Team have prepared an AA Screening Report to assist the competent authority, see Appendix M.

The project team note that four Natura 2000 sites were identified as occurring within five kilometres of the proposed indicative line route. During the screening stage by the ecologist for the project, it was determined that three of these sites (River Nore SPA, Lisbigney Bog SAC and Ballyprior Grassland SAC) will not be impacted upon either directly or indirectly as a result of the proposed development and therefore are excluded from appropriate assessment if required.

Based on the precautionary approach adopted it has been shown that the proposed development has the potential to adversely impact the River Barrow and River Nore SAC during the construction phase.

It was concluded that a stage 2 appropriate assessment should therefore be carried out to further examine the risk posed by the proposed project on the conservation interest of this Natura 2000 site.

In order to facilitate an AA by the competent authority, the project team will produce a Natura Impact Statement (NIS) to submit with the planning application as set out under the Department of Environment, Heritage and Local Government guidance document *"Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities"* Feb 2010.

The project team have presumed that the project could be the subject of an AA from the outset and has adopted an appropriate information gathering methodology to accommodate the AA requirements.

## 11.0 NEXT STEPS

A four week consultation period follows the publication of this report. As with the Stage 1 report, during this period the project team will continue to consult on the findings of the report with stakeholders including members of the general public and landowners. Members of the public are encouraged to make submissions and this can be done through any of the communication channels listed below.

Further 'Open Days' are also scheduled during the four week period where members of the project team will be available locally to discuss any of the findings – details will be advertised in local newspapers for these information days.

Following the 4 week consultation period, EirGrid will then open an information office in the region, details of this will also be advertised in local newspapers.

Following the forthcoming four week consultation period, the project will start to progress to Stage 3. Stage 3 will include the following tasks:

- Complete outline electrical designs which will include the substation and overhead line, as well as civil engineering designs.
- Continued consultation with directly affected landowners and the wider community.
- Continued consultation with An Bord Pleanála, Statutory and Non Statutory agencies.

On completion of Stage 3, Stage 4 will then commence which is final preparation and lodgement of the required application for approval. This application will include the Environmental Report and Natura Impact Statement (NIS) as well as other required documentation. The planning application is expected to be submitted in summer 2012.

Finally, this Stage 2 report details the proposal which is likely to form the basis for the application for Approval. As the process is an iterative process which involves continuous gathering of information from many sources including environmental studies, submissions from statutory and non statutory agencies, the public and An Bord Pleanála, there may be alterations from the current proposal in the future. EirGrid will make the public aware of any such changes should they occur.

Due to the large amount of data contained within the appendices they are published separately. These appendices can be either viewed or downloaded from the project website:

[www.eirgridprojects.com/projects/laoiskilkenny](http://www.eirgridprojects.com/projects/laoiskilkenny)

Or they can be requested from the project manager at the address provided below:

**PROJECT MANAGER  
(LAOIS - KILKENNY REINFORCEMENT PROJECT)  
EIRGRID PLC  
THE OVAL  
160 SHELBOURNE ROAD  
BALLSBRIDGE  
DUBLIN 4  
Tel: +353 (0)1 702 6642  
laoiskilkennyreinforcement@eirgrid.com**

Any member of the general public is welcome to make submissions on the findings to date and can do so by writing to the Project Manager at the postal address and/or email address provided above

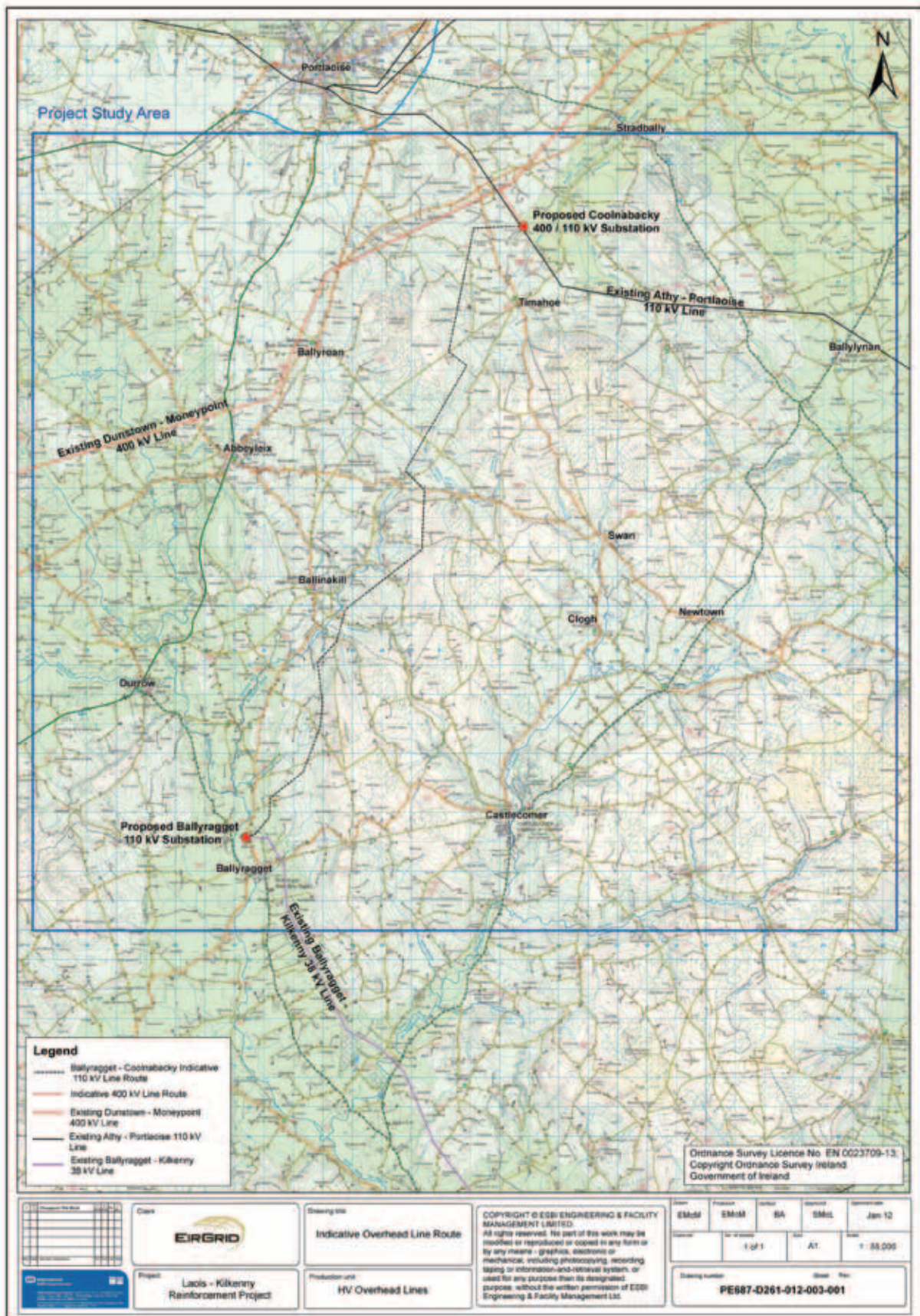


Figure 11.1: The indicative 400 and 110 kV line routes to progress to Stage 3









ESB International  
Stephen Court,  
18-21 St. Stephen's Green,  
Dublin 2, Ireland.

Tel: +353 (0) 1 703 8000  
Fax: +353 (0) 1 703 8088  
Email: [marketing@esbi.ie](mailto:marketing@esbi.ie)  
Web: [www.esbi.ie](http://www.esbi.ie)