

Step 4B - Route Options and Evaluation Report

Document no: 321084AJ-REP-015
Version: 04

EirGrid
CP1021

East Meath - North Dublin Grid Upgrade



Step 4B - Route Options and Evaluation Report

Client name: EirGrid
Project name: East Meath - North Dublin Grid Upgrade
Client reference: CP1021 **Project no:** 321084AJ
Document no: 321084AJ-REP-015 **Project manager:** Gregor Simpson
Version: 04 **Prepared by:** Gregor Simpson
Date: 09/08/2023 **File name:** 321084AJ-REP-015 Step 4b Report_Sep-23

Document history and status

Version	Date	Description	Author	Checked	Reviewed	Approved
01	Dec 22	Initial draft	HS	KRS	AS	GS
02	Jun 23	Second Issue	GS	AS	KRS	AS
03	Aug 23	Third Issue	GS	AS	SMcG	AS
04	Sep 23	Fourth Issue	GS	AS	SMcG	AS

Jacobs Engineering Ireland Limited

Merrion House
Merrion Road
Dublin 4, D04 R2C5
Ireland

T +353 (0)1 269 5666
F +353 1 269 5497
www.jacobs.com

Copyright Jacobs Engineering Ireland Limited © 2023.

All rights reserved. The concepts and information contained in this document are the property of the Jacobs group of companies ("Jacobs Group"). Use or copying of this document in whole or in part without the written permission of Jacobs Group constitutes an infringement of copyright. Jacobs, the Jacobs logo, and all other Jacobs Group trademarks are the property of Jacobs Group.

NOTICE: This document has been prepared exclusively for the use and benefit of Jacobs Group client. Jacobs Group accepts no liability or responsibility for any use or reliance upon this document by any third party.

All mapping in this report is reproduced under licence by EirGrid and the National Mapping Agreement.

Contents

Executive Summary	ii
What is this Report?.....	ii
What is the East Meath to North Dublin Grid Upgrade Project?	ii
What Happened at Step 4A (the previous step of the project)?.....	iii
What Happened at Step 4B (the current step of the project)?.....	iv
1. Introduction	1
1.1 Who is EirGrid?.....	1
1.2 What is the East Meath – North Dublin Grid Upgrade Project?	1
1.3 Purpose of this Report.....	2
1.4 Structure of this Report	4
1.5 Accompanying Reports.....	4
2. Summary of Project to Date	5
2.1 Introduction	5
2.2 Overview of Step 4A.....	7
2.3 Overview of Step 4B.....	10
3. Description of Best Performing Route Option	12
3.1 Introduction	12
3.2 Cable Details	12
3.2.1 Cable Trench.....	12
3.2.2 Other Design Features.....	12
3.3 Route Width.....	13
3.4 Route Changes from Step 4A.....	13
3.5 Summary of Route	16
3.5.1 Woodland to R156	17
3.5.2 R156 and R157.....	18
3.5.3 M3 Motorway.....	19
3.5.4 L5026, L1010 and L1007	20
3.5.5 Hollystown	21
3.5.6 R121 and R122.....	22
3.5.7 St. Margaret’s.....	23
3.5.8 R108, L2020 and L2753.....	24
3.5.9 M1 to Belcamp	25
3.6 Conclusion.....	26
4. Next Steps	27
Appendices	
Appendix A. Best Performing Option Figures	28

Executive Summary

What is this Report?

EirGrid follows a six-step approach when they develop and implement solutions to any identified transmission network problem. The process and timescale of the East Meath to North Dublin Grid Upgrade project (hereafter referred to as the Proposed Project) is shown in Figure A1-1 below. The Proposed Project is currently at Step 4 – Where exactly should we build? To help identify the best location for the project, Step 4 has been divided into two sub-steps: Step 4A and Step 4B. Step 4A was completed in March 2023 and further details are on the project website¹.

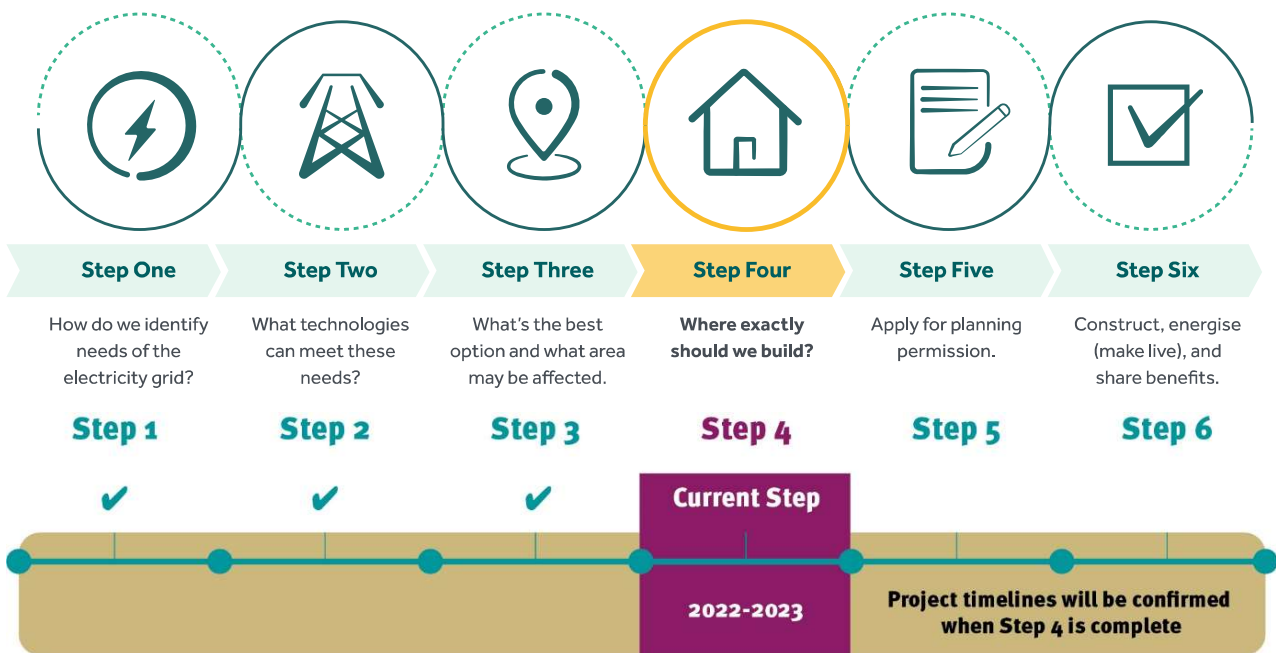


Figure A1-1: EirGrid’s six-step approach and the timeline for the proposed development

This Step 4B Report identifies what EirGrid considers to be the Best Performing Option² for the route of the underground cable and presents a description of the proposed route. This report will be published on the project website and EirGrid will consider all feedback arising and will use this, and any further survey and analysis undertaken, to confirm the final route at Step 5.

What is the East Meath to North Dublin Grid Upgrade Project?

The East Meath to North Dublin Grid Upgrade is the Proposed Project to reinforce the grid network between east Meath and north Dublin. This Proposed Project will help to meet the growing demand for electricity in the east of the country due to the increased economic activity and population growth in recent years.

Meath and Dublin are ideally placed for optimal transport networks including air, road and rail routes which provide access to and from Dublin and the rest of Ireland. Over the past 25 years, the population in Meath has increased by 81.5%, and has doubled in north Dublin. Rapid population growth and proximity to Dublin City have led to thousands of businesses, including multi-national companies and Irish SMEs, being situated

¹ <https://www.eirgridgroup.com/the-grid/projects/cp1021/the-project/>

² The preferred route as shown in Step 4B. It is Option A (Red) from Step 4A with some minor changes.

within the region, including important sectors such as construction, pharmaceuticals, information technology, energy and more. The growth in the area is set to continue and with it the energy demand.

The East Meath to North Dublin Grid Upgrade will prepare the grid for the delivery of more renewable electricity from sources such as wind, solar and hydro. This is in line with Government policy. Renewable energy accounted for 36% of all electricity consumed in Ireland in 2019. Ireland's Climate Action Plan 2023 calls for 80% of the country's electricity to come from renewable energy sources by 2030.

Upgrading and strengthening Ireland's electricity grid allows the system to send more energy, both traditional and renewable sources, from where it is generated to where it is needed. The grid needs to deliver a constant supply of energy to users while simultaneously managing a variable supply of energy generated from wind, solar and hydro sources. Grid upgrades will help Ireland to meet growing and changing energy demands while also facilitating a transition to renewable, sustainable electricity generation.

What Happened at Step 4A (the previous step of the project)?

The design of the proposed route options at Step 4 were based on the application, where reasonably practicable, of the following routing principles:

- Avoid motorways;
- Maximise the use of regional and local roads;
- Avoid town centres and industrial estates;
- Avoid going off-road, through private land and through agricultural land where possible;
- Avoid sensitive natural and built heritage locations;
- Minimise impact on communities where possible; and
- Minimise the overall length of the route.

These routing principles align with EirGrid's five key assessment criteria (Environment; Socio-Economic; Technical; Deliverability; and Economic). By following the routing principles, improved route options were developed. The process outlined in Figure 2-1 (see p. 6) resulted in the identification of four route options.

EirGrid invited the public to give feedback on the four proposed route options during a public consultation from September to November 2022. A range of communication and engagement methods were adopted including in person meetings and online methods to reach as wide an audience as possible. Public Consultation was promoted through Community Forum meetings, engagement in the project area, stakeholder engagement, public webinars, multi-channel advertisements, social media and a project website.

During March 2023 it was announced that Route Option A (Red) was the Emerging Best Performing Option. The Step 4A Report was published at this time, describing the process followed to identify the proposed route options and presenting an evaluation of these options against a set of criteria while also considering feedback from stakeholders, local communities and the public.

Option A (Red) was selected as the Emerging Best Performing Option due to several factors including its lowest combined impact across all topic areas compared to the other options. Option A has a lower environmental impact than Option C (Yellow), a lower socio-economic impact than Option C (Yellow) and Option D (Blue), a lower deliverability impact than all other options and a lower economic impact than Option C (Yellow) and Option D (Blue). This lower deliverability impact means that there will be less disruption to road users and local communities during the delivery phase compared to other options.

While Option A (Red) has the longest length of off-road sections compared to other options, there is a relatively high degree of confidence that the necessary permits and wayleaves can be arranged for these sections, and these off-road sections are primarily required for technical reasons such as avoiding impacts to existing utilities and physical constraints in existing roads. While Option A (Red) has potentially moderate

impacts on some environmental sub-criteria (biodiversity, surface water/flood risk and cultural heritage), further surveys, engagement, design, and assessment work will be undertaken to avoid or reduce these impacts.

Following the announcement of the Emerging Best Performing Option and the publication of the Step 4A Report, EirGrid held its seventh Community Forum on 19 April 2023. The Emerging Best Performing Option was promoted from 29 March 2023 to 14 May 2023, including via local and regional press titles and radio, out of home, digital and social media and a search campaign. During this time, EirGrid carried out open days, Mobile Information Unit days, and school presentations and project information was hosted in a number of local information points such as libraries, post offices and schools in the project area. EirGrid also corresponded with stakeholders throughout this period, including through emails, telephone calls, and information published on the EirGrid website to advise them of the Step 4A Report and the Emerging Best Performing Option.

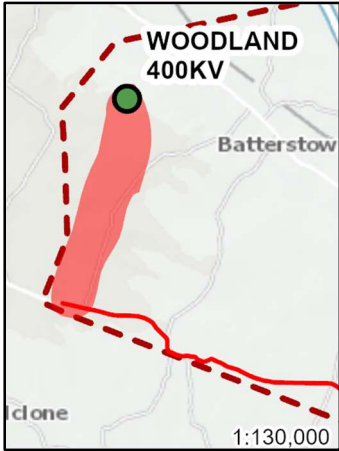
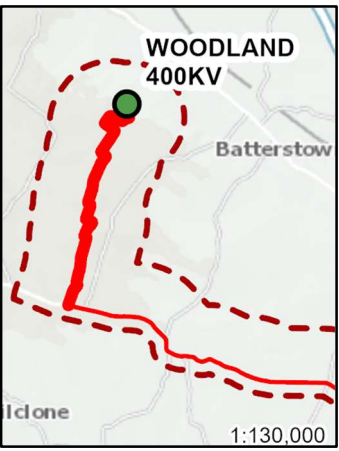
What Happened at Step 4B (the current step of the project)?

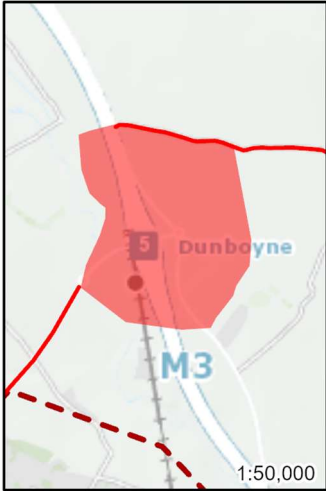



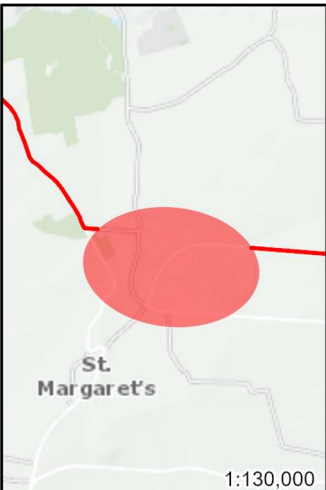
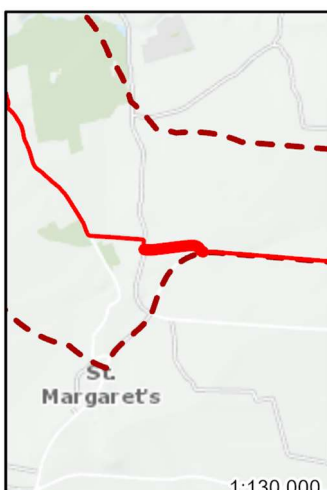
In Step 4B, Option A (Red) was re-examined to refine the route as far as possible to remove the need for any wider refinement areas and to provide more certainty on the specific location. The five wider areas at Step 4A were shown in this way, as these locations included off-road sections, and further discussions were required with relevant stakeholders and landowners. Further surveys and assessment work were also required to determine the best location for the cable route within these wider areas.



Option A (Red) from Step 4A provided a framework for the routing process at Step 4B. While it was explained in the Step 4A Report that route changes were a possibility because of further surveys and assessment, the project team sought to avoid significant changes.

The Step 4B process identified several areas where changes would result in an improved route. The vast majority of changes are in the off-road wider areas, as summarised in Table A.1 below. The changes were made for a number of reasons, such as reducing potential environmental impacts, or avoiding private lands. As a result, the route located within three of the five wider areas added during Step 4A, can now be determined. The route within the retained wider areas at the M3 motorway crossing and between M1 to Belcamp is subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5.

Table A.1: Changes to Step 4A Wider Areas

Emerging Best Performing Option	Reason for the Change	Best Performing Option
<p>Woodland to R156</p> 	<p>This is now an off-road section approximately 3km in length through agricultural land. The use of the local road network in this area was technically challenging due to two existing masonry arch road bridges on the Red Road that were unsuitable. An off-road corridor would also minimise the risk of disrupting access to the Woodland substation and converter station. The BPO also optimises a corridor shared with another EirGrid project, CP0966.</p>	

Emerging Best Performing Option	Reason for the Change	Best Performing Option
<p>M3 Crossing</p> 	<p>Feasible route options have been developed at this location however the route remains subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5.</p>	
<p>Hollystown</p> 	<p>This is now an off-road section approximately 1.4km in length through agricultural land. The use of the local road through the village of Hollystown was considered challenging from a deliverability perspective due to potential disruption during construction and the presence of numerous existing utilities. An off-road corridor will minimise disruption to the local community, businesses and road users.</p>	
<p>St. Margaret's</p> 	<p>This is now an off-road section approximately 0.5km in length through agricultural land. The use of the local road network in this area was considered to be technically challenging due to potential risk of disruption to strategic infrastructure associated with the airport (i.e. runway landing lights). An off-road corridor will minimise risk.</p>	

Emerging Best Performing Option	Reason for the Change	Best Performing Option
<p>M1 to Belcamp</p> 	<p>This is now an off-road section approximately 3.5km in length through agricultural and industrial land. The use of the local road (Stockhole Lane) was identified to perform less successfully against the other options due to potential disruption during construction and the presence of numerous existing utilities. An off-road corridor will minimise disruption to the local community, businesses and road users. Feasible route options have been developed at this location however the route remains subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5. The potential for this off-road section to become a wider 'transmission cable corridor' has been discussed with affected landowners on the approach to Belcamp substation and continues to be investigated and assessed, for potential development under future EirGrid projects.</p>	

Continued assessment, design and surveys, along with engagement with key stakeholders, including local communities and landowners, has enabled refinements of the Emerging Best Performing Option and identification of the Best Performing Option.

The route refinements described above have changed the length of the cable route from 36.5km to 37.7km, representing a difference of 1.2km. Within this 37.7km, there is also an increase to the off-road length, from 8.7km to 10.8km.

This increase in off-road length is largely due to the changes in the route design in the wider refinement areas, where the cable route is now predominantly crossing agricultural land. The increase in the overall length will slightly increase the overall cost and potentially, the ecological impact, of the Proposed Project. However, it was concluded that these route refinements were minor and do not materially alter the assessment of Option A (Red) as presented in the Step 4A Report. It has been concluded that Route Option A (Red) remains the Emerging Best Performing Option and that the route shown in this Step 4B Report is the Best Performing Option.

It is likely that further, minor route refinement work will be required at Step 5, following additional design, surveys, engagement, and assessment. As in previous steps, feedback from affected landowners, local communities and prescribed bodies will be considered and further project information will be provided to the public via EirGrid's website. Also, additional design features may be incorporated at Step 5, but these will generally be accommodated within the area of the route described. This will be determined at Step 5.

As noted in Table A.1, the M1 to Belcamp off-road section has the potential to become a wider 'transmission cable corridor' and this has been discussed with affected landowners on the approach to Belcamp substation and continues to be investigated and assessed, for potential development under future EirGrid projects.

Figures illustrating the Best Performing Option are presented in Appendix A of this report.

1. Introduction

1.1 Who is EirGrid?

EirGrid develops, manages, and operates Ireland’s electricity grid. EirGrid is leading the secure transition of Ireland’s electricity grid to a low carbon, renewable future. EirGrid is responsible for the safe, secure, and reliable supply of Ireland’s electricity.

The grid brings power from where it is generated to where it is needed throughout Ireland. It supplies power directly to industry and businesses that use large amounts of electricity. The grid also brings power from generators to the domestic network that supplies the electricity you use every day in homes, businesses, schools and hospitals.

This critical infrastructure underpins our societal and economic development. Work carried out now will help to create a more sustainable future for the next generation.

1.2 What is the East Meath – North Dublin Grid Upgrade Project?

The Proposed Project is a high-capacity 400 kV underground electricity cable connection from Woodland substation, near Batterstown in County Meath, to Belcamp substation, near Clonshaugh, in north Dublin (see Figure 1-1).

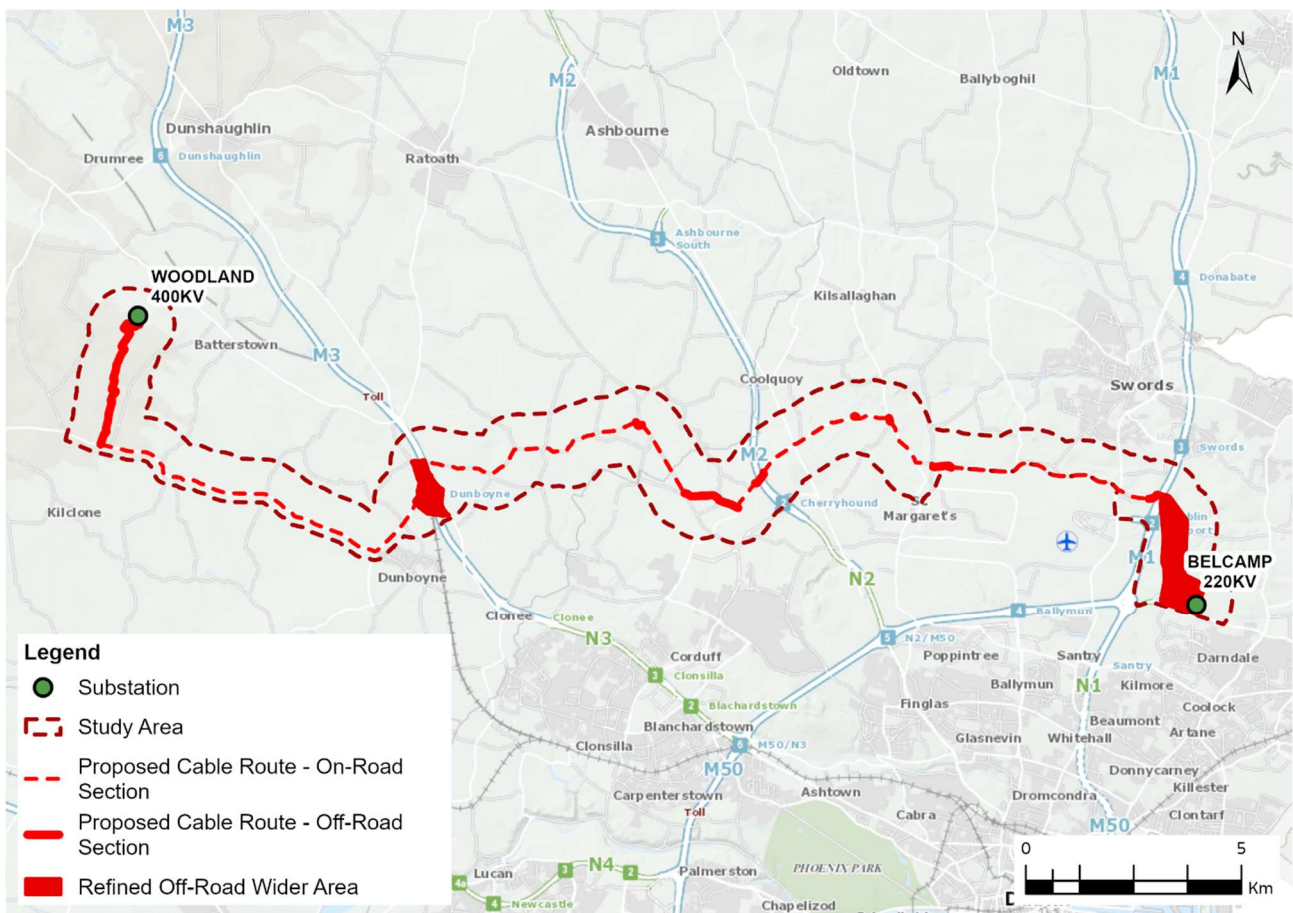


Figure 1-1: East Meath to North Dublin Grid Upgrade

The East Meath to North Dublin Grid Upgrade is the Proposed Project to reinforce the grid network between east Meath and north Dublin. This proposed upgrade will help to meet the growing demand for electricity in the east of the country due to the increased economic activity and population growth in recent years.

Meath and Dublin are ideally placed for optimal transport networks including air, road and rail routes, which provide access to and from Dublin and the rest of Ireland. Over the past 25 years, the population in Meath has increased by 81.5% and has doubled in north Dublin. Rapid population growth and proximity to Dublin City have led to thousands of businesses, including multi-national companies and Irish SMEs, being situated within the region, including important sectors such as construction, pharmaceuticals, information technology, energy and more. The growth in the area is set to continue and with it the energy demand.

The East Meath to North Dublin Grid Upgrade will prepare the grid for the delivery of more renewable electricity from sources such as wind, solar and hydro. This is in line with Government policy. Renewable energy accounted for 36% of all electricity consumed in Ireland in 2019. Ireland’s Climate Action Plan 2023 calls for 80% of the country’s electricity to come from renewable energy sources by 2030.

Upgrading and strengthening Ireland’s electricity grid allows the system to send more energy, both traditional and renewable sources, from where it is generated to where it is needed. The grid needs to deliver a constant supply of energy to users while simultaneously managing a variable supply of energy generated from wind, solar and hydro sources. Grid upgrades will help Ireland to meet growing and changing energy demands while also facilitating a transition to renewable, sustainable electricity generation.

The need for the Proposed Project has been established through a series of studies completed at Steps 1 to 3 (see Figure 1-2). These reports are available on the project website³. This series of studies identified the need for a new connection between Woodland and Belcamp substations and that an underground cable is the best technology for this connection. The Proposed Project is a high voltage (400 kV) underground cable between Woodland and Belcamp substations and the need for the Proposed Project remains robust.

1.3 Purpose of this Report

For any identified transmission network problem, EirGrid follows a six-step approach when they develop and implement the best performing solution option. This six-step approach is described in the document ‘Have Your Say’ published on EirGrid’s website⁴. The six steps are shown at a high-level in Figure 1-2. Each step has a distinct purpose with defined deliverables, and collectively, they represent the lifecycle of a project from conception through to implementation and energisation.



Figure 1-2: EirGrid’s Six-Step Approach to Developing the Electricity Grid

³ <https://www.eirgridgroup.com/the-grid/projects/cp1021/related-documents/>

⁴ <http://www.eirgridgroup.com/the-grid/have-your-say/>

The Proposed Project is currently in Step 4, where the project team in consultation with stakeholders and the community identifies exactly where the underground electricity circuit will be built. The timeline for Step 4 can be seen in Figure 1-3.

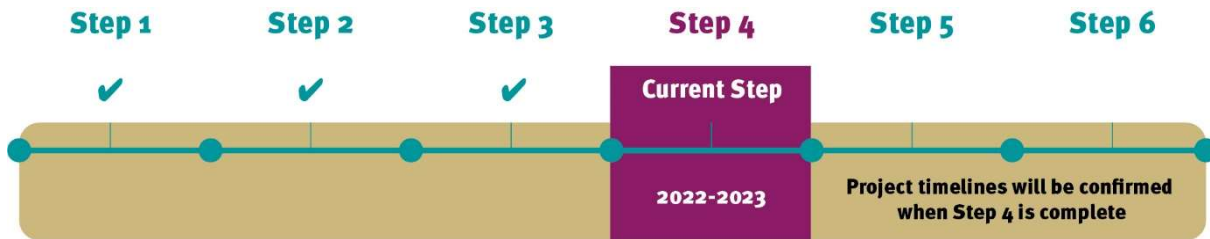


Figure 1-3: EirGrid's Six-Step Timeline for the Proposed Project

In Step 1, EirGrid identified the need for the Proposed Project.

In Step 2, EirGrid compiled a shortlist of best performing technical options, which went out for public consultation between October and December 2020. This included a mix of overhead line and underground cable technological solutions and the possibility of a new transmission route being between Woodland and either Corduff, Finglas or Belcamp substations. This identified a short list of four options: an underground cable or overhead line to either Finglas or Belcamp substations.

In Step 3, EirGrid re-confirmed the need for the Proposed Project and assessed the feasibility of, and constraints which may impact upon, the shortlisted technology options to strengthen the electricity network in East Meath and North Dublin. In April 2022, EirGrid identified the 400 kV underground cable option between Woodland and Belcamp substations as the best performing option to progress for this Proposed Project. This was communicated to stakeholders through a Public Engagement awareness campaign from May to June 2022, during which time feedback was encouraged through the project website, webinars and through mobile information units in the study area.

As part of Step 4, EirGrid has identified four potential underground cable route options and has consulted on these options during September to November 2022. The four proposed route options have been assessed against five key assessment criteria (see also Figure 1-4 below):

- Environmental factors;
- Socio-economic factors – such as the local economy and local amenities;
- Technical aspects;
- Deliverability factors – such as timeline and potential risks; and
- Economic factors.



Figure 1-4: EirGrid's Five Assessment Criteria for Projects

Step 4 has been divided into two sub-steps: Step 4A and Step 4B. This Step 4B Report identifies what EirGrid, following technical assessments and substantive public and stakeholder engagement and consultation, considers to be the Best Performing Option for the route of the underground cable. This report will be published and EirGrid will consider all feedback arising. Comments on this report can be made to EirGrid (see Chapter 4 of this report for further details) for review and consideration by the project team. Should further changes to the design be required, this will be described in the Step 5 reports. The Best Performing Option will be the route option taken forward to the planning process and the design will be finalised at that time.

1.4 Structure of this Report

This report is structured, as outlined in Table 1.1.

Table 1.1: Report Structure

Chapter	Overview
Executive Summary	A summary of this report.
Chapter 1 Introduction	An outline of the report, a description of the Proposed Project; and information on the approach to the development of the project.
Chapter 2 Summary of Project to Date	An overview of the works that have been completed on the Proposed Project at Step 4A and Step 4B.
Chapter 3 Description of the Best Performing Option	A description of the current cable route highlighting any changes from Step 4A.
Chapter 4 Next Steps	Information on providing comments on this report to EirGrid, and an overview of what the project team will do next (Step 5).

1.5 Accompanying Reports

The following reports accompany this Step 4B report:

- Cable Feasibility Report⁵ (Jacobs, 2022a) – this standalone report considered the technical feasibility of the underground cable solution and two connection options, Woodland substation to Finglas substation or Woodland substation to Belcamp substation;
- Step 4A Constraints Report⁶ (Jacobs, 2022b) – this standalone report identified the constraints (environmental and socio-economic) considered in the identification of route options;
- Consultation and Engagement Summary Report⁷ (Jacobs, 2023a) – this standalone report provided a summary of engagement activities carried out in Step 4, including a public consultation, focus groups and other engagement activities such as stakeholder meetings, in-person information days, and webinars; and
- Step 4A Report⁸ (Jacobs, 2023b) – this standalone report presented a multi-criteria analysis of the proposed route options. It describes the process followed to identify the proposed route options and presents an evaluation of these options against a set of criteria while also considering feedback from stakeholders, local communities and the public. This report identifies what EirGrid considers to be the Emerging Best Performing Option for the route of the underground cable.

⁵ <https://www.eirgridgroup.com/site-files/library/EirGrid/321084AJ-REP-002-Cable-Feasibility-Report-Final-April-2022.pdf>

⁶ https://www.eirgridgroup.com/site-files/library/EirGrid/321084AJ-REP-009_Constraints-Report-Final-August-2022-Clean.pdf

⁷ https://www.eirgridgroup.com/site-files/library/EirGrid/CP1021_EastMeath_NorthDublin_Grid-Upgrade_PublicConsultationAndEngagementReport_Final.pdf

⁸ https://www.eirgridgroup.com/site-files/library/EirGrid/321048AJ-REP-010-Step-4a-Report-v4-Mar-23_Optimised.pdf

2. Summary of Project to Date

2.1 Introduction

This chapter provides an overview of the works that have been completed on the Proposed Project at Step 4A and includes a description of the work that has been undertaken at Step 4B. Further details are provided in the reports and mapping on the EirGrid website (see Chapter 1 of this report for details).

At Step 4A, Route Option A (Red) was presented as the Emerging Best Performing Option. This route option included several 'wider areas' to allow for further refinement of the route design at specific locations during Step 4B. This design process has been completed and the wider areas at three of five locations have been removed, providing confirmation of the current route design at these locations. The route within the retained wider areas at the M3 motorway crossing and between M1 to Belcamp is subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5.

This report presents the findings of the refinement of the Emerging Best Performing Option and identifies the Best Performing Option.

The Step 4 route design process is summarised in Figure 2-1.

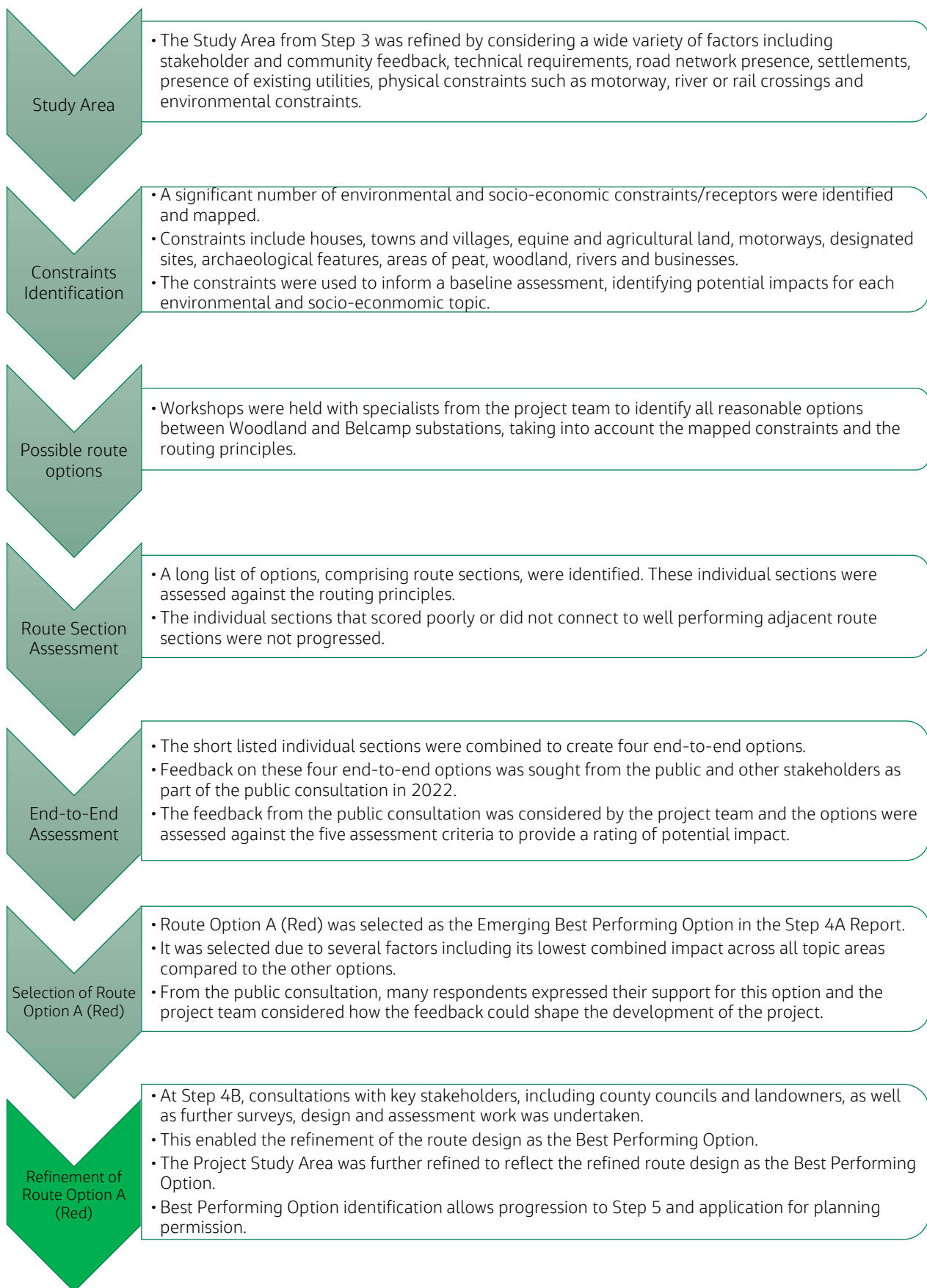


Figure 2-1: Step 4 Route Design Process

2.2 Overview of Step 4A

The design of the proposed route options at Step 4A were based on the application, where reasonably practicable, of the following routing principles:

- Avoid motorways;
- Maximise the use of regional and local roads;
- Avoid town centres and industrial estates;
- Avoid going off-road, through private land and through agricultural land where possible;
- Avoid sensitive natural and built heritage locations;
- Minimise impact on communities where possible; and
- Minimise the overall length of the route.

These routing principles align with EirGrid’s five key assessment criteria (Environment; Socio-Economic; Technical; Deliverability; and Economic). By following the routing principles, improved route options were developed. The process outlined in Figure 2-1 resulted in the identification of four route options, illustrated in Figure 2-2.

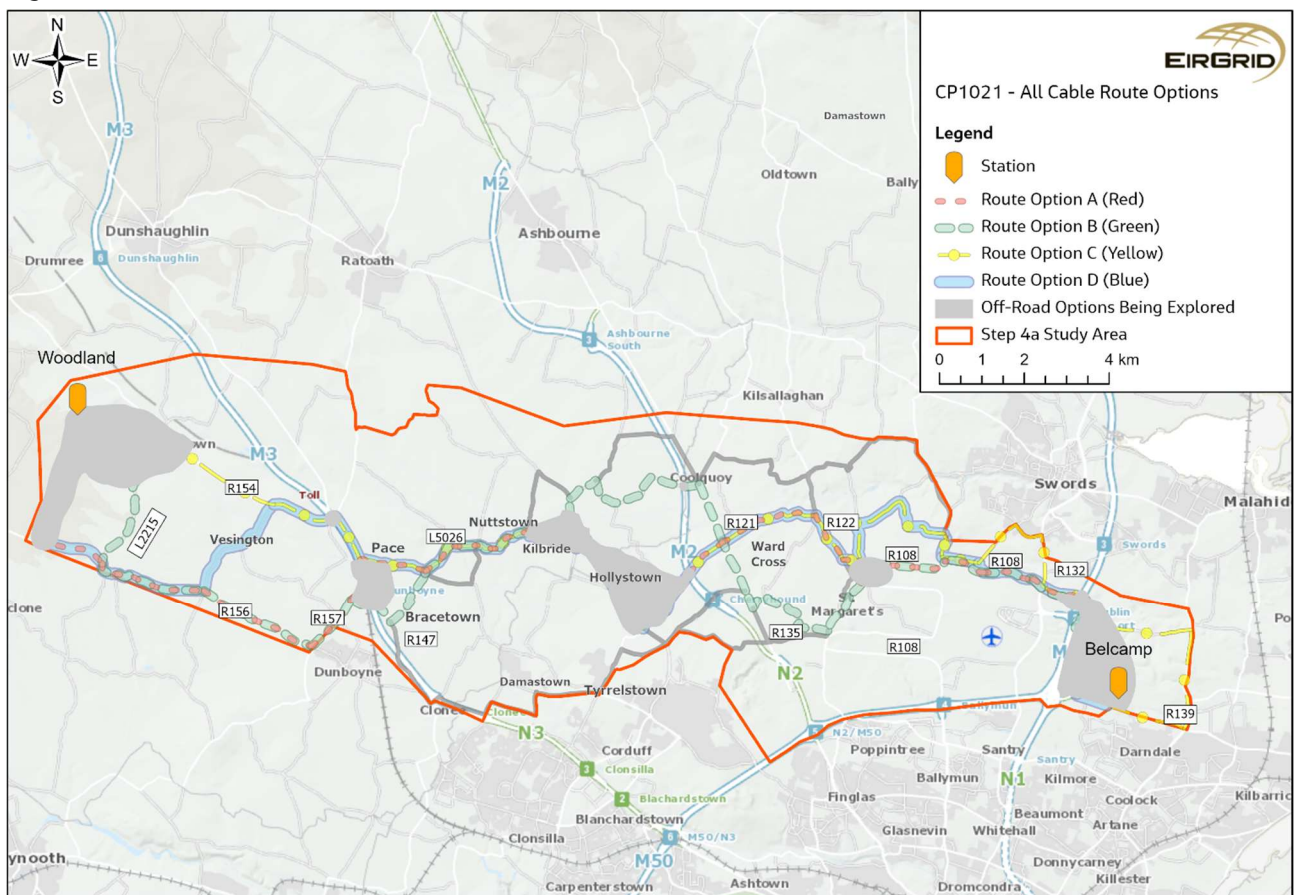


Figure 2-2: Route Options

EirGrid invited the public to give feedback on the four proposed route options during a public consultation from September to November 2022. A range of communication and engagement methods were adopted, including in person meetings and online methods to reach as wide an audience as possible. Public Consultation was promoted through Community Forum meetings, engagement in the project area, stakeholder engagement, public webinars, multi-channel advertisements, social media and a project website.

A total of 24 responses were received during the public consultation⁹. Consultation responses were received via an online portal (five), by email (eight) or by post (11). Public consultation has been an integral part of the Proposed Project, with each response being considered in the routing of the Proposed Project. Stakeholders expressed concerns about disruption, particularly traffic disruption, with one stakeholder questioning whether the construction works would affect the road on which they live close to Kilbride Village. Furthermore, stakeholders expressed concerns about access to their dwellings/ communities during construction. Stakeholders expressed broad support for the Proposed Project. Some commented that they understood the need for the development due to increasing national demand. Many praised the information provided at the Mobile Information Unit and the opportunity to have their questions answered. Stakeholders expressed support for the approach taken at the events and EirGrid's willingness to engage with the public.

During March 2023, it was announced that Route Option A (Red) was the Emerging Best Performing Option. The Step 4A Report was published at this time, describing the process followed to identify the proposed route options and presenting an evaluation of these options against a set of criteria while also considering feedback from stakeholders, local communities and the public.

Option A (Red) was selected as the Emerging Best Performing Option due to several factors, including its lowest combined impact across all topic areas compared to the other options. Option A has a lower environmental impact than Option C (Yellow), a lower socio-economic impact than Option C (Yellow) and Option D (Blue), a lower deliverability impact than all other options and a lower economic impact than Option C (Yellow) and Option D (Blue). This lower deliverability impact means that there will be less disruption to road users and local communities during the delivery phase compared to other options.

While Option A (Red) has the longest length of off-road sections compared to other options, there is a relatively high degree of confidence that the necessary permits and wayleaves can be arranged for these sections, and these off-road sections are primarily required for technical reasons such as avoiding impacts to existing utilities. While Option A (Red) has potentially moderate impacts on some environmental sub-criteria (biodiversity, surface water/flood risk and cultural heritage), further surveys, engagement, design and assessment work will be undertaken to reduce or avoid these impacts.

Following the announcement of the Emerging Best Performing Option and the publication of the Step 4A Report, EirGrid held its seventh Community Forum on 19 April 2023. The Emerging Best Performing Option was promoted from 29 March 2023 to 14 May 2023, including through local and regional press titles and radio, out of home, digital and social media and a search campaign. During this time EirGrid carried out open days, Mobile Information Unit days, school presentations and project information was hosted in a number of local information points such as libraries, post offices, schools in the project area. EirGrid also corresponded with stakeholders throughout this period, including through emails, telephone calls, and information published on the EirGrid website to advise them of the Step 4A Report and the Emerging Best Performing Option.

EirGrid also engaged with a number of stakeholders through in-person open days and door-to-door visits. Members of the EirGrid project team discussed the Step 4A Report and the Emerging Best Performing Option during these engagement days.

In total, four Open Day events were held following the announcement of the Emerging Best Performing Option. This included two in Dublin (in the Clayton Hotel Dublin Airport and in St. Margaret's GAA Club) and two in Meath (in Scoil Bhríde, Priest town and The Hatchet Inn, Dunboyne). For each of the Open Days, EirGrid's Community Liaison Officers (CLO), project managers and members of the EirGrid technical team were on site to answer questions and document feedback received. Approximately 50 people attended the Open Days during this phase in total.

⁹ <https://consult.eirgrid.ie/en/node/2569/submissions>

In addition to Open Days, EirGrid organised four Mobile Information Unit events, in Dunboyne AFC, Caffrey's Batterstown, The Coachman's Inn (Dublin Airport) and Sweeneys of Kilbride. The EirGrid Mobile Information Unit events are staffed by EirGrid's CLOs and two members of the project team and provided additional opportunities for the public to get project information and provide feedback to the EirGrid team.

A Step 4 Emerging Best Performing Option Engagement Report has been prepared which outlines the engagement and communications that have taken place during the Emerging Best Performing Option period of engagement from 29 March 2023 to 14 May 2023. This report is available on the project website.

Table 2.1 below provides a summary of key issues raised and how the project team have considered the comments.

Table 2.1: Post Step 4A Engagement Summary

Feedback theme	Project Team response
What is the construction timeline?	The timelines for Step 5 and Step 6 will be confirmed following the completion of Step 4.
What measures will be taken to reduce disruption?	<p>As part of Step 4B of the project development process, traffic survey data has been acquired and a traffic study will assess delays and disruption due to traffic management during the construction phase.</p> <p>We are also working with local communities and landowners to identify suitable site construction compounds and to identify appropriate haul routes and abnormal load routes.</p> <p>Where possible we are seeking to avoid routes through towns, villages and other residential areas while also seeking to minimise disruption to farms and other businesses in the area.</p>
Will road closures be required ?	Wherever possible we seek to avoid road closures however we expect that some narrow roads may require temporary road closures.
What is the decision making process?	<p>We will continue to engage with local communities and stakeholders during Step 4 and Step 5.</p> <p>Following the planning application in Step 5 a statutory public consultation process will also be undertaken as part of the statutory approval process.</p>
How will this enable other energy projects?	This upgrade will strengthen the electricity grid in the east of Meath and the north of Dublin to improve the transfer of power across the existing transmission network. This will facilitate further development of renewable energy generation, onshore and offshore.
Will this work with other utilities?	We have undertaken surveys of existing utilities to assess the feasibility of the route. In some locations diversions of existing utilities may be required and in other locations off-road sections are required to avoid excessive disruption to local communities due to the utility diversions that would be required.
Could this impact health (i.e. due to EMF)?	<p>The consensus from health and regulatory authorities is that extremely low frequency EMFs do not present a health risk. Further information is available on the EirGrid website: https://www.eirgridgroup.com/about/health-and-safety/</p> <p>In addition, EirGrid's design standards require all underground cables to operate within existing public exposure guidelines from the International Commission on Non-Ionising Radiation Protection (ICNIRP) and as such there will be no effect from EMFs in terms of human health or interference to other electrical devices and systems.</p>

2.3 Overview of Step 4B

In Step 4B, Option A (Red) was re-examined to refine the route as far as possible to remove the need for any wider areas and to provide more certainty on the specific location. The five wider areas presented at Step 4A were shown in this way, as these locations included off-road sections, and further discussions were required with relevant stakeholders and landowners. Further surveys and assessment work were also required to determine the best location for the cable route within these wider areas.

Option A (Red) from Step 4A provided a framework for the routing process at Step 4B. While it was explained in the Step 4A Report that route changes were a possibility because of further surveys and assessment, the project team sought to avoid significant changes.

The Step 4B process identified several areas where changes would result in an improved route. The vast majority of changes are in the off-road wider areas, as summarised in Table 3.1 below. Other, more localised changes to the route design are associated with watercourse crossings, as described in Sections 3.5.1 to 3.5.9.

The Step 4B process involved close cooperation between all members of the project team: agricultural liaison officers, and specialists in the fields of deliverability, technical, economic, environmental and socio-economic factors. This multidisciplinary team, along with input from stakeholders, landowners and the community, ensured that the Best Performing Option would be selected through consideration of all relevant issues.

Extensive engagement was carried out with a number of potentially affected landowners. This allowed landowner input into the potential routing and provided more information on ground conditions, environmental constraints, and farming practices that were considered in the routing process. At this time, further surveys and assessments were undertaken to determine how the route could be refined in order to avoid or reduce the potential environmental and social impacts, and to take account of technical issues. Issues such as the cable rating and the need to maintain the structural integrity of the cable (i.e. the cable must bend and not make 90° turns) have been factored into the routing. This process also included technical assessment of the roads affected by the cable, for example, masonry arch bridges on existing roads that may not be suitable to accommodate the proposed cable circuit. This is because the depth of the bridges below the roads are generally quite shallow. In these cases, off-road watercourse crossings adjacent to the bridges have been assessed to be the best solution, subject to the crossing methods, including site-specific environmental mitigation. These locations are identified in Chapter 3.

Environmental and social considerations were addressed via surveys, assessment, consultation with statutory bodies, input from landowners and the community, and discussions as a project team.

This process allowed for the consideration of relevant factors and for the project team to discuss potential routing options for the cable. The Step 4B Best Performing Option was chosen from this process and is detailed in Chapter 3 below.

The Project Study Area at Step 4A was roughly 340km², which represented a reduction of approximately 55% from the Step 3 Project Study Area, covering all four of the proposed route options. After the selection of Option A (Red) as the Emerging Best Performing Option, the Project Study Area was further refined to cover this area. The current Project Study Area is shown in Figure 2.3. It covers an area of 51 km², which represents a reduction from the Step 4A area of approximately 85%. These refinements have allowed community engagement to be focused to the relevant area of the route.

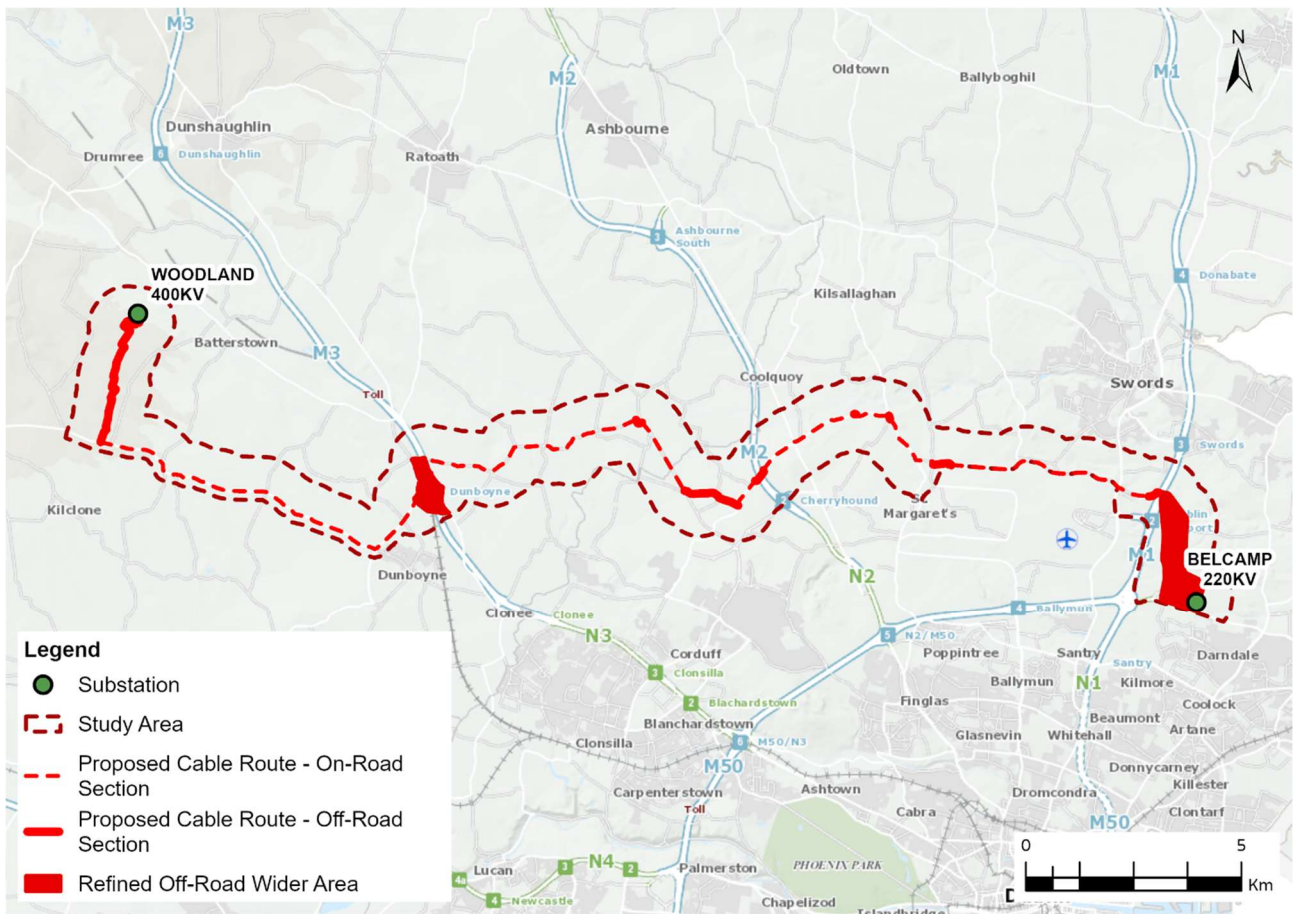


Figure 2-3: Step 4B Project Study Area

3. Description of Best Performing Route Option

3.1 Introduction

This chapter of the report provides a description of the Best Performing Option at Step 4B. The route described is based on the previous design, assessment work and surveys from Step 4A, with updates at this Step following the consideration of feedback from key stakeholders, including local communities and landowners. Further work will be undertaken as the project moves into Step 5 and this could result in further changes and refinement to the route design. This may be due to new information from ground investigations, new constraints identified from environmental surveys or new details provided by affected landowners. The changes will be made because of technical, deliverability or economic reasons, or to avoid or reduce potential impacts to the environment or local communities. Any changes will be fully described in the Step 5 reports.

3.2 Cable Details

3.2.1 Cable Trench

The route shown in this report is based on a 2.1m wide trench. It is possible that this width will be decreased when further technical assessments are completed at Step 5. However, 2.1m is the maximum width expected that could be used on this Proposed Project and is used here as a reasonable “worst case”. A narrower cable trench may result in reduced construction activity and fewer road closures. These issues will be addressed at Step 5. In some areas (e.g. at watercourse crossings), it may be necessary to widen the cable route to overcome physical constraints present.

The cable trench comprises several layers (see Figure 3-1 below) and is typically 1.5m in depth (that can change because of ground conditions or the presence of constraints, such as other utilities).

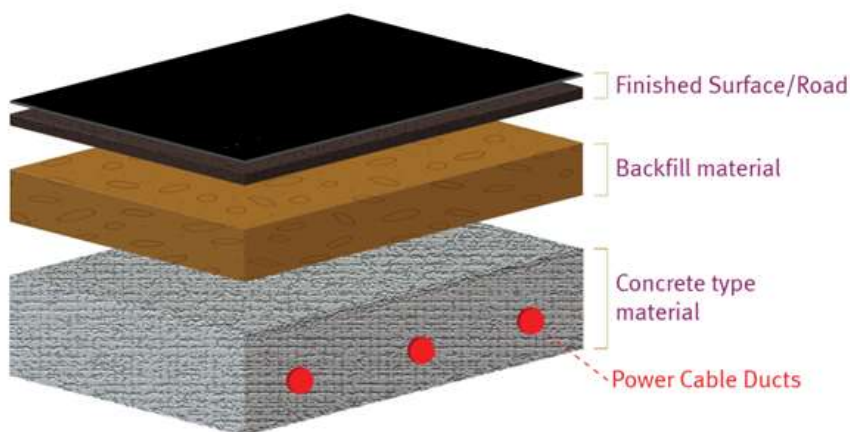


Figure 3-1: Indicative High-Voltage Alternating Current (HVAC) Cable Duct Arrangement (single conductor per phase solution)

3.2.2 Other Design Features

Further design features will be added to the Proposed Project at Step 5. These include jointing bays, passing bays, construction areas, access tracks, other associated works, and substation works. These works will be in the vicinity of the described route, however further surveys and assessment work are required before these elements can be designed. These elements will not affect the routing of the cable. However, they may result in additional requirements and further landowner engagement.

Jointing bays (underground chambers) will also be constructed along the cable route and are used to join together ('joint') consecutive lengths of cable and to facilitate the cable pulling. Typically, jointing bay spacing for this type of cable circuit is approximately 750m. To facilitate traffic management at locations where jointing bays are to be located within the carriageway, the use of temporary passing bays is proposed. These are strips of land at the edge of a public road on one side of a jointing bay (approximately 100m in length), that are temporarily cleared and laid with a temporary road surface in order to facilitate vehicle movements around the jointing bay, thereby avoiding or minimising the need for road closures. This will entail removing the top layer of ground to the side of the carriageway (including removal of hedges and other vegetation if present) and temporarily storing it locally to the site for reinstatement following the works. New hedges would be planted as part of reinstatement works.

Other traffic control measures will also be implemented as appropriate along the cable routes. These are likely to include road diversions, temporary closures and traffic management. All traffic management measures will be implemented in the context that the laying of cable is a linear construction process, which will be done in smaller sections along the cable route. This means that not all roads along the cable route will be disrupted at the same time during construction.

In addition to crossings of watercourses, crossings of utilities, motorways and a railway will also be required along the cable route. These crossings will be designed at Step 5 but typical crossing techniques include cable bridge, open-cut trenching or by use of Horizontal Directional Drilling (HDD). The specific detail of each crossing will be developed at Step 5 of the Proposed Project but an overview of the techniques is provided below:

- Cable bridge – a structure to pass cables over an area such as a watercourse. Measures are designed in to prevent unauthorised access to the structure;
- Open-cut trenching – an excavated area dug through fields where the cable is constructed. Where it is done through watercourses, the water flow is temporarily diverted with pipes around the area of work and the watercourse is then reinstated; and
- HDD – one of a number of trenchless techniques. A drilling rig launches a bore underground and it is guided in the desired direction. The cable is then laid in the drilled hole. There are no above ground works except for the start and end points of the hole.

3.3 Route Width

For the on-road sections, the route is shown as the width of the road. Further design and assessment will refine the location of the route within or adjacent to the road (e.g. in a footpath) at Step 5.

For the off-road sections, the route is generally shown as a 40m wide strip. The width of 40m is subject to ground conditions, severance issues, and other constraints. It may increase in size at watercourse crossings where additional land may be required for the Proposed Project works (e.g. HDD). This 40m width is mostly temporary construction areas within these sections and there will be a smaller permanent easement above the cable, which will be required for maintenance.

In some on-road sections, an off-road crossing of a watercourse will be required. These areas are described below and are needed at some existing bridge crossings of watercourses. At this time, it is considered that those bridges would not have sufficient depth to accommodate a cable and so an off-road crossing is required. Where it was determined that it would not be possible to utilise a watercourse crossing, an alternative route design has been considered.

3.4 Route Changes from Step 4A



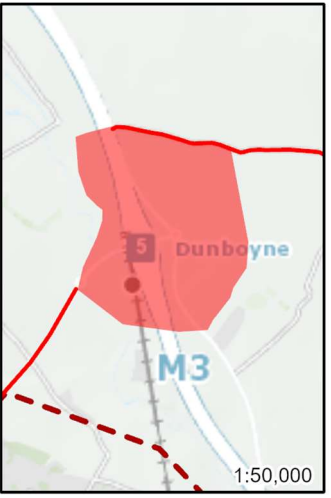

The work undertaken by the project team has allowed the refinement of the Emerging Best Performing Option that was shown at Step 4A. Route Option A (Red), as shown at Step 4A, had several wider areas and


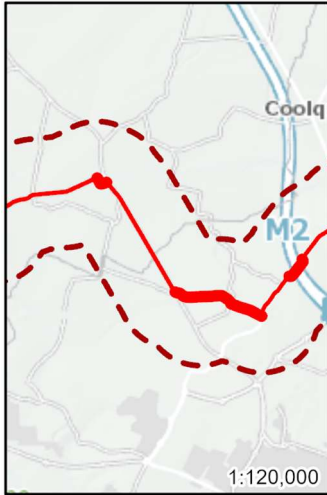
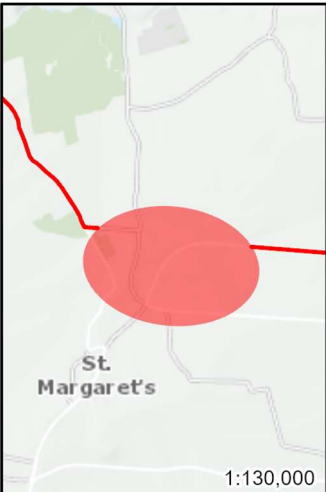
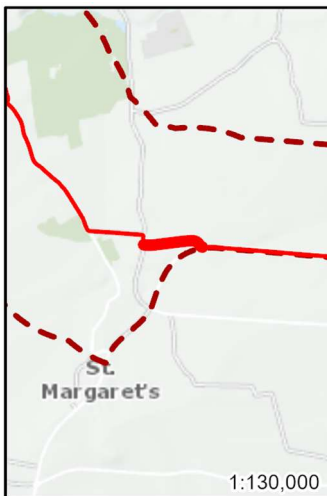


these are shown in Figure 2-2. It was necessary to show these wider areas because further design, assessment and consultation was required to refine the route at these locations.

In Step 4B, refinements to the route design have enabled the removal of four of these five 'wider areas', as the specific route at these locations has been identified.

Further details are provided in the text below with a summary of the key changes in Table 3.1.

Table 3.1: Changes to Step 4A Wider Areas

Emerging Best Performing Option	Reason for the Change	Best Performing Option
<p>Woodland to R156</p> 	<p>This is now an off-road section approximately 3km in length through agricultural land. The use of the local road network in this area was technically challenging due to two existing masonry arch road bridges on the Red Road that were unsuitable. An off-road corridor would also minimise the risk of disrupting access to the Woodland substation and converter station. The BPO also optimises a corridor shared with another EirGrid project, CP0966.</p>	
<p>M3 Crossing</p> 	<p>Feasible route options have been developed at this location however the route remains subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5.</p>	

Emerging Best Performing Option	Reason for the Change	Best Performing Option
<p>Hollystown</p> 	<p>This is now an off-road section approximately 1.4km in length through agricultural land. The use of the local road through the village of Hollystown was considered challenging from a deliverability perspective due to potential disruption during construction and the presence of numerous existing utilities. An off-road corridor will minimise disruption to the local community, businesses and road users.</p>	
<p>St. Margaret's</p> 	<p>This is now an off-road section approximately 0.5km in length through agricultural land. The use of the local road network in this area was considered to be technically challenging due to potential risk of disruption to strategic infrastructure associated with the airport (i.e. runway landing lights). An off-road corridor will minimise risk.</p>	
<p>M1 to Belcamp</p> 	<p>This is now an off-road section approximately 3.5km in length through agricultural and industrial land. The use of the local road (Stockhole Lane) was identified to perform less successfully against the other options due to potential disruption during construction and the presence of numerous existing utilities. An off-road corridor will minimise disruption to the local community, businesses and road users. Feasible route options have been developed at this location however the</p>	

Emerging Best Performing Option	Reason for the Change	Best Performing Option
	<p>route remains subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5. The potential for this off-road section to become a wider 'transmission cable corridor' has been discussed with affected landowners on the approach to Belcamp substation and continues to be investigated and assessed, for potential development under future EirGrid projects.</p>	

3.5 Summary of Route

The following sections of this chapter describe the Best Performing Option travelling from Woodland substation to Belcamp substation. For ease of reference, the route has been broken into sections in this report. It is noted that at the construction phase, the route may be progressed by multiple construction teams working at different locations (i.e., not necessarily working sequentially from Woodland to Belcamp). This will be addressed in the Step 5 reports.

See Appendix A for figures illustrating the Best Performing Option.

3.5.1 Woodland to R156



Figure 3-2: Woodland to R156

At Step 4A, a wider area as shown in Figure 3-2 was situated from Woodland substation to the R156. As part of Step 4B, several routing options were considered in accordance with the routing principles for the Proposed Project (see Chapter 2 of this report for further details). The option of an in-road section using the Red Bog Road and the Red Road to connect to the R156 was considered. However, this was not preferred due to the presence of two existing masonry arch road bridges, which were assessed to be unsuitable for the cable. Alternative design solutions (such as cable bridges) and off-road routes were considered in these areas. However, the area is constrained by residential properties and farm buildings adjacent to the bridges. Short off-road diversions at the bridges would have resulted in impacts to the properties and farm buildings and so this option was not preferred. Both the Red Road and Red Bog Road are also vital access routes to the substation itself and the East-West Interconnector station. As a result, any route along these roads, or immediately adjacent, could risk disruption to the operation of these stations particularly during the construction phase.

These issues required the project team to identify an alternative off road route. This is in-line with the routing principles for the Proposed Project, which aim to find the best overall option considering all issues. While there is a preference for on-road sections in the routing principles, that preference is to be considered on balance with all factors. In this case an off-road route was determined to be the Best Performing Option in

this location. The route also shares a corridor with another EirGrid underground project, CP966 Kildare Meath UGC, ensuring efficiencies across the two projects and minimisation of potential impacts.

Consultation with landowners between Woodland substation and the R156 helped to identify a viable route for the cable. Potential impacts to the affected area have been discussed and the route has sought to minimise these effects.

The route will cross approximately 17 hedgerows and treelines and there will be a crossing of the Dunboyne Stream_010. There are field drains along hedgerows and treelines which will also require crossing. There are cultural heritage features (ring ditches) with the potential to be directly impacted. Construction may also impact any previously unknown archaeological remains that may be present (this applies to all off-road sections of the route). An assessment of the potential impacts of the proposed route was undertaken in the Step 4A Report for the Proposed Project; however further assessment will be undertaken at Step 5. Where it is required, mitigation will be proposed in the Step 5 reports to avoid or reduce the potential impacts.

Part of the cable route is shown outside of the north-west corner of the wider area. The route follows the field boundary at this location and a small additional area has been included to avoid potential severance of this portion of land.

3.5.2 R156 and R157



Figure 3-3: R156 and R157

This section of the route, illustrated in Figure 3-3, is in-road with no off-road sections. This section of the route joins the R156 close to Barstown Industrial Estate. The route travels east along the R156 towards Dunboyne.

There are two watercourse crossings where the cable circuit will remain in-road and cross above the bridge or culvert structures. The detail of the crossing will be confirmed at Step 5 following further technical surveys and assessment work, and consultations with Meath County Council. At the roundabout with the R157 and Summerhill Road (a local road), the route again crosses the Dunboyne Stream_010 watercourse on the circulatory carriageway of the roundabout. It is proposed to cross the watercourse on the road, above the watercourse structure. From this location, the route travels to the north along the R157 towards Junction 5 (Dunboyne) on the M3 Motorway. Along this section, the cable route crosses over the Tolka_020 watercourse within the road. It is proposed to cross the watercourse on the road, above the watercourse structure.

Continuing towards the junction with the M3 Motorway, the cable route will pass through the roundabout providing access to the M3 Parkway rail station and car park. It is understood that this roundabout may be upgraded to an alternative junction type as part of the development of adjacent land, however it is anticipated that the cable route will remain in-road at this location.

3.5.3 M3 Motorway



Figure 3-4: M3 Motorway

At Step 4A a wider area, as shown in Figure 3-4, was situated around the M3 Motorway crossing. The reason for the wider area was that the surrounding area is subject to planned development and engagement with local landowners and other interested parties was ongoing in order to determine the proposed route in this location. This wider area has been refined and reduced in size, as illustrated in Figure 3-4.

Several technically feasible options have been developed and assessed against environmental constraints. These options have also been discussed with relevant landowners and stakeholders.

The route within the retained wider area is subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5.

3.5.4 L5026, L1010 and L1007



Figure 3-5: L5026, L1010 and L1007

This section of the route, illustrated in Figure 3-5, is largely in-road with the potential for several localised off-road sections at watercourse crossings. It joins the L5026 close to the junction with the R147 adjacent to the M3 Motorway. The route travels east along the L5026 passing through the townland of Whitesland. At the junction with the L1010, the route turns to the north-east, following the L1010, before turning east again through Nuttstown, currently following an on-road route to facilitate the crossing of two watercourses, both tributaries of the Pinkeen_010.

As the route continues eastward toward Kilbride, there is an on-road section to cross the Ward_010 watercourse. The route passes through Priest Town, and before reaching the junction with the L1007, follows a localised off-road section again crossing the Ward_010 watercourse. From this location, the route turns south-east following an on-road route along the L1007.

Approaching Hollystown, the route remains on-road using existing watercourse structures to cross over three tributaries of the Ward_020. Immediately north of Hollystown, opposite Kilmartin Lane, the route turns off-road to the south-east.

There is a recorded monument (AY_18) to the south of the route in Ballingtry townland. However, it is not anticipated to be directly impacted. Further assessment will be undertaken at Step 5, and where it is required, mitigation will be proposed in the Step 5 reports to avoid or reduce the potential impacts.

Off-road watercourse crossings may be required where there is an existing bridge in the road, which technical assessments have determined may not be suitable to accommodate the proposed cable circuit, due to the limited depth of the bridge structure. The crossing types at these watercourses could be trenched or trenchless crossings, such as cable bridges or HDD. The crossing type will be resolved at Step 5 following further surveys, assessment, and engagement with affected landowners, Meath and Fingal County Councils and other key stakeholders (such as Inland Fisheries Ireland).

Throughout a significant portion of this section of the route, from the junction with the R147 to the Priest Town Cross Roads, the route shares road space with an existing MV (medium voltage) cable. At certain pinch points, particularly on bends where the MV cable 'weaves' from one side of the road to the other, it may be necessary to consider local diversions of the MV cable and/or localised off-road sections of the proposed cable circuit. This will be resolved at Step 5 following further surveys, assessment, and engagement with affected landowners, Meath County Council and other key stakeholders.

3.5.5 Hollystown

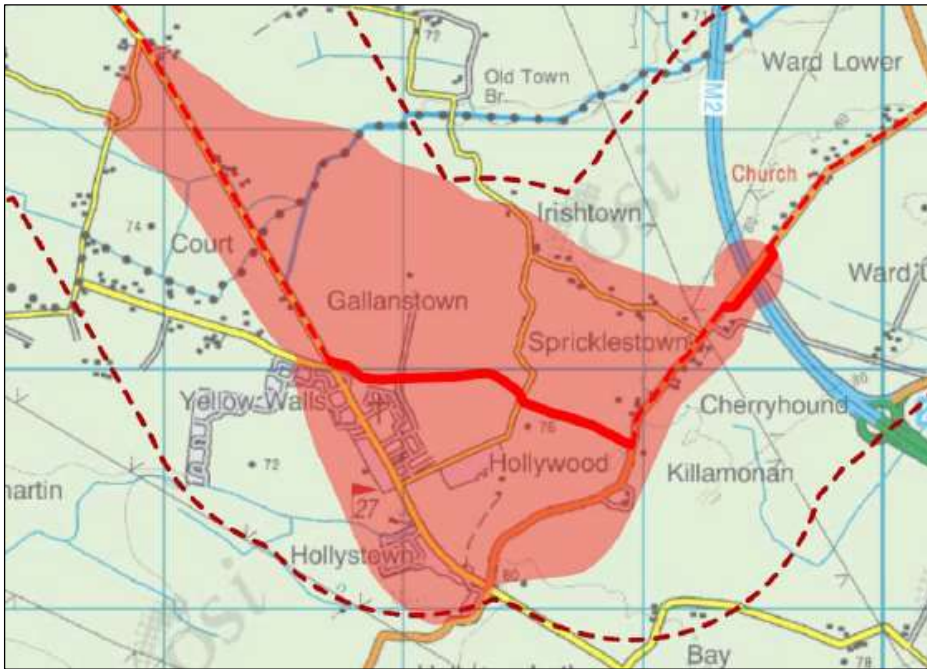


Figure 3-6: Hollystown

At Step 4A, a wider area as shown in Figure 3-6 was situated around the villages of Kilbride, Hollystown and the adjacent L1007 and R121. As described in Section 3.5.4, the route remains predominantly on-road along the L1010 and L1007 through the village of Kilbride, with only localised off-road sections to facilitate watercourse crossings.

As part of Step 4B, several routing options were considered in accordance with the routing principles for the Proposed Project (see Chapter 2 of this report for further details). The option of an in-road section using the L1007 through Hollystown to connect to the R121 at the roundabout with Hollywoodrath Road was considered. However, this was not preferred due to the presence of numerous utilities in Hollystown and the potential need for utility diversions to facilitate the construction of the cable circuit. This could require full road closures that would lead to significant levels of disruption to road users and the local community.

These issues required the project team to identify an alternative off-road route. While there is a preference for on-road sections in the routing principles, that preference is to be considered on balance with all factors. In this case, an off-road route was determined to be the Best Performing Option in this location.

Engagement with landowners to the north-east of Hollystown, between the L1007 and R121, helped to identify a viable route for the cable circuit. Potential impacts to the affected area have been considered and the route has sought to minimise these impacts.

The route will cross approximately eight hedgerows and treelines and traverse Ballymacarney Road. There are field drains along several hedgerows and treelines that will also require crossing. Where it is required, mitigation will be proposed in the Step 5 reports to avoid or reduce the potential impacts. There are cultural heritage features in this area that could be impacted. Further assessment will be undertaken at Step 5, and where it is required, mitigation will be proposed in the Step 5 reports to avoid or reduce the potential impacts.

3.5.6 R121 and R122



Figure 3-7: R121 and R122

This section of the route, illustrated in Figure 3-7, is predominantly in-road with two localised off-road sections. There are two watercourse crossings in this section of the route.

Following the off-road section at Hollystown, the route turns back on-road at Killamonan, following the R121 to the north-east. At the M2 Motorway, the route follows a localised off-road section, to allow for an HDD crossing to the south of overbridge (it was not possible to take the overbridge itself due to a lack of space for the cable). The route remains on-road to cross the roundabout with the R135 and continues to follow the R121 through the townlands of Ward Lower, Newpark and Shallon.

As the route passes from Newpark to Shallon, there is a localised off-road section in order to cross the Ward_030 watercourse to the south of the existing road.

At the junction with the R122 in Skephubble, the route turns to the south-east following an on-road route through Ballystrahan. At the junction with Toberburr Link Road (known locally as Kilreesk Lane), the route turns from the R122 onto Toberburr Link Road in an easterly direction towards St. Margaret's where the route stays on-road to cross the Ward_030 watercourse.

There are cultural heritage features in this section of the route (including four recorded monuments, of which two are also protected structures) that could be impacted. Further assessment will be undertaken at Step 5, and where it is required, mitigation will be proposed in the Step 5 reports to avoid or reduce the potential impacts.

3.5.7 St. Margaret's



Figure 3-8: St. Margaret's

At Step 4A, a wider area, as shown in Figure 3-8, was situated near St. Margaret's between the Toberburr Link Road and the R108.

As part of Step 4B, several routing options were considered in-line with the routing principles for the Proposed Project (see Chapter 2 of this report for further details). The option of an in-road section using Toberburr Link Road to connect to the R108 at Kingstown Crossroads was considered. However, this was not preferred due to the presence of airport infrastructure (runway landing lights) and the need for two crossings of a watercourse (Ward_020).

These issues required the project team to identify an alternative off-road route. This is in line with the routing principles for the Proposed Project, which aim to find the best overall option considering all issues. While there is a preference for on-road sections in the routing principles, that preference is to be considered on balance with all factors. In this case an off-road route was determined to be the Best Performing Option in this location.

Engagement with the landowner between Toberburr Link Road and the R108 near St. Margaret's helped to identify a viable route for the cable circuit. Potential impacts to the affected area have been considered and the route has sought to minimise the effects. This route also has the additional benefit of a shorter overall route with fewer bends.

The route will cross approximately three hedgerows and treelines. There are no watercourse crossings or field drains. Where it is required, mitigation will be proposed to avoid or reduce the potential impacts in the Step 5 reports. There are no known archaeological features directly impacted by the proposed route. An assessment of the potential impacts of the proposed route was undertaken in the Step 4A Report for the Proposed Project. However, further assessment will be undertaken at Step 5.

3.5.8 R108, L2020 and L2753



Figure 3-9: R108, L2020 and L2753

This section of the route, illustrated in Figure 3-9, is all in-road with no off-road sections. There are two watercourse crossings in this section of the route.

Following the off-road section near St. Margaret's, the route turns back on-road, following the R108 Naul Road to the east and remaining in-road over a watercourse (Ward_030). At the roundabout at Forest Great, the route remains on-road, following the L2020 to the east, passing through Forest Little and remaining in-road over a watercourse crossing (Sluice_010). The route remains on-road to cross the roundabout with the R132 and follows the L2753 in an easterly direction, through the townland of Cloghran towards the M1 Motorway.

There are cultural heritage features in this section of the route (including two recorded monuments) that could be impacted. Further assessment will be undertaken at Step 5, and where it is required, mitigation will be proposed in the Step 5 reports to avoid or reduce the potential impacts.

3.5.9 M1 to Belcamp

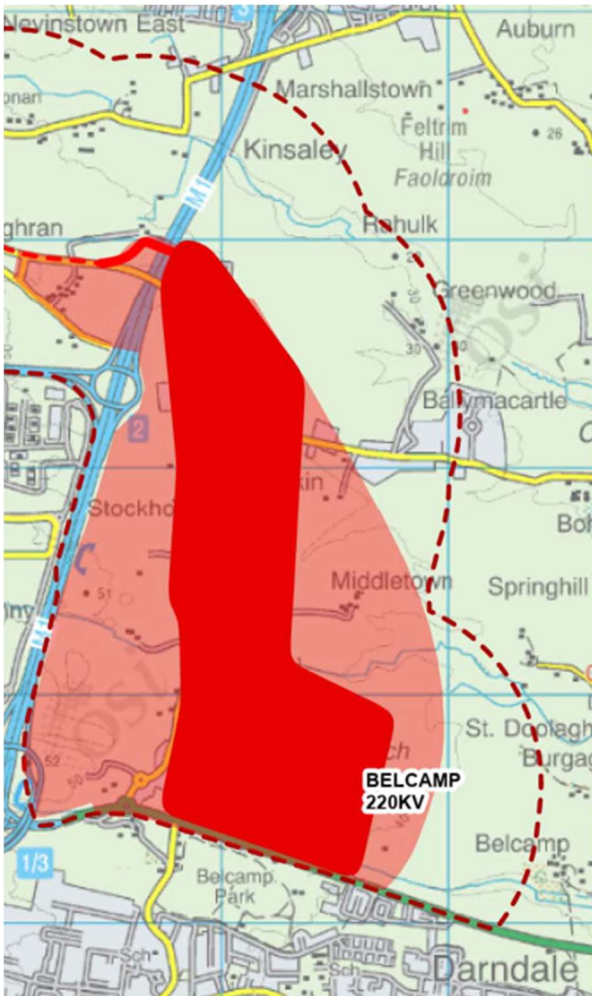


Figure 3-10: M1 to Belcamp

At Step 4A, a wider area, as shown in Figure 3-10, was situated from the M1 Motorway to Belcamp substation. As part of Step 4B, several routing options were considered in-line with the routing principles for the Proposed Project (see Chapter 2 of this report for further details). The option of an in-road section using the L2051 (Stockhole Lane) to connect to the R156 was considered. However, this was not preferred due to the presence of several existing and planned utilities and the potential need for utility diversion works. This would likely require full road closures that would lead to significant levels of disruption to road users, the local community and local businesses.

These issues required the project team to identify an alternative off-road route. This is in line with the routing principles for the Proposed Project, which aim to find the best overall option considering all issues. While there is a preference for on-road sections in the routing principles, that preference is to be considered on balance with all factors. In this case, an off-road route was determined to be the Best Performing Option in this location.

Engagement with landowners between the M1 Motorway and Belcamp substation is ongoing. Feasible route options have been developed at this location however the route remains subject to ongoing engagement with key stakeholders and local landowners and will be confirmed during Step 5.

3.6 Conclusion

Continued assessment, design and surveys, along with engagement with key stakeholders, including local communities and landowners, has enabled refinements of the Emerging Best Performing Option and the identification of the Best Performing Option.

The route refinements described herein have changed the length of the cable route from 36.5km to 37.7km, representing a difference of 1.2km. Within this 37.7km, there is also an increase to the off-road length, from 8.7km to 10.8km.

This increase in off-road length is largely due to the changes in the route design in the wider refinement areas, where the cable route is now predominantly crossing agricultural land. The increase in the overall length will slightly increase the overall cost of the Proposed Project. However, it was concluded that these route refinements were minor and did not materially alter the assessment of Option A (Red), as presented in the Step 4A Report. It has been concluded that Route Option A (Red) remains the Emerging Best Performing Option and that the route shown in this Step 4B Report is the Best Performing Option.

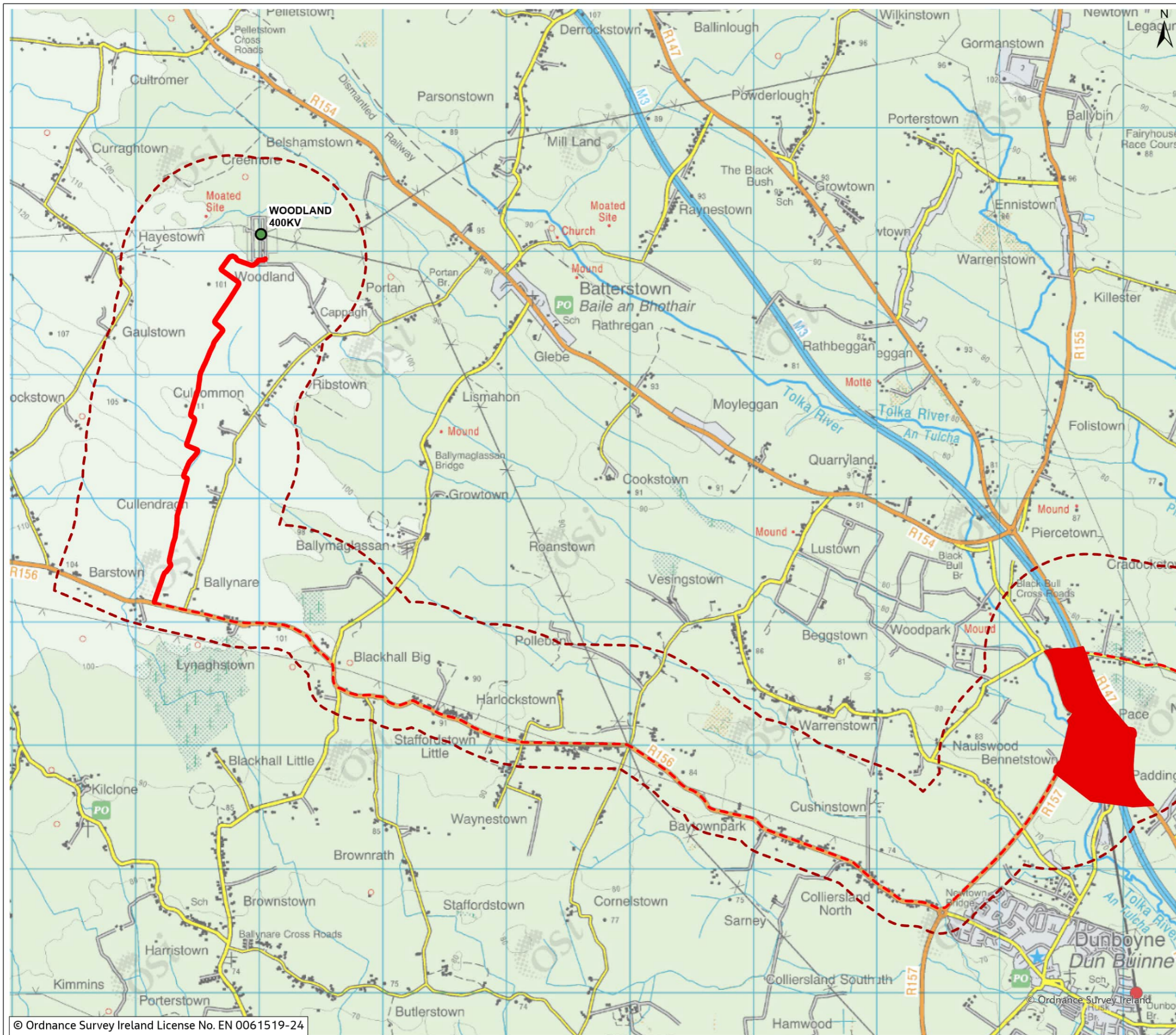
It is likely that further minor route refinement work will be required at Step 5, following additional design, surveys, engagement, and assessment. As in previous steps, feedback on the developing design will be sought from affected landowners, local communities, and prescribed bodies and further details will be provided to the public via EirGrid's website. Additional design features may also be incorporated at Step 5, but these will generally be accommodated within the area of the route described. This will be determined at Step 5.

4. Next Steps

The following actions will be completed on the Proposed Project:

- Publication of this Step 4B Report and any feedback reviewed by the project team with amendments considered where appropriate;
- EirGrid will continue to engage with affected landowners, local communities, local councillors, the Community Forum, and other relevant stakeholders to discuss the Proposed Project;
- EirGrid will continue to engage with bodies such as Meath and Fingal County Councils, Transport Infrastructure Ireland, Inland Fisheries Ireland, Irish Rail, and utility providers such as Uisce Éireann and Gas Networks Ireland. Initial meetings have taken place and subsequent meetings will be facilitated to examine further details of the proposed route design;
- EirGrid will engage with environmental stakeholders such as Inland Fisheries Ireland, the National Parks and Wildlife Service, Uisce Éireann and local authority heritage officers. Matters discussed will include the agreement of watercourse crossing mitigation and reinstatement principles. EirGrid will incorporate biodiversity enhancement into the design (e.g., as a minimum, including species-rich reinstatement of hedgerows that are to be temporarily removed for passing bays). Natural recolonisation will be adopted, in lieu of sowing commercial wildflower seed in the reinstatement of semi-natural habitats. All biodiversity enhancement methods will be discussed in consultation with relevant stakeholders;
- Confirmation of Strategic Infrastructure Development status of the Proposed Project under the Planning and Development Act, 2000 (as amended) will be sought. Commencement of pre-planning consultation with An Bord Pleanála;
- Completion of a wide range of surveys to inform the development of the route design. This will include consideration of the approach to the construction phase and potential mitigation measures, such as traffic management, to minimise traffic disturbance. Surveys include archaeology, ecology, agriculture, ground investigations, utility surveys, hydrology and technical assessments. As these surveys are progressed and further information is gathered, new issues may be identified, resulting in changes to the route. This is a normal part of the design development process;
- Further design work will be progressed at the substations to determine the works required to connect the proposed cable into the grid;
- The project team will prepare the planning submission (Step 5) for the Proposed Project. This work will include planning and environmental reports, which will describe the final design of the Proposed Project, outline the potential impacts, and identify the mitigation measures that will be put into place to avoid or reduce any impacts; and
- Further updates will be published by EirGrid on the project website: <https://www.eirgridgroup.com/the-grid/projects/cp1021/the-project/>

Appendix A. Best Performing Option Figures



Drawing Number-

Legend

- Substation
- Study Area
- Proposed Cable Route - On-Road Section
- Proposed Cable Route - Off-Road Section
- Refined Off-Road Focus Area



0	Sep 2023	Initial Issue	SMD	GS	GS	AS
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Jacobs



Client

Project
East Meath to North Dublin Grid Upgrade

Drawing Title
**Step 4B Report
Best Performing Option
Sheet 1 of 3**

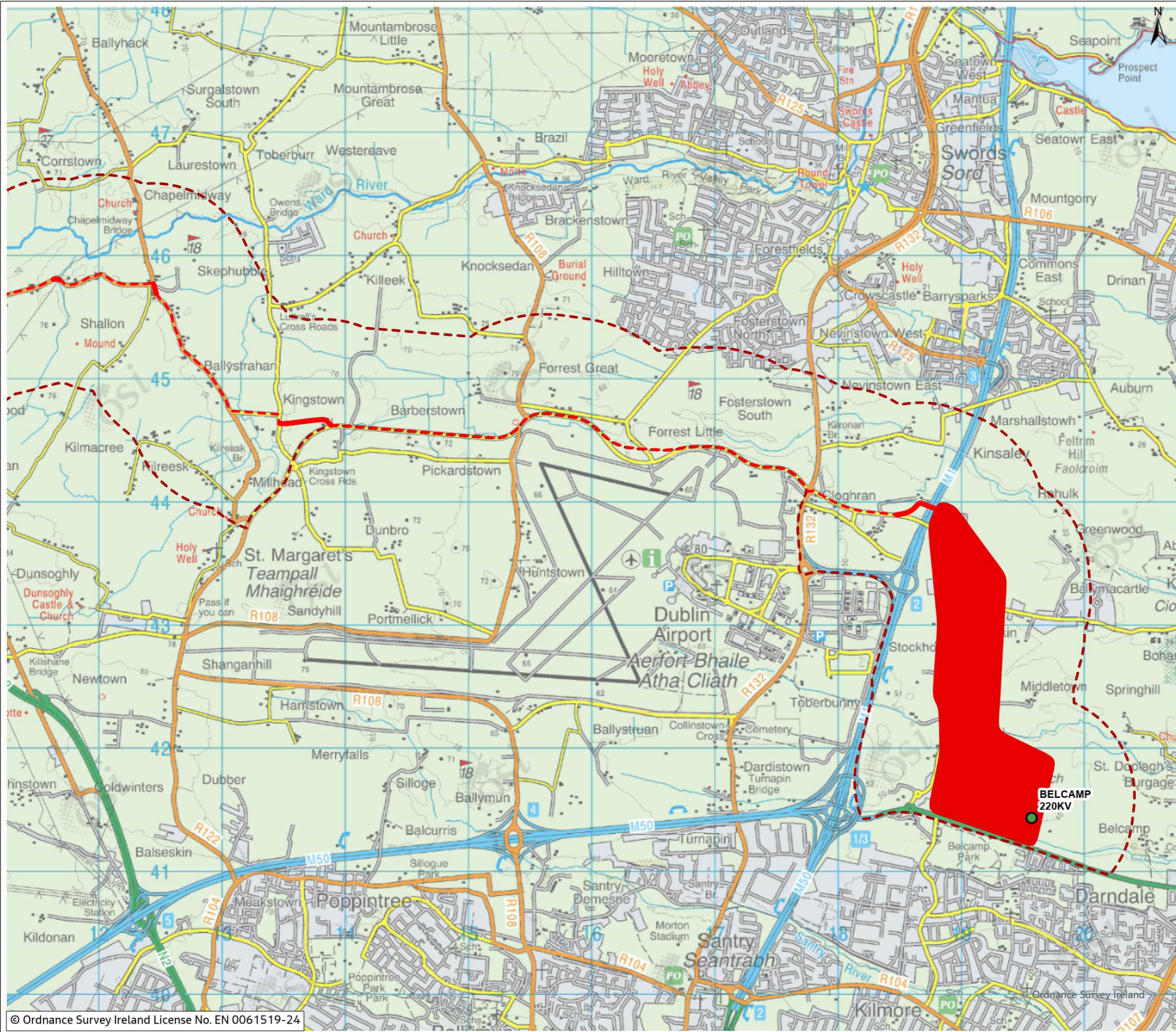
Drawing Status
DRAFT

Scale @ A3
1:30,000
DO NOT SCALE

OSI Sheet No.
Jacobs No. B321084AO

Drawing No.
Drawing Number -

© Copyright 2023 Jacobs U.K. Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright. Limitation: This drawing has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this drawing by any third party.



Drawing Number-

- Legend**
- Substation
 - Study Area
 - Proposed Cable Route - On-Road Section
 - Proposed Cable Route - Off-Road Section
 - Refined Off-Road Focus Area



0	Sep 2023	Initial Issue	SMD	GS	GS	AS
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Jacobs



Client

Project
East Meath to North Dublin Grid Upgrade

Drawing Title
**Step 4B Report
Best Performing Option
Sheet 3 of 3**

Drawing Status
DRAFT

Scale @ A3
1:30,000 DO NOT SCALE

OSI Sheet No.

Jacobs No. B321084A0

Drawing No. Drawing Number -

© Copyright 2023 Jacobs U.K. Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright. Limitation: This drawing has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this drawing by any third party.