



CP1021 East Meath - North Dublin Grid Upgrade

Step 4A Report - Analysis of Route Options

321084AJ-REP-010

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EirGrid



CP1021 East Meath - North Dublin Grid Upgrade

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Glossary and Abbreviations

Abbreviations	
ACA	Architectural Conservation Areas
AAP	Areas of Archaeological Potential
AEOS	Agri Environmental Options Scheme
AIS	Air insulated
ASI	Archaeological Survey of Ireland
CAFE	Cleaner Air for Europe
CFRAM	Catchment Flood Risk Assessment and Management
CPD	County Development Plan
CSO	Central Statistics Office
EHV	Extra High Voltage
End-to-End Option	A cable route option that runs from Woodland substation to Belcamp substation comprised of several shorter route sections.
EPA	Environmental Protection Agency
GIS	Geographic Information System
GSI	Geological Survey Ireland
HDD	Horizontal Directional Drilling
IGHS	Irish Geological Heritage Sites
i-WeBS	Irish Wetland Bird Survey
LCA	Landscape Character Area
MVAr	Mega Volt Amps (reactive)
MCA	Multi-Criteria Analysis
Node	A point where two or more route sections meet – labelled alphabetically.
NIAH	National Inventory of Architectural Heritage
NHA/ pNHA	Natural Heritage Area/ Proposed Natural Heritage Area
NPWS	National Parks and Wildlife Services
OHL	Overhead Line
OPW	Office of Public Works
PWS	Public Water Supply
Route section	A short section of a particular cable route option. Several added together form an End-to-End option.
RHM	Register of Historic Monuments
RMP	Record of Monuments and Places
RPS	Records of Protected Structures
RBMP	River Basin Management Plan
SAC	Special Area of Conservation, designated under the EU Habitats Directive
SI	Statutory Instrument
SMR	Sites and Monuments Record
SPA	Special Protection Area, designated under the EU Birds Directive
TPC	Total Project Cost
TSO	Transmission System Operator
TSSPS	Transmission System Security and Planning Standards

Abbreviations	
UGC	Underground cable
WFD	Water Framework Directive
XLPE	Cross-linked polyethylene

1. Introduction

1.1 Project Need

The East Meath – North Dublin Grid Upgrade (referred to as the 'Proposed Development' in this report) will strengthen the electricity network in the east of Meath and the north of Dublin to improve the transfer of power across the existing transmission network. We need to upgrade and strengthen the network to:

- address the increased electricity demand in east Meath and north Dublin due to economic development and population growth,
- reduce the use of and reliance on fossil fuels for electricity generation,
- facilitate further development of renewable energy generation, onshore and offshore, and;
- assist in achieving climate action targets of having up to 80% of electricity coming from renewable sources by 2030.

This project was identified as one of the candidate solutions in the Shaping Our Electricity Future Roadmap¹ which was published in November 2021.

The need for the Proposed Development has been established through a series of studies completed at Steps 1 to 3 (see Figure 1-2 below for reference). These reports are available on the project website². This series of studies identified the need for a new connection between Woodland and Belcamp substations and that an underground cable would be the best technology for this connection. The Proposed Development is a high voltage (400 kV) underground cable between Woodland and Belcamp substations and the need for the project remains robust.

1.2 Project Benefits

The project is essential to meet the Government of Ireland's Climate Action Plan 2023³ target to increase the proportion of renewable electricity to 80% by 2030, which includes transporting electricity from offshore wind energy. In addition to supporting future renewable generation, the project will improve power quality and support growing electricity demand in the north Dublin area.

The Proposed Development will strengthen the transmission network between Woodland and Belcamp substations to continue to ensure the security of the network feeding the east of Meath and the north of Dublin, between Woodland, Clonee, Corduff, Finglas and Belcamp substations. EirGrid has identified that the Proposed Development will have the following benefits:

- Security of Supply – Improve electricity supply for Ireland's electricity consumers. The network can be more readily rearranged in response to an unplanned tripping or during planned outages to manage power flow;
- Sustainability – Help facilitate Ireland's transition to a low carbon energy future by connecting renewable energy sources (onshore and offshore) to the network and reducing use of fossil fuels for electricity generation;
- Community – Deliver community benefits in the areas that facilitate the project infrastructure including savings in electricity costs and addressing increased electricity demand in the area;
- Competition – Apply downward pressure on the cost of electricity; and
- Economic – Contribute to the regional economy particularly during the construction stage and support foreign direct investment.

¹ https://www.eirgridgroup.com/site-files/library/EirGrid/Shaping_Our_Electricity_Future_Roadmap.pdf

² <https://www.eirgridgroup.com/the-grid/projects/cp1021/related-documents/>

³ <https://www.gov.ie/en/publication/7bd8c-climate-action-plan-2023/>

1.3 Project Description

CP1021 is a proposed development to reinforce the network between East Meath and North Dublin. As noted above, reinforcement of this part of the network is needed to continue to ensure the security of the network feeding the east of Meath and the north of Dublin, between Woodland, Clonee, Corduff, Finglas and Belcamp substations.

The Proposed Development will add a high-capacity 400 kV underground cable electricity connection from Woodland substation near Batterstown in County Meath to Belcamp substation near Clonsaugh in north Dublin (see Figure 1-1).

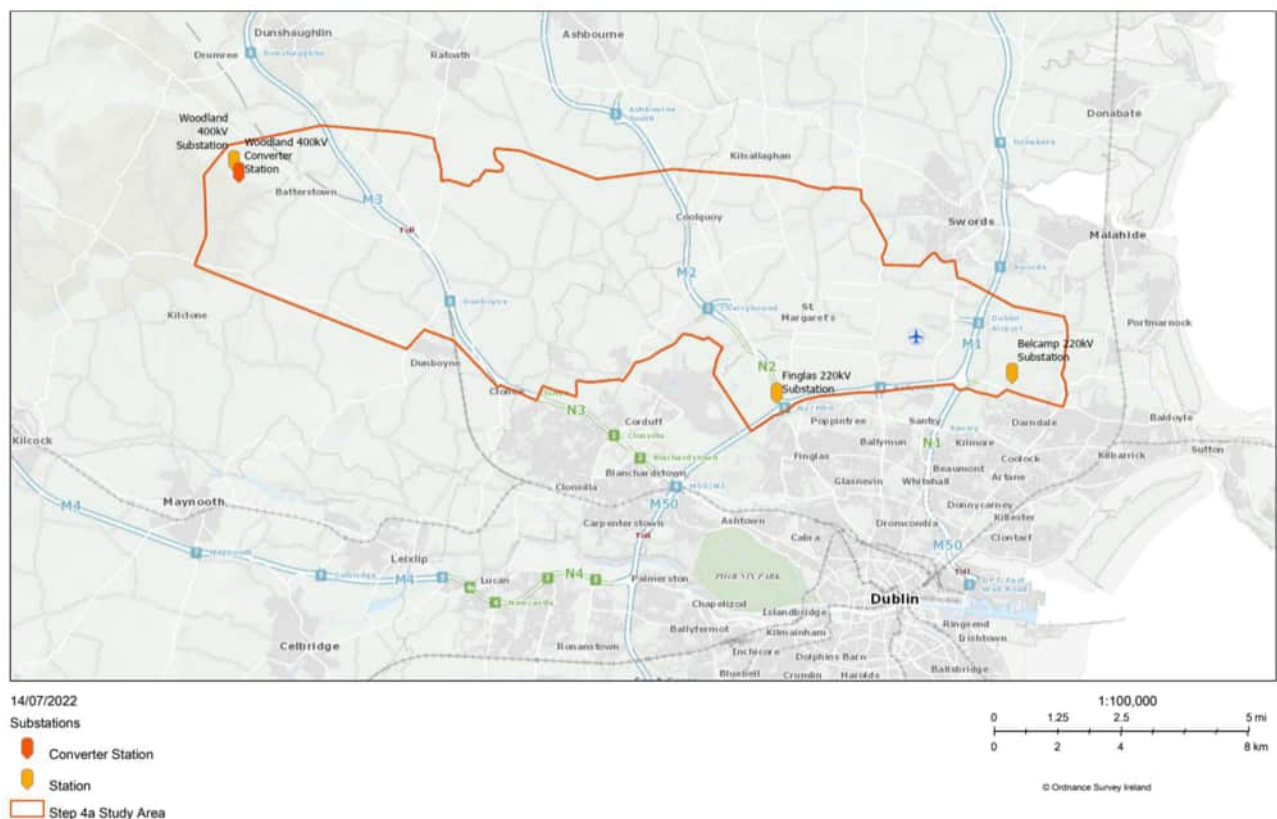


Figure 1-1: East Meath – North Dublin Grid Upgrade Step 4 Study Area

1.4 Assessment Process

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 development from conception through to implementation and energisation.

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



Figure 1-2: EirGrid's six-step approach to developing the electricity grid

The Proposed Development 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.

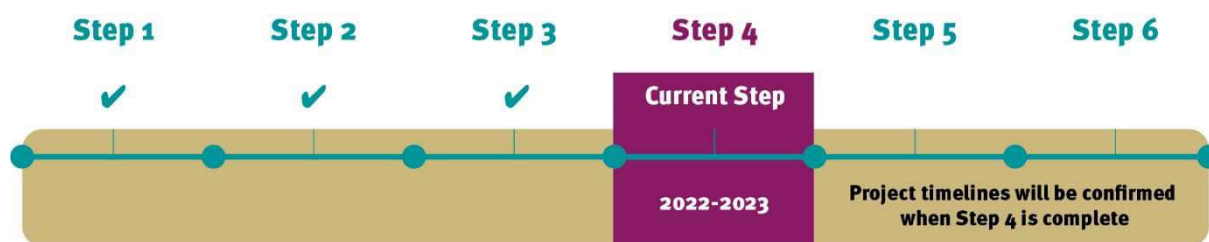


Figure 1-3: EirGrid's six-step timeline for the Proposed Development

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

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 Development 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 Development. 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:

- **Environment.** This criterion assesses the potential environmental impact of an option on the following: biodiversity; geology and soils; surface water and flood risk; planning policy and land use; landscape and visual impact; cultural heritage; noise & vibration; and air quality.
- **Socio-economic.** This criterion assesses the potential social and economic impact and level of social acceptability of an option. Relevant considerations include traffic & transport; amenity; human health; employment and economy; agriculture (including equine); and utilities and critical infrastructure.
- **Technical.** This criterion assesses the technical performance of an option with reference to security of supply and efficiency standards including system reliability; headroom and ratings; maintainability; operational risk; and repeatability.
- **Deliverability.** This criterion assesses the ability to construct and deliver an option within an acceptable period of time. Relevant considerations include design complexity; traffic disturbance; dependence on other service providers; permits and wayleaves; and implementation timelines.
- **Economic.** This criterion assesses economic performance which considers investment costs and life-cycle costs.



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

1.5 Purpose of Report

Step 4 has been divided into two sub-steps: Step 4A and Step 4B. This Step 4A Report presents a technical 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, on the basis of information currently gathered, considers to be the Emerging Best Performing Option for the route of the underground cable.

This report will be published and EirGrid will consider all feedback arising and will use this, and further surveys and analysis, to confirm the Best Performing Option at Step 4B. The Best Performing Option will be the route option taken forward as part of the process to apply for planning permission (Step 5 of the six-step development process).

1.6 Structure of Report

This report is structured as outlined in Table 1.

Table 1.1: Report Structure

Section	Overview
Chapter 1 Introduction	An introduction to the development, setting out the project need, project benefits and project description as well as providing an outline of the assessment approach.
Chapter 2 Route Development Process	An explanation of the Step 4A route design and assessment approach, the assessment criteria and the methodology adopted.
Chapter 3 Description of Route Options	A description of the route options assessed and those not progressed.
Chapter 4 Environment Assessment	The assessment of route options against the environment assessment criteria.
Chapter 5 Socio-economic Assessment	The assessment of route options against the socio-economic assessment criteria.
Chapter 6 Technical Assessment	The assessment of route options against the technical assessment criteria.
Chapter 7 Deliverability Assessment	The assessment of route options against the deliverability assessment criteria.
Chapter 8 Economic Assessment	The assessment of route options against the economic assessment criteria.
Chapter 9 Emerging Best Performing Option and Conclusion	A comparison of the four route options (Option A – D) and selection of the Emerging Best Performing Option with an explanation of why it has been selected.
Appendices	Supporting information for the text of this report.

Section	Overview
Figures	Supporting maps and drawings. Some figures are inset within the text and some are stand-alone at the end of the report.

1.7 Accompanying Reports

The following reports accompany this Step 4A Report:

- Cable Feasibility Report⁵, Jacobs, 2022 – this standalone report considers 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, 2022 – this standalone report identifies the constraints (environmental and socio-economic) considered in the identification of route options.
- Consultation and Engagement Summary Report⁷, Jacobs, 2023 – this standalone report provides 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.
- Step 4A Social Impact Assessment⁸, Jacobs, 2023 – this report provides a high-level assessment of socio-economic impacts resulting from the project in both the construction and operational (energisation) phases considering cultural identity, employment and educational opportunities, place and community attachment, health and overall sense of social cohesion.

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/the-grid/projects/cp1021/related-documents/>

⁸ <https://www.eirgridgroup.com/the-grid/projects/cp1021/related-documents/>

2. Route Development Process

2.1 Introduction

As detailed in Section 1.4, this Step 4A Report presents an analysis of the proposed route options that were identified following confirmation at the end of Step 3 that the Best Performing Technological Option was an underground cable (UGC) between Woodland and Belcamp substations. As noted in Section 1, the aim of the route development process is to identify the location of an Emerging Best Performing Route Corridor Option. The following sections outline how the proposed route options were designed and how they were assessed. The proposed route options are described in Chapter 3 and assessed in subsequent chapters.

2.2 Our Approach

This approach to route options identification and appraisal is a best practice approach to the Consideration of Alternatives for a linear infrastructure project and a key tenet of EirGrid's Framework for Grid Development.

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, which are described in further detail in Section 2.4. By following the routing principles, improved route options were developed. **Error! Reference source not found.** Figure 2-2 outlines the process that was followed.

For the purposes of this route option assessment, a trench width of 1.5m to 2.1m was assumed. **Error! Reference source not found.** Figure 2-1 below shows an indicative arrangement of a High-Voltage Alternating Current (HVAC) cable (single conductor per phase solution).

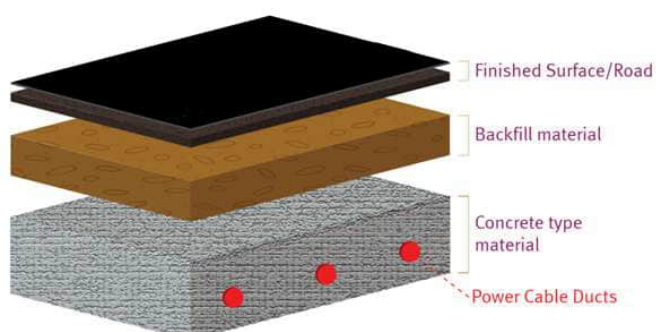
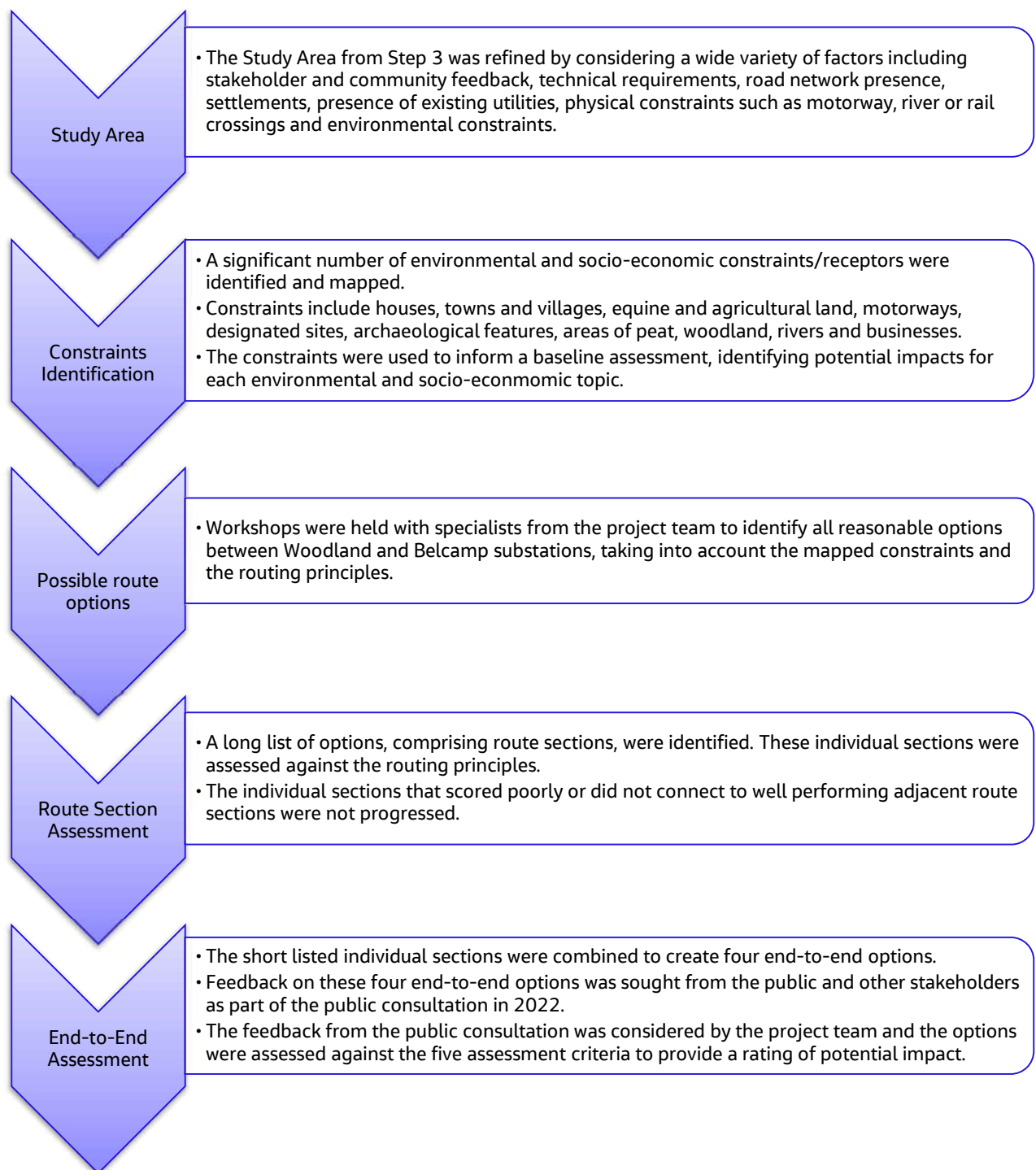


Figure 2-1: Indicative arrangement of a High-Voltage Alternating Current (HVAC) Cable

**Figure 2-2: Step 4A Route Design Process**

2.2.1 Study Area

As part of Step 3, the Study Area was further refined by considering a wide variety of factors. These included stakeholder and community feedback as well as technical requirements of the project, road network presence, settlements, presence of existing electrical utilities, physical constraints such as motorway, river or rail crossings and environmental constraints. In particular, the conurbations of Swords and Blanchardstown have been excluded from the Study Area (see Figure 1-1); as has Malahide Estuary, which is a European designated Special Area of Conservation.

Following the identification of Option 4 – Woodland to Belcamp 400 kV UGC as the Emerging Best Performing Technical Option and as a result of the feasibility studies and assessments the study area was further refined in March 2022. The Study Area shown in Figure 1-1 was used as the basis for the Step 4A assessment and formed the boundary for the identification and mapping of constraints.

2.2.2 Constraints Identification

In advance of the Step 4A Public Consultation (September to November 2022) a Constraints Report⁹ was published. The purpose of the Constraints Report was to review and update the constraints identified in Step 3, to ensure they may be considered appropriately as part of the assessment work to select the Emerging Best Performing Option. The objective of the Constraints Report was to identify the international, national, county, and local constraints that should be taken into account to better inform the design of the Proposed Development.

The project team used site visits, consultation, online mapping, and a project Geographical Information System (GIS) to ensure that details were not omitted and would be fully considered as part of the development of potential route options. This mapping is available for public viewing via the EirGrid website¹⁰.

The study area was subdivided into sub-study areas to allow the identification of key constraints and to better understand the varying characteristics. The key constraints were used to inform a baseline assessment of the following socio-economic and environmental aspects:

- Socio-Economics Factors
 - Traffic and Transport
 - Amenity
 - Human Health
 - Economy
 - Utilities and Critical Infrastructure; and
 - Agronomy including Equine
- Environmental Factors
 - Biodiversity, Flora and Fauna
 - Soils and Water
 - Material Assets
 - Planning Policy and Land-Use
 - Landscape and Visual
 - Cultural Heritage (Archaeological and Architectural Heritage)
 - Noise and Vibration

⁹ https://www.eirgridgroup.com/site-files/library/EirGrid/321084AJ-REP-009_Constraints-Report-Final-August-2022-Clean.pdf

¹⁰ <https://www.eirgridgroup.com/the-grid/projects/cp1021/related-documents/>

- Air Quality; and
- Climate Change.

The potential impacts presented in the Constraints Report were used to guide the identification and assessment of possible route options as part of the subsequent Step 4A route design process.

2.2.3 Possible Route Options

Possible route options were developed using the project Geographical Information System (GIS). This allowed consideration of constraints and routing principles while identifying possible route options. Workshops were held with technical, environmental and socio-economic specialists from the project team to identify and develop initial designs for range of possible route options. As part of this stage of the process, the project team attempted to avoid, where possible, direct impacts on key socio-economic and environmental constraints, such as houses, towns and villages, businesses, equine and agricultural land, designated sites, archaeological features, area of peat and woodland.

Given the large number of potential route options, it was decided that the proposed route options would be broken down into shorter sections first, and then assessed. Eighty-eight individual route sections were designed and labelled for the nodes they connected (for example the section between Nodes A and B was labelled as Route Section AB). This is illustrated in Figure 2-3.

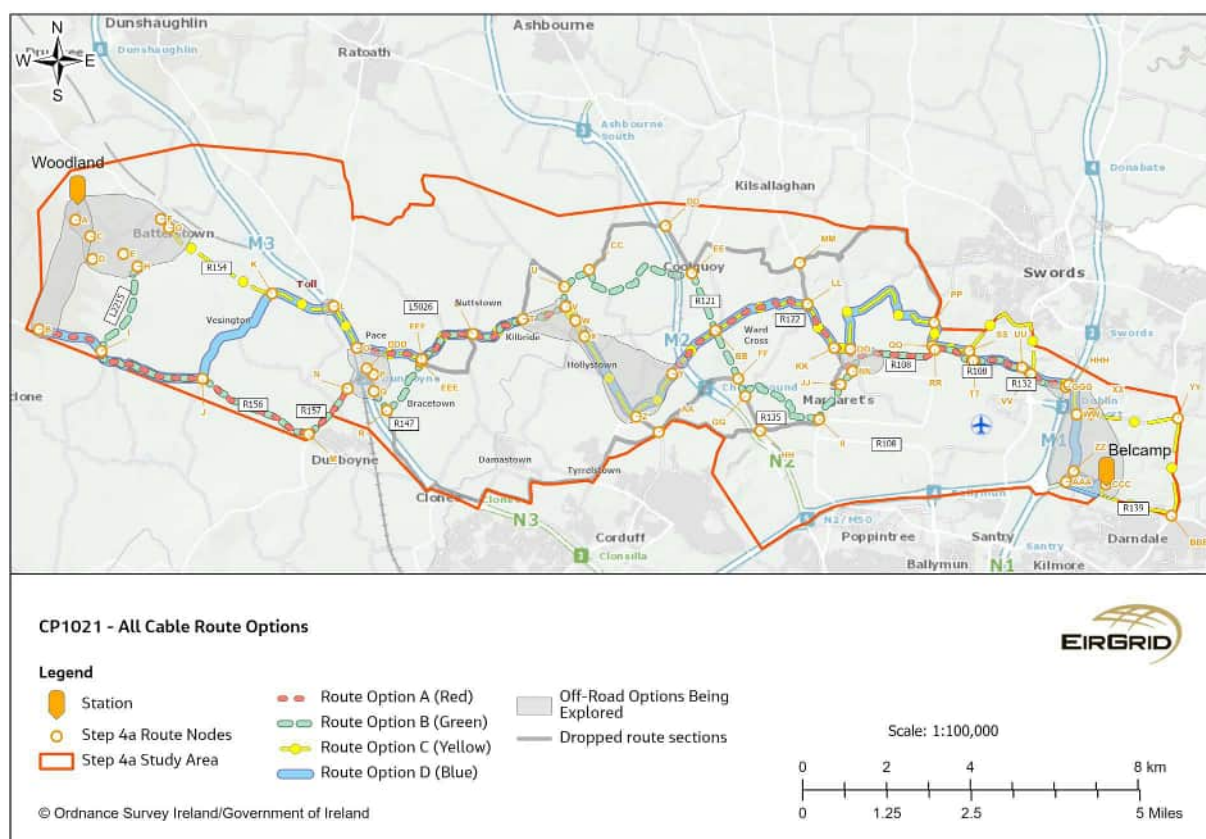


Figure 2-3: Route Sections and Nodes

This process has been described as being like building with bricks. The individual bricks can be swapped out or added together to make something larger. The shorter route sections could be added with other sections to create longer route sections. The route section approach allows greater flexibility in the design and subsequent assessment of route options. In addition, constraints can be more easily avoided by switching to a different route section, and the routing principles can be followed more closely.

This long list of possible route sections, defined by nodes, was taken forward to the next stage of the design process, route section assessment.

2.2.4 Route Section Assessment

The assessment of route sections was based on the five key assessment criteria (Environment; Socio-Economic; Technical; Deliverability; and Economic (see Section 2.4 for further details on the criteria)). These are the same criteria that are used for the assessment of route corridors (see Chapters 4 to 8 for the assessments). With the use of GIS, a large amount of environmental, social and technical data was collected for each route section. For example, this included the number of houses along each route section, how many watercourses in the route section, the geology of the route section, how many archaeological sites were within 25m, 50m, 200m, etc. The data collected is presented in Appendix F of this report.

This data was used as the basis for the assessment of the individual route sections. Environmental and socio-economic specialists used this data and professional judgment to identify the potential impacts, challenges and risks of each route section to assign a ranking based on the process outlined in Section 2.4 of this report. Route sections that had greater potential impact, greater challenges or higher risk relative to comparable sections were sifted out and not progressed. The outcome of this process is summarised in Section 3.1.2 of this report.

2.2.5 End-to-End Assessment

Following the Route Section assessment, the better performing route sections were added together to create end-to-end options between Woodland substation and Belcamp substation. The four (End-to-End) route options presented to the public and stakeholders during the Step 4A consultation are assessed in Chapters 4 to 8 of this report. The four options share some common sections in certain areas (e.g. between Bracetown and Kilbride). This is because the route sections at these locations were assessed to be the best performing. Other alternative route sections at these locations were explored in accordance with the process described above and were deemed not to perform as well as the identified options.

The four options presented at public consultation are presented in Chapter 3. Some larger areas are shown on the maps where a specific alignment has yet to be identified. These areas typically incorporate off road sections where engagement with landowners in these areas will continue, with the route design in these locations subject to further assessment and development.

The results of the end-to-end assessment are shown in Chapters 4 to 8 of this report. The proposed route options are subject to further design and changes as the project continues to the next steps. This will result from further surveys, through public consultation, or information from landowners and statutory bodies.

2.2.5.1 Assumptions and Limitations

For all route options, the following assumptions have been made:

- The UGC will be installed in sections equal to the length of cable on drum (approximately 700 m). Welfare facilities and storage area to be provided at the end of each section;
- Motorways, national roads, railways and major rivers and canals will be crossed using Horizontal Directional Drilling (HDD) reducing disruption and impacts to these elements of transport infrastructure and the environment;
- The cables will be laid primarily using the regional and local road network and will not cross third-party land, except where physical constraints dictate that approach (for example, there is insufficient space in the road network to accommodate the cables and joint boxes e.g. the local road to the Woodland substation from R154 already carries the East West Interconnector DC cable with insufficient space to accommodate the Proposed Development);
- Indicative routes were assumed in the off-road areas. Further surveys, design, engagement and assessment work are required to inform the refinement of the route design in these areas. The assumed off-road routes were necessary since assessing a much wider corridor would not have been practicable. The wider corridors are shown in the accompanying figures to reflect the further work required to optimise the route during Step 4B.

- The circuit will be connected into the substations as underground cables and there will be no requirement for overhead line (OHL) connections. In this regard, there will be requirement for associated additional apparatus and works within both Woodland and Belcamp substations; however, this is not considered further for the purposes of this Step 4A report, as this is a matter of technical detail relevant to Step 5 – it does not influence the cable routing process.

2.3 Public Consultation

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 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, onsite engagement in the project area, stakeholder engagement, public webinars, multi-channel advertisements, social media and a project website. The consultation opened on 7 September 2022 and remained open for twelve weeks, closing on 30 November 2022. EirGrid undertook engagement to promote the consultation among local stakeholders. This phase included:

- A Community Forum, with independent chair and members from local community groups, met a total of 4 times during the consultation period.
- Three focus groups convened in November 2022 across the study area to gain further insights from members of the local community.
- Five onsite engagements, with a Mobile Information Unit visiting towns and villages.
- Six in-person drop-in sessions held at various venues.
- Engagement (including meetings and/or written communications) with multiple stakeholders.
- Three public webinars.
- Attendance at the Meath Energy Expo.
- Door-to-Door Engagement carried out by Community Liaison Officers (CLOs).
- A media campaign in regional press and radio, social media, a project website, and online consultation portal.

The public consultation process allowed members of the public to view the four proposed route options (Figure 3-3 to Figure 3-6) in a consultation brochure¹¹ as well as other materials available via the project website, including interactive mapping, to view the route sections that were not progressed (see Figure 3.1.2). The public were invited to provide comments in relation to each route, about the approach taken on the project to date, and confirm if there were any events in the local area that should be considered during scheduling of the project.

Three channels were provided for submission of responses to the consultation:

- Online: by using the consultation portal at consult.eirgrid.ie, accessible via the EirGrid website;
- Email: by emailing the project's dedicated email address; EastMeathNorthDublin@eirgrid.com, administered by the project team at EirGrid;
- Post: by returning the freepost questionnaire delivered to all homes and businesses along the route, or by sending a letter to the address provided by EirGrid.

A total of 24 responses were received during the consultation period. Full details on the responses are provided in the Engagement and Consultation Summary Report¹² available on the EirGrid website.

Chapters 4 to 8 include a summary of the feedback received for various topics relating to each route option. A response from the project team is also included to demonstrate how the feedback has been considered as part of the Step 4A process, or will be considered during subsequent steps.

¹¹ <https://www.eirgridgroup.com/site-files/library/EirGrid/210538-EirGrid-East-Meath-North-Dublin-Step-4-Consultation-v14.pdf>

¹² Hyperlink to be added following publication

2.4 Route Option Assessment Criteria and Methodology

The design and assessment of the Proposed Development has followed EirGrid's six-step approach as outlined in Section 1.4. This approach facilitates engagement and consultation with stakeholders and the public which helps to explore route options fully and make more informed decisions. As part of the approach, a comprehensive and consistent multi criteria analysis is applied to decision making. The multi criteria analysis facilitates a balanced consideration of the following assessment criteria relating to the Proposed Development:

- Environment;
- Socio-Economic;
- Technical;
- Deliverability; and
- Economic.

Each of the proposed route options have been assessed across the constraints criteria detailed below based on the ranking approach presented below. Matters raised during public consultation, of relevance to the assessment criteria and methodology are highlighted.

More significant/difficult/risk
Significant/difficult/risk

Less



This risk scale is clarified by text, as follows:

- High: Dark Blue;
- Moderate-High: Blue;
- Moderate: Dark Green;
- Low-Moderate: Light Green; and
- Low: Cream.

2.4.1 Environment

Environmental matters were of key concern to several stakeholders during the consultation process; both generally and in respect of particular environmental topics, for example:

- Stakeholders praised the project for its role in enabling the green agenda.
- A number raised concerns about impacts of the project on cultural heritage sites.
- Stakeholders commented that they had experienced previous issues with flooding of the River Boyne and the tributaries of the River Tolka.
- Some focus group participants raised concerns about the loss of hedgerows and trees along the route and suggested that further information is provided about the effects of the project on the environment.

Inland Fisheries Ireland (IFI) provided feedback related to potential impacts on watercourses along the route and set out requirements for the design and assessment of watercourse crossings and drainage features.

Transport Infrastructure Ireland (TII) noted the consideration of an environmental impact statement, TII's Environmental Assessment and Construction Guidelines as well as other TII Publications, in addition to the Environmental Noise Regulations 2006.

Taking the above into account, the environmental risks and considerations associated with the proposed route options are presented under the following environmental assessment topics:

- Biodiversity (Flora and Fauna);
- Geology and Soils;
- Surface Water and Flood Risk;
- Planning Policy and Land-Use;
- Landscape and Visual;
- Archaeology, Architectural Heritage and Cultural Heritage;
- Noise and Vibration;
- Air Quality; and
- Climate Change

The assessment approach undertaken by each environmental assessment topic is outlined below with the detail on each individual option assessment presented within Chapter 4. The environmental assessment topics use a mixture of qualitative and quantitative assessment to assign the overall score (e.g. low, moderate, high, etc.) to the assessment topic under consideration.

2.4.1.1 Biodiversity, Flora and Fauna

The following aspects were considered in the assessment of the four route options in terms of biodiversity (flora and fauna):

- **Distance and connectivity to European and Ramsar sites** – the assessment looked at the proximity and hydrological connection of the proposed route options to both SACs and SPAs in addition to any Ramsar sites. This allowed an understanding of potential pollution pathways and /or impact to Qualifying Interest (QI) species including potential impacts to foraging bird species from each route option;
- **Distance and connectivity to nationally important sites** - as above in the context of national sites;
- **Watercourse crossings, aquatic species and Water Framework Directive (WFD) status** - The assessment looked at the number and location of potential watercourse crossings, proposed crossing technique, the aquatic species of interest and the current WFD waterbody status i.e., good, poor etc.; and
- **Known or presumed locations of species and/or habitats of conservation interest** - the assessment considered findings from desk-based review in addition to initial site visits to identify species/habitats of conservation interest potential impacted by each of the proposed route options.

Ecological constraints are shown in Appendix A.1.

2.4.1.2 Geology and Soils

The following aspects were considered in the assessment of the four route options in terms of geology and soils:

- **Geology** - a review of desk-based data to understand the geology and soils potentially impacted by the proposed route options. This aspect also considered potential for the proposed route options to encounter karst features and known mines;
- **Land Quality** - a review of desk-based data to understand potential impacts associated with licensed facilities, historic contaminated sites, and landfills;
- **Hydrogeology** - a review of desk-based data to understand aquifer importance, groundwater vulnerability, WFD status, public or private water supplies and any groundwater dependent water bodies potentially affected by each route option.

2.4.1.3 Surface Water and Flood Risk

The following aspects were considered in the assessment of the four route options in terms of surface water and flood risk:

- **Surface Water** - closely connected to the biodiversity criteria, this assessment looked at the number and location of potential watercourse crossings, proposed crossing technique, the current Water Framework Directive (WFD) water body status (i.e. good, moderate, poor etc.) and proximity to designated sites. Sensitivities are determined based upon their WFD status and proximity to internationally or nationally designated habitat.
 - Likely crossing techniques are determined as follows:
 - Open Cut (OC): shallow crossings (i.e. streams, very small/shallow canals, drainage channels) can be open cut using temporary over-pumping if required to maintain water flow during installations;
 - Cable bridges/micro-tunnels: for anything (approximately) wider than 4m and deeper than 1m where Horizontal Directional Drilling (HDD) not adopted, alternative solutions like cable bridges/culverts/micro-tunnels are also considered;
 - HDD: When the crossing would be significant (i.e. at large and/or sensitive watercourse);
 - Tunnelling: If the crossing is significant and HDD is not feasible from a cable ratings perspective (i.e. very deep or very poor ground), and creating compounds on both sides of the river to account for changes in the number/type of cables for HDD at the crossing is not an option, then tunnelling is also considered.
 - Potential impacts are identified by considering the sensitivity of the water body and the risk associated with the crossing technique employed.
- **Flood Risk** – National Indicative Flood Mapping¹³ reviewed for each route option and the number of watercourse crossings also taken into account.

2.4.1.3.1 Methodology – Surface Water

Water bodies are given a score for sensitivity based upon their Water Framework Directive (WFD) status and proximity to designated sites, as follows:

- High or Good quality or within <2km hydrologically from an SAC – Score 5
- Moderate quality and 2-5km hydrologically from an SAC – Score 4
- Poor quality and 2-5km hydrologically from an SAC – Score 3
- Moderate quality and >5km hydrologically from an SAC – Score 3
- Poor quality and >5km hydrologically from an SAC – Score 1

The likely crossing techniques are also taken into consideration. Possible crossing techniques are as follows:

- Open cut
- HDD (trenchless)
- In-road

Whilst most of the route options are in-road, there are a number of crossings of water bodies which require the route to come off-road for a short stretch because existing road bridges are not deep enough to allow the trench to be installed within them. The likely occasions where this may happen have been identified for each of the crossings. A risk score is assigned to each of the crossing techniques as follows:

- Open cut – score 5;

¹³ www.floodinfo.ie

- HDD – score 1;
- In-road – score 3.

Following identification of the number of crossings, the sensitivity and the potential impacts as a result of different crossing techniques, the route is assigned a risk score based upon the following method:

- The 'worst case' and best-case scenarios are established:
 - Worst case: all crossings are of high-quality water bodies; all crossings are via open cut. For example, 16 crossings of high sensitivity water bodies would score 80; 16 crossings using open cut techniques would also score 80
 - Best case: all crossings are of low quality, and all are HDD; these routes would score a maximum of 16 on sensitivity and technique.
- After establishing the highest possible (worst) and lowest possible (best) score, the mid-point can be determined and from this a risk ranking identified. The mid-point is moderate risk. Where there are varying likely crossing techniques proposed for a water body (which is crossed more than once), an average is taken.

2.4.1.3.2 Potential Impacts – Surface Water

- Potential impacts on water bodies include the following:
 - Increased sedimentation from silty water runoff and dewatering of trenches;
 - Hydromorphological impacts on banks as a result of open-cut crossings; and
 - Accidental releases of contaminants such as hydrocarbons or cement washings.

2.4.1.3.3 Methodology – Flood Risk

As far as possible all route options will avoid flood risk zones. Each route has been assessed based on the distance of each route located within a flood risk zone identified by the Preliminary Flood Risk Assessment. The routes have been assessed against the following sources of flooding:

- Pluvial (Surface Water) Flooding
- Fluvial (River) Flooding
- Coastal Flooding

A qualitative review of the route options using Jacobs Project Mapper does not identify any reasons why a particular route option is not feasible. Ranking of the routes by distance within a flood risk zone is therefore used to identify a route's impact.

To determine the level of risk from flooding to a given option, similar to surface water quality, a worst and best case scenario is identified; in this case, 100% of the route in flood zone would be the worst case scenario, 0% the best case scenario. Proportions in between are provided below to determine the risk:

- High – 7.5-100 %
- Moderate to High – 5-7.5%
- Moderate – 2.5-5%
- Low to moderate – 1-2.5%
- Low – 0-1%

Additional weighting is given to fluvial flooding as this typically occurs for a longer duration and at greater depth than pluvial flooding. The total score for each was calculated as follows;

Total Score = (pluvial flooding rank x 1) + (fluvial flooding rank x 1.5) + (coastal flooding rank x 1)

2.4.1.4 Planning Policy and Land-Use

The following aspects were considered in the assessment of the four route options in terms of Planning Policy and Land Use:

- **Planning Policy** National, regional and local planning policy relevant to the Study Area has been reviewed. Development objectives and policies that have the potential to influence the siting of projects relating to land use zoning, biodiversity, flood risk, cultural heritage, landscape designations and characterisations, protection corridors, amenity, and existing and proposed residential land use have been considered.
- **Planning Applications (including other large infrastructure projects)** - A review of planning applications (both granted and currently in the system) over the last five years within a 50m buffer of each route option was conducted in order to gain insight into the future built environment and identify potential issues and impacts arising. Other strategic infrastructure developments with the potential to interact with the route options, including other planned electricity transmission projects as advised by EirGrid, have also been considered.

2.4.1.5 Landscape and Visual

The following aspects were considered in the assessment of the four route options in terms of Landscape:

- **Landscape Character** - this aspect of the landscape criteria assessment looked at the existing Landscape Character Areas (LCAs) and their sensitivity to the Proposed Development in order to identify the potential magnitude and significance of any impact to these LCAs. These significance ratings were used to feed into the overall score for each route option in terms of landscape impacts.
- **Landscape elements** – a review of designated and non-designated highly sensitive landscape elements was undertaken in the context of proximity to each route option. Again, the sensitivity, magnitude and potential significance to these Landscape elements is defined in order to develop the overall score in terms of landscape.

2.4.1.5.1 Methodology

All Route Options involve trenching works along the road network; thus, road users are also likely to notice some impacts during the construction phase, but these are not considered to be a differentiating factor between the Route Options. A review of the County Development Plans for Meath and Fingal identified and considered scenic designations, landscape character areas and other landscape-related elements. All of the Route Options were considered in relation to each the following landscape and visual designations. Meath County Council (<https://www.meath.ie/>): Landscape Character Area; and Views and Prospects. Fingal County Council (<https://www.fingal.ie/>): Landscape Character Types; Green Belt Zoning; Nature Development Areas; locations with Specific Objective to 'Protect & Preserve Trees, Woodlands and Hedgerows'; and Views and Prospects.

2.4.1.5.2 Sensitivity – landscape character

While influenced by the value and sensitivity judgements for particular Landscape Character Areas in the County Landscape Character Assessments for Meath and Dublin, independent landscape sensitivity judgements are provided for this assessment based on the more universal criteria, which are derived from the GLVIA-2013 Guidelines (Landscape Institute and Institute of Environmental Management & Assessment 2013) and accounts for the susceptibility of the landscape to the Proposed Development. This approach is consistent with best practice and also accounts for the inconsistency that commonly occurs in assigning landscape sensitivity to similar or adjoining landscape units between Counties. Furthermore, the receiving landscape is considered at a finer grain than that of a County-wide Landscape Character Assessment.

2.4.1.6 Archaeology, Architectural Heritage and Cultural Heritage

The potential to impact on archaeology, architectural heritage and cultural heritage assets was raised during public consultation and a thorough assessment was undertaken of the four route options in terms of the following :

- Designated Archaeology:
 - National Monuments and Preservation Orders
 - Register of Historic Monuments (RHM)
 - Recorded Monuments
 - Entries to the Sites and Monuments Record (SMR)
- Designated Architectural Heritage
 - Record of Protected Structures
 - Architectural Conservation Areas (ACA)
 - National Inventory of Architectural Heritage (NIAH)
 - Historic Gardens and Designed Landscapes (GDL)
- Non-designated Cultural Heritage Assets, typically post-medieval built heritage including stone road bridges, houses and farm buildings.

To identify and quantify the constraints above that may be impacted by the proposed route options, including indirect impacts, a Study Area of 100m was established around each route option under consideration. A 100m Study Area is considered sufficient to capture impacts given any direct impacts would largely result from the excavation for the cable trench, joint boxes, and temporary launch and reception pits for directional drilling, and be focused on the alignment of the route option. Any indirect impacts are anticipated to be temporary (lasting the duration of construction in each location), localised along the wayleave corridor and are not anticipated beyond 100m.

Baseline conditions were established through desk-based research, including a review of the following sources:

- The archaeological and architectural features identified as part of the Environmental Constraints Report;
- Aerial imagery, including Google, OSi Digital Globe, and EirGrid aerial photography;
- Historic mapping available online, comprising:
 - The Down Survey of Ireland¹⁴;
 - Larkin's map of Meath (1812)¹⁵; and
 - Historic Ordnance Survey mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913);
- Placename information available online¹⁶;
- The National Folklore Collection via the UCD digital library available online¹⁷; and
- Topographical files of the National Museum of Ireland through the online National Museum of Ireland: Finds Database (up to 2010) available online¹⁸.

A unique reference number was assigned to each constraint. Archaeological constraints are prefixed with 'AY' and architectural heritage constraints are prefixed with 'AH'. Demesne lands are prefixed with 'DL' and undesignated cultural heritage sites are prefixed with 'CH'. Archaeological, architectural heritage and cultural heritage constraints are identified in the sections below and are also shown in Appendix B.1. Supporting

¹⁴ <http://downsurvey.tcd.ie/index.html> [Accessed 05.11.21].

¹⁵ <https://www.logainm.ie/Eolas/Data/Brainse/logainm.ie-map-william-larkin-1812-grand-jury-meath-sheet-06.jpg> [Accessed 09.11.21].

¹⁶ www.loganim.ie

¹⁷ <https://digital.ucd.ie/>

¹⁸ <http://heritagemaps.ie/>

baseline information for the archaeological, architectural heritage and cultural heritage constraints identified is provided in Appendix B.1.

The assessment was undertaken based on the guidance provided in EirGrid's '*Cultural Heritage Guidelines for Electricity Transmission Projects*'¹⁹. The assessment looked at the potential for direct and indirect impacts on the identified feature within the 100m Study Area in order to ascertain the overall score for the archaeology, architectural heritage, and cultural heritage criteria. Full details for the archaeology, architectural heritage and cultural heritage constraints identified are provided in Appendix B.1.

2.4.1.7 Noise and Vibration and Air Quality

The assessment of potential impacts of noise and vibration and air quality is based on the quantification of sensitive receptors close to the proposed route options within a number of distance bands from each of the proposed route options. These distance bands are up to 300m for noise and 350m for air quality. The noise assessment focused on potential impact as a result of "noisy" elements during construction and the air quality assessment focused on potential impacts as a result of dust during construction.

2.4.1.7.1 Methodology – noise and vibration

The noise and vibration assessment at this stage of the Proposed Development involves gaining an appreciation of the baseline noise environment close to each of the proposed route options and identifying noise and vibration sensitive receptors within distance bands up to 300m from each of the proposed routes. Noise impacts from construction activities do not normally occur beyond 300m and vibration impacts do not normally occur beyond 100m. The locations of major crossings where HDD is likely to be required and off-road sections where noise impacts are likely to be greater compared to on-road sections is also used to assess each route in terms of the noise risk according to the multi criteria analysis at Step 4A.

A semi quantitative assessment was carried out using GIS to count the number of noise and vibration sensitive receptors within 100m and 300m of this option. Noise and vibration sensitive receptors include dwellings, schools, hospitals, nursing homes, places of worship, equestrian centres and heritage buildings. Noise and vibration impacts have the potential to be greater at sensitive receptors close to off-road sections and motorway crossings compared to standard on-road construction.

A count of the number of receptors within 100m and 300m of the off-road sections was undertaken and a count of the number of receptors within 100m and 300m of the motorway crossings was undertaken. See Table 4.9.

No baseline noise surveys were undertaken, and no noise modelling was undertaken at this stage of the Proposed Development. However, these will be completed during Step 5 of the Proposed Development.

2.4.1.7.2 Methodology – air quality

For human exposure to air pollutants, sensitive receptors (termed 'human receptors') include, for example, residential properties, schools and care homes. Air pollutants can also impact on sensitive vegetation and habitats (termed 'ecological receptors'). These include the following ecological receptor designations:

- Special Area of Conservation (SAC);
- Special Protection Area (SPA);
- Ramsar site;
- Natural Heritage Area (NHA) and proposed NHA (pNHA); and
- Ancient Woodland.

¹⁹ EirGrid, 2015, Cultural Heritage Guidelines for Electricity Transmission Projects. <https://www.eirgridgroup.com/site-files/library/EirGrid/Cultural-Heritage-Guidance-for-Electricity-Transmission-Projects.pdf>

The Institute of Air Quality Management (IAQM) dust guidance²⁰ has been adapted for the purposes of this assessment.

A semi quantitative assessment was carried out using GIS to count the number of (human) air quality receptors within set distance bands of the design option centreline. For ecological receptors, distance bands of 20m and 50m were assessed, whereas human receptors used 20m, 50m, 100m and 350m.

2.4.1.7.3 Assessment criteria – air quality

The main criteria used for the assessment of each route option was adapted from Table 2 of the Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction (June 2016) (see Table 2.1).

Table 2.1: Sensitivity of the area to dust soiling impacts on people and property

Number of receptors	Distance from the source (m)		
	<50	<100	<350
>100	High	Medium	Low
10-100	Medium	Low	Low
1-10	Low	Low	Low

The following scoring was applied:

- Route options with a high sensitivity to dust soiling - Risk Score 3 (moderate risk);
- Route options with a medium sensitivity to dust soiling - Risk Score 2 (low to moderate risk); and
- Route options with a low sensitivity to dust soiling - Risk Score 1 (low risk).

2.4.1.8 Climate Change

All of the options will deliver the reinforcement of the Grid to facilitate the connection of new renewable sources of energy in line with the targets in the Climate Action Plan 2020. This is not a differentiator between the routes. The options assessment focuses on the resilience of each option to climate change impacts and the contribution each option may make to greenhouse gas emissions as a result of the materials used in its construction.

2.4.2 Socio-Economic

Socio-economic matters were raised by several stakeholders during the consultation process; both generally and in respect of particular socio-economic topics, for example:

- Stakeholders raised concerns about disruption to the road network during construction, particularly impact on narrow local roads and the potential need for road closures and diversions.
- Some expressed concerns about how delays on the road network during construction would affect local businesses and farming operations.
- Some respondents expressed concerns regarding the potential health impacts of electromagnetic fields.
- Stakeholders asked whether there had been consideration of joined up thinking around the presence of other ongoing local utilities and renewables construction projects.
- Some stakeholders expressed concerns that particular routes would be disruptive to agriculture.

²⁰ Institute of Air Quality Management. 2016. Guidance on the assessment of dust from demolition and construction. Version 1.1. <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

TII raised concerns about the principle of the route options maximising use of national, regional and local roads. They express concerns about the impact of the route options on their management and maintenance of the national road network. They also commented on the following potential impacts:

- Impacts on embankments, bridges, drainage and road furniture infrastructure which could lead to maintenance liabilities in the future;
- Difficulties with future maintenance and operations activities;
- Challenges with future routine network improvements such as pavement overlay and strengthening and installation of new verge-side signs and other road infrastructure;
- Impacts on traffic flow during construction; and
- Difficulties with future on-line upgrades of national roads due to technical challenges and the additional cost of re-routing underground cables to accommodate road improvements.

Taking the above into account, the socio-economic risks and considerations associated with the four route options are presented under the following assessment topics:

- Traffic and Transport;
- Amenity;
- Human Health;
- Employment and Economy (and Tourism);
- Land Use (and Land-take)
- Utilities; and
- Agriculture (including Equine).

These assessment topics are consistent with the assessment topics considered within the Step 3 Strategic Social Impact Assessment Scoping Report (EirGrid 2022²¹) and the Step 3 Environmental Constraints Report (EirGrid 2022²²).

The approach undertaken by each assessment topic is outlined below with the detail of the assessment of each individual route option outlined within Chapter 5 of this report. These assessment topics use a mixture of qualitative and quantitative assessment to assign the overall score (e.g. low, moderate, high, etc.) to the assessment topic under consideration.

Electromagnetic Fields (EMF) are an important consideration in any electrical transmission project. 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)²³ and as such there will be no effect from EMFs in terms of human health or interference to other electrical devices and systems. In this way, EMFs are not a differentiator between the cable options and are not assessed at this stage in the Proposed Development.

2.4.2.1 Traffic and Transport

The following aspects were considered in the assessment of the four route options in terms of traffic and transport:

- Road Network – the road type, its length per type (km) and consideration of the available width along stretches of the corridor (e.g. hard shoulder, and/or cycleway, footway provision along the route).
- Junction – the number of key junctions potentially affected by the route option; and

²¹ EirGrid. 2022. Step 3 Strategic Social Impact Assessment Scoping Report.

²² EirGrid. 2022. Environmental Constraints Report. <http://www.eirgridgroup.com/site-files/library/EirGrid/321084AJ-REP-004-Environmental-Constraints-Report-Final-May-2022.pdf>

²³ ICNIRP GUIDELINES FOR LIMITING EXPOSURE TO ELECTROMAGNETIC FIELDS (100 KHZ TO 300 GHZ) <https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf>

- Access – the number of properties and community facilities located along the route option that could be potentially affected in terms of access as a result of the route option.

Consideration of these aspects of construction works were undertaken along the route and the likely traffic management measures required to accommodate current traffic movements along the routes. The likely impact of these measures on traffic progression and journey time reliability has been used to inform the ranking scoring applied.

2.4.2.2 Amenity

'Amenity' is the term used to describe the overall pleasantness and the 'feel' of a community and the ability for people to enjoy the general character or quality of their surroundings.

The impact on amenity of the four route options is determined by considering the indirect (in-combination) impact of the following environmental effects:

- Air quality;
- Noise (and vibration);
- Visual; and
- Traffic and transport.

Where there is a combination of at least two direct environmental effects on a receptor or group of receptors, this is classified as an indirect (in-combination) impact on amenity. For example, where there are both visual and air quality impacts on a receptor or group of receptors, it would be concluded that these receptors(s) would be indirectly impacted by an in-combination amenity effect.

2.4.2.3 Human Health

Impacts on human health relate to the likely impacts stemming from the direct 'nuisance effects' of noise (and vibration), air quality, visual, traffic. These environmental effects could impact individuals as well as groups of individuals directly, or indirectly by way of inducing stress or fear. Examples of how such environmental effects can impact human health during construction are outlined below. As noted in Section 2.4.2, EMF is not a differentiator between the cable options and is not assessed at this stage in the Proposed Development.

Dust and pollutant emissions from plant machinery or construction-related traffic, in the absence of mitigation measures, could lead to general annoyance as well as being detrimental to the respiratory health of individuals and communities in close proximity to construction activities.

Noise (and vibration) impacts that are considered to be excessively noisy and brought on by construction or operational activities can lead to impaired hearing, sleep disturbance, and general annoyance. There is also increasing evidence of a link to heart disease and hypertension (WHO, 2018)²⁴.

Changes in the long-standing visual environment can also lead to distress and annoyance for people and communities. This distress and annoyance would not just be in respect to changes in visual amenity but also due to changes in the landscape itself and its use by people and communities as a recreational amenity / asset.

2.4.2.4 Employment and Economy (and Tourism)

The potential impacts on employment and the economy as a result of the four route options are determined by professional judgement, informed by currently known project information (particularly in respect to likely workforce composition, the duration of construction, and the construction methodology more generally), statistical data and evidence of the current economic climate in Ireland from the Central Statistics Office (CSO) as well as past professional experience on infrastructure projects of a similar scale and nature.

²⁴ https://www.euro.who.int/_data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf

2.4.2.5 Utilities

Utilities provide many different services that people, and communities rely upon. There are many different types of utility infrastructure, which may be situated overhead (such as other electricity or telephone lines) or underground (such as electricity cables, water services, sewers, gas, fibre optic cables).

The assessment of potential impacts on utilities is informed by desk-based research on the extent and nature of utilities likely present in the Study Area, currently known project information relative to likely construction methodology and best practice measures in respect to treatment of utility infrastructure during construction (and operation, as applicable).

2.4.2.6 Agriculture (including Equine)

The following aspects were considered in the assessment of the four route options in terms of agricultural (and equine):

- Agricultural Land – the amount of agricultural land crossed by the option.
- High sensitivity agricultural enterprises – the number of enterprises such as equine, dairy and horticultural potentially affected by the option. Sensitivity of enterprises is determined mainly from the type of farm enterprise, as set out in Table 2.2. The appraisal of sensitivity is subject to professional judgement and evaluation of other site-specific factors such as the land quality and importance of the enterprise.

Table 2.2: Sensitivity of Agricultural Lands

Farm Enterprise Type	Sensitivity
Stud farm, Equestrian centre, horticultural enterprise, intensive agriculture (poultry & pigs)	High - Very High
Dairy farm, intensive equine enterprises	High
Non-dairy grazing livestock enterprises (including beef, sheep and non-intensive equine) and grass cropping enterprise	Medium
Tillage	Medium
Rough Grazing, Bog, Forestry, Woodland (where poor land quality restricts farming practices)	Low - Very low

2.4.3 Technical

Feedback from TII set out a number of technical requirements regarding horizontal directional drilling (HDD) crossings of motorways:

- Launch and reception pits for the pipeline are located outside the motorway boundary;
- Installation of the pipeline at a depth that does not impact drainage for the motorway;
- Neither the works nor the pipeline will damage or impact the motorway;
- Any maintenance or planned upgrades of the pipeline at the crossing location can take place without access to the motorway boundary;
- There are no bolted joints in the section of pipeline within the motorway fence-line; and
- A pre and post-construction survey is necessary along the length of the pipeline over the extents of the motorway boundary.

IFI also provided a series of technical requirements regarding temporary watercourse crossings:

- Preferred option is clear span 'bridge type' structures on fisheries water;

- If clear span structures cannot be used, structures should:
 - use one or more metal or concrete pipes or prefabricated culverts;
 - maintain the existing stream profile;
 - avoid significant alternation of speed or hydraulic characteristics;
 - have capacity to accommodate the full range of flows including flood flows; and
 - be covered with a clean, inert material to enable safe crossing of all items of construction equipment without the cover material being dislodged.
- Design and install the approach and departure routes for drainage to fall away from the watercourse being crossed;
- Provide additional earthwork settlement areas where the fall of ground does not allow sufficient control on drainage;
- Fence with geotextile to prevent the wind carrying dust to waters;
- Use side armour to make sure machinery cannot drive over the edge of crossings;
- Ensure crossings can accommodate all construction machinery.

All four route options require HDD crossings under the M3, M2 and M1 motorways and the assessment in the respect of motorway crossings is similar in this respect. Similarly, all four route options are required to cross numerous watercourses where, depending on the nature of the watercourse, either HDD or a trenching approach may be appropriate. This feedback will therefore be further considered as the route design is developed and refined as part of Step 4B.

The technical assessment included review of the proposed route options against the criteria laid out in EirGrid's Framework for Grid Development:

- **General Compliance with System Reliability, Security Standards** – EirGrid's reliability and security standards are defined in the Transmission System Security and Planning Standards and their Operation Security Standards;
- **Headroom and Ratings Impact** – This is the amount of additional capacity each route option offers that would be available for the future without requiring further upgrade;
- **Maintainability** – This considers the ease with which the route option can be serviced and maintained, for example how easy it is to access joint bays and link boxes;
- **Technology Operational Risk** – This criterion aims to capture the risk of operating different technologies on the network;
- **Average Reliability Rates** – This is the likelihood of the chosen cable technologies such as cables, joint bays, and bonding failing during operation; and
- **Repeatability** – Repeatability means whether the proposed technical solution can be readily repeated in the transmission network.

It is proposed to use the same cable solution (same conductor cross-section) and cable system design for all options (cross bonded solution). As a result, all of the route options will receive the same scoring from a technical perspective.

2.4.3.1 Technical Delivery Solution

It should be noted that independent cable integration studies indicate there will be a need for reactive compensation at both Woodland and Belcamp substations, dependent on the cable size chosen. These shunt reactors work to maintain voltages within acceptable limits during operation of the cable. The reactors are similar to transformers and are installed on concrete plinths adjacent to the cable connections to the

substation within the substation compound. Additional harmonic filtering on the network for all the proposed route options may also be required. At this stage, given the available information, the small percentage difference in the lengths of each route option does not trigger any substantial change for any of the required auxiliary equipment noted above.

The technical delivery solution presented below follows on from the Step 3 report, as well as technical discussions and meetings with EirGrid. Initially at Step 3, three variations of size of conductor and trench size were assessed. These options were:

- 400 kV 2500mm² Cu conductor, single conductor per phase, cable solution in a 1.7m trench
- 400 kV 3000mm² Cu conductor, single conductor per phase, cable solution in a 2.1m trench
- 400 kV 2500mm² Cu conductor, two conductors per phase, cable solution in a 1.7m trench

However, to understand the potential impact of the Proposed Development on the physical environment, Jacobs prepared a typical trench cross-section for reference (see Figure 2-4). This cross section is in line with the initial assumptions for the Kildare - Meath Grid Upgrade project.

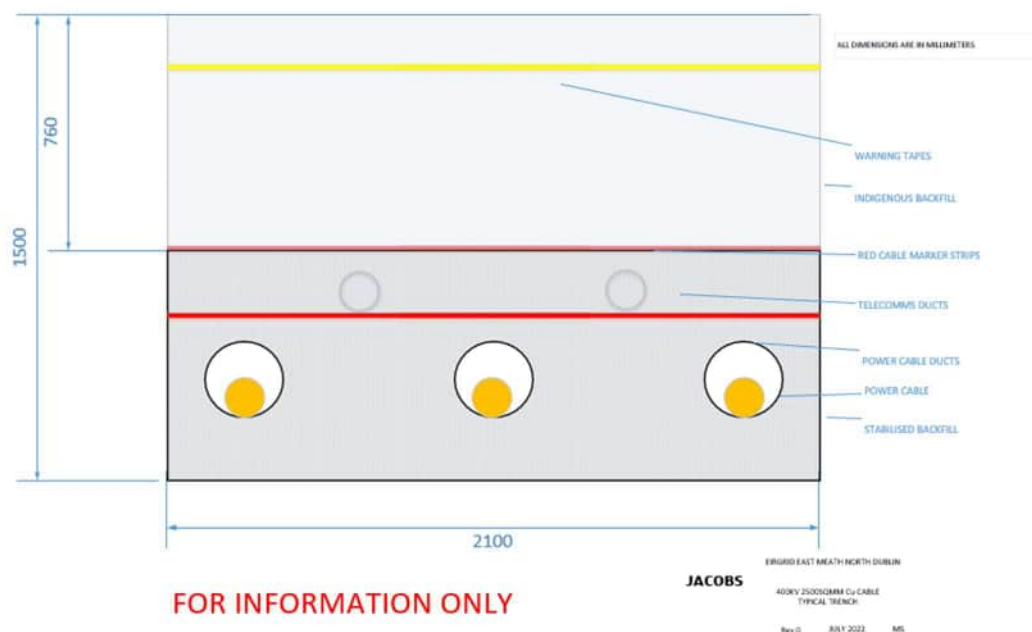


Figure 2-4: Preliminary typical trench cross-section for 400 kV 3000sqmm Cu solution (trench width 2100mm)

Recent developments and advancements in the Kildare - Meath Grid Upgrade project have now moved the focus to the following solution, illustrated in Figure 2-5:

- Cable: 400kV, 3200sqmm Cu conductor
- Trench cross-section: Width of 1.5m

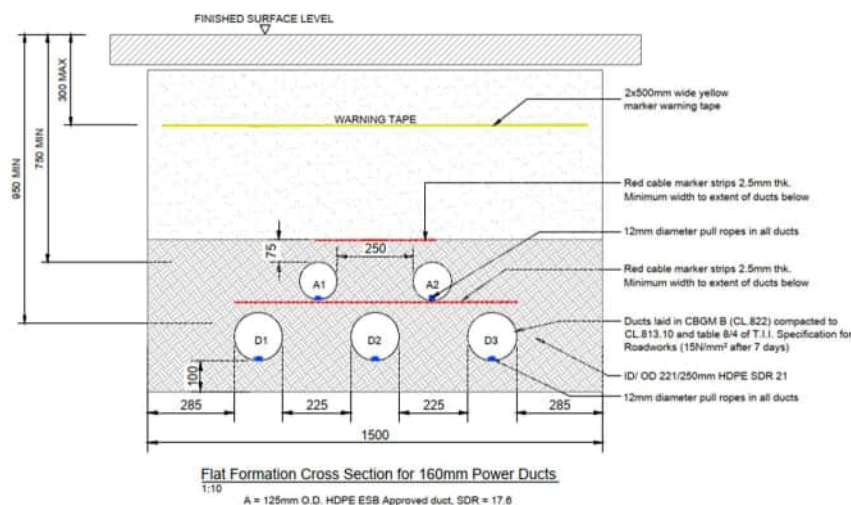


Figure 2-5: 1.5m, Wide Trench

This construction solution is expected to be utilised for the majority of the length of the Proposed Development, where the circuit is installed in roads.

This solution carries the following advantages:

- Fully ducted route solution allows for decoupling of civil works from cable installation and testing works;
- Will minimise duration of any required road closure along the route sections;
- Will facilitate future maintenance and repair works;
- Is compliant with EirGrid standards and best practices; and
- Allows for the delivery of transmission power as outlined in Table 2.3 (these revised target ratings are an increase on the initial values identified at Step 3).

Table 2.3: Target Transmissible Power (continuous ratings)²⁵

	Winter	Summer
Transmissible Power/ Current*	1866MVA /2693A	1577MVA/2276A

**Correct at the time of writing – further changes in the cable rating may affect this*

2.4.3.2 Technical Delivery Solution at crossing points

The delivery option described in Section 2.4.3.1 will be adopted for all options (Option A: Red, Option B: Green, Option C: Yellow, and Option D: Blue) for cable installation in road like conditions.

Due to the presence of numerous and different obstacles along each of the proposed route options, a number of different crossing methodologies may be required. Possible solutions are outlined in Table 2.3.

Table 2.3: Potential Obstacle Crossings Solutions

Obstacle description	Potential Solution	Comment
Shallow crossings like Utilities, road drainage ducts, telecoms, medium pressure gas and other.	Typical trench as per Figure 2-5 with increased depth of ducts	Measures to improve rating, including special thermal backfill materials and bentonite filled ducts
Small streams/roadside water ditch/ shallow water crossings.	Typically open cut installation to avoid shallow obstacles with temporary water	N/A

²⁵ In August 2022, EirGrid issued a new cable policy (Ref. PoL_St_11_v1.0) indicating target ratings for underground cables operating at 400kV

Obstacle description	Potential Solution	Comment
	over-pumping to maintain flow during works (unless environmental risks drive HDD)	
Larger waterways.	Cable bridges or cable culverts or micro tunnels	Solution will depend on ground conditions and impact on surrounding environment.
Large rivers/ wide canals/ motorways/ railways	Horizontal Directional Drilling (HDD) or Auger Bores solutions	Solution will depend on ground conditions. Assume maximum depth of approximately 10m for these types of installation. Further lateral spacing of cables will be required to counteract the effects of depth on ratings.
Large rivers/canals/motorways/railways/extremely densely populated areas with very poor ground conditions.	Tunnel installation	Solution will depend on ground conditions

2.4.3.3 Impact on deliverable ratings caused by crossings

The crossings noted above that will necessitate deep HDD excavations, will have an impact on the overall circuit transmissible power. Along each of the proposed route options, the deepest crossing will act as a "ratings pinch point" for the route option and limit the overall transmissible power.

Preliminary calculations show the following:

- Solution A (refer **Error! Reference source not found.**): An HDD, 10m Deep, with phase separation of 12m, will deliver 90% of target winter ratings as described in Table 2.2
- Solution B (refer Figure 2-7): An HDD, 10m Deep, with phase separation of 10m, will deliver 88% of target winter ratings as described in Table 2.2

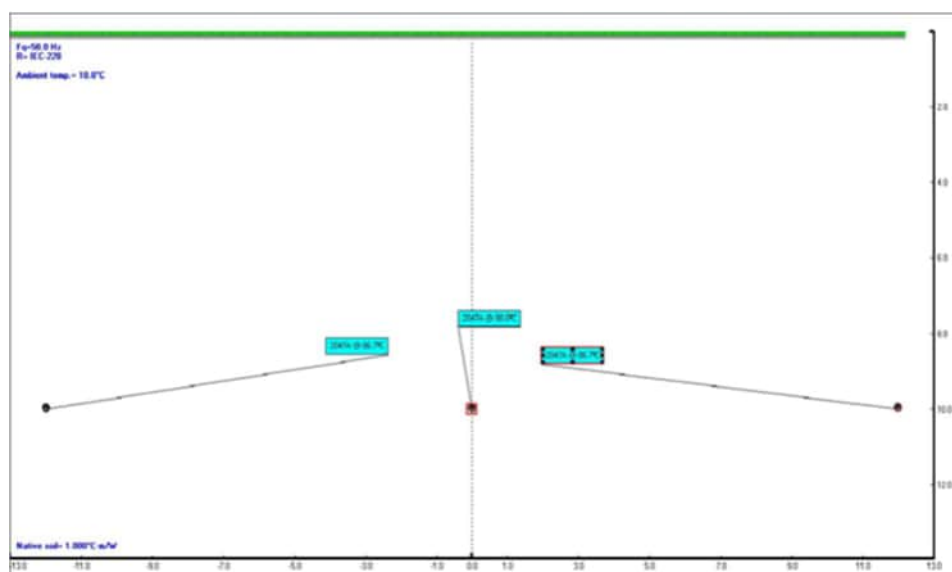


Figure 2-6: Calculation showing Solution A

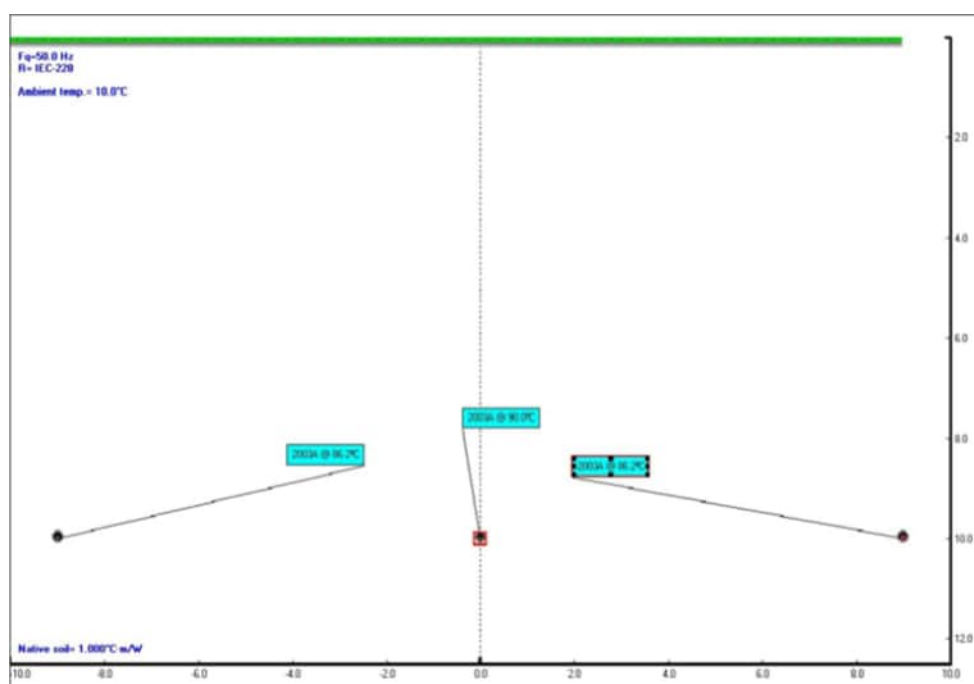


Figure 2-7: Calculation showing Solution B

There are a number of solutions to mitigate such effects:

- Using bentonite in HDD ducts;
- Increase conductor size at HDD crossing;
- Double number of phases at crossing; and
- Utilise a tunnel crossing solution.

2.4.4 Deliverability Criterion

Deliverability matters were raised by several stakeholders during the consultation process; both generally and in respect of particular deliverability topics, for example:

- Stakeholders raised concerns about disruption to the road network during construction, particularly impact on narrow local roads and the potential need for road closures and diversions.

TII raised concerns about the principle of the route options maximising use of national, regional and local roads. They express concerns about the impact of the route options on their management and maintenance of the national road network. They also commented on the following potential impacts:

- Impacts on embankments, bridges, drainage and road furniture infrastructure which could lead to maintenance liabilities in the future;
- Difficulties with future maintenance and operations activities;
- Challenges with future routine network improvements such as pavement overlay and strengthening and installation of new verge-side signs and other road infrastructure;
- Impacts on traffic flow during construction; and
- Difficulties with future on-line upgrades of national roads due to technical challenges and the additional cost of re-routing underground cables to accommodate road improvements.

The deliverability risks and considerations associated with the four route options, which include consideration of the feedback summarised above, were considered under the following assessment criteria:

- **Design complexity:** Each route section will be assessed in terms of the length of the route, obstacles encountered along the route, the number of utility crossings that will need to be made, the need for Horizontal Directional Drilling (HDD), micro-routing requirements to ensure a minimum duct bending radius of 20m, and the extent to which services have already been installed within the road;
- **Traffic disturbance impact:** Each route section will be assessed in terms of level of disruption including: the need for traffic management; the availability of alternate routes for diversion during installation works; and anticipated length of time the diversion or traffic management shall be in place;
 - TII noted that a Traffic and Transport Assessment should, where appropriate, be carried out according to relevant guidelines. This will be further considered during Step 4B.
- **Dependence on other infrastructure projects:** This will assess the extent to which the route may be impacted/may impact other infrastructure projects in the area;
- **Permits and wayleaves:** This will include consideration of the number of permits required for crossing other utilities, licenses, and easements/wayleaves;
- **Implementation Timelines:** The installation timelines will be directly impacted by the deliverability criteria outlined above. Consideration will be given to the length of ducting that can be installed per day, as well as any seasonal and local constraints that may impact the implementation. Installation of the cable route will assume a standard 5-day working week; and
- **Third party utilities:** from a deliverability perspective, existing underground electricity cables and third-party utilities were identified, in so far as possible from a desk-based study, to determine the potential for interactions and conflicts.

2.4.5 Economic

Each route option is evaluated on the following:

- Length of installed cable;
- Quantity of Minor and Major service crossings; and
- Number of Major Crossings (such as Horizontal Directional Drills).

The economic evaluation consisted of assessing the number of each crossing solution per section, for each of the four route options. The crossings were matched to the standard crossings highlighted in Table 2.3 above. Each of the crossing solutions above has an associated cost which is a multiplier of the standard trench cost.

When added together, an indication of the relative cost for the selected route option is provided. A relative weight was also assigned to each route option based on its relative length over the shortest route. When assessing service crossings, focus has been placed on the differences between the reference installation rate (typical trench) and that of the crossing. This results in the key differences being the:

- Depth of excavation;
- Additional trench support;
- Support for the service being crossed;
- Method of excavation;
- Special equipment used; and
- Additional material used.

The method of excavation changes where either an existing gas main or electrical cable is being crossed. In these circumstances, hand digging is required. For water service crossings mechanical excavation methods with suitable supervision and controls are assumed to be used. Traffic management costs are included in the reference rate and consequently incur no additional cost for a service crossing.

3. Route Options Assessed

3.1 Description of Route Options

The route options are presented in **Error! Reference source not found.** and an overview of key constraints is provided in Appendix F. The route options vary in length and location, which were determined taking into account the mapped constraints and the routing principles.

In line with the routing principles, route options have avoided going off-road, through private land and through agricultural land, where possible. The balancing with the other routing principles means that there are some route sections which do impact agricultural land. The impacts on agricultural land have been carefully considered and a balance has been sought between impacts to farming operations, the importance of field drains and hedgerows at the edges of field for their ecological value, and technical considerations. None of the route sections directly impact private dwellings and none would require demolition of dwellings or other buildings.

The off-road sections within the options are shown as refinement areas. As noted above this is because further engagement, surveys, design and assessment work is required to refine the route design in these areas. However, an indicative route within these corridors has been assumed in some cases to assist consultation and engagement. This is also to allow a comparative assessment to be undertaken at this Step of the Proposed Development. Following the identification of the Emerging Best Performing Option, further survey, design, consultation and assessment will be completed to refine the potential corridors into a specific route. This will be presented at Step 4B and further refined at Step 5.

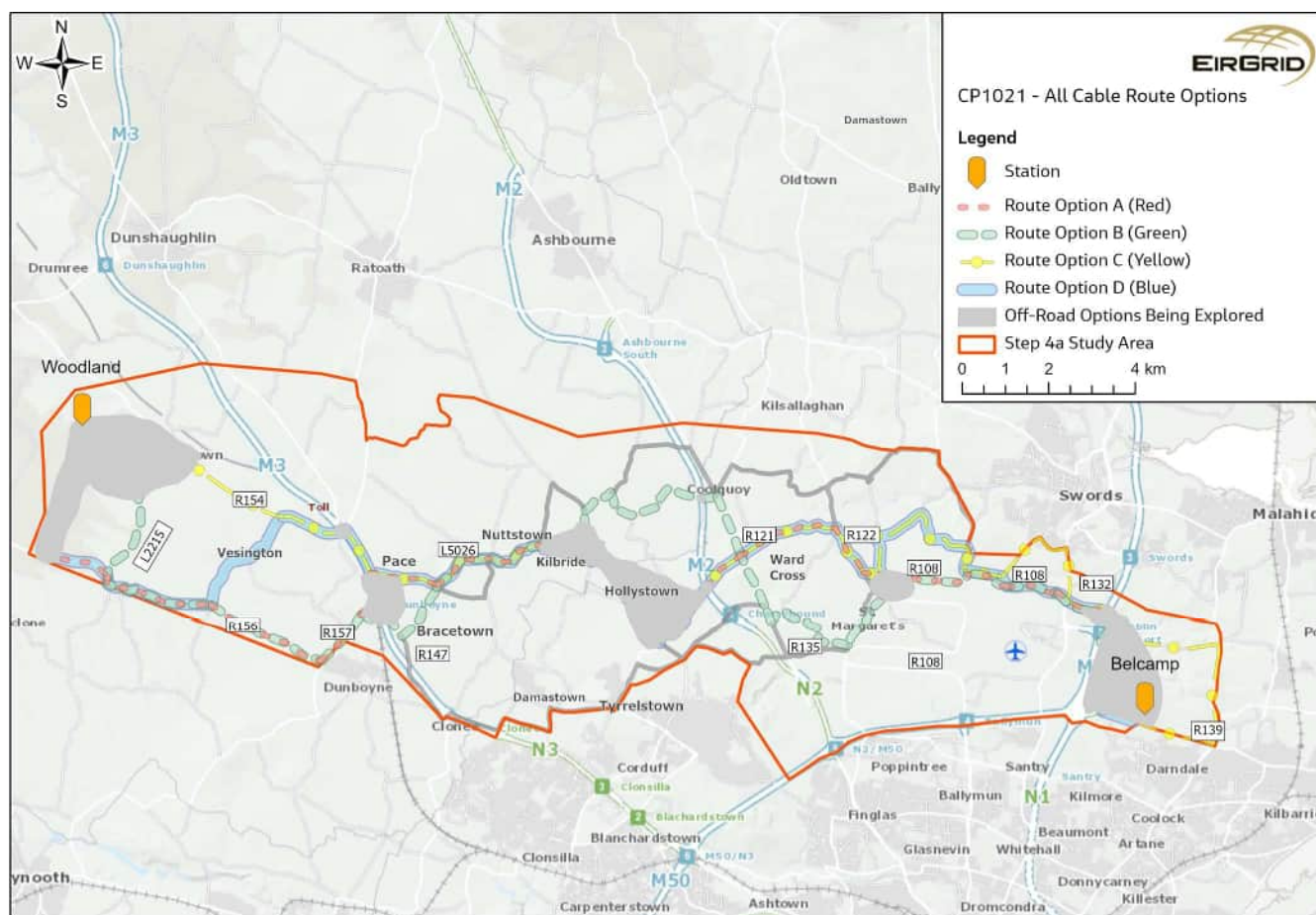


Figure 3-1: Route Options

3.1.1 Common to all four route options

3.1.1.1 Woodland Station – all routes start here

Woodland 400kV substation near Batterstown, Co Meath is of national strategic importance within the electricity transmission grid. It already has several major circuits connected with several grid infrastructure developments planned to be connected in the coming years. The planned underground cable will connect into the existing substation, which will require the associated provision of apparatus and site development works.

There are a number of high voltage infrastructure projects which are planned to connect to the existing Woodland station, such as:

- East Meath – North Dublin Grid Upgrade (the Proposed Development);
- Kildare – Meath Grid Upgrade;
- North South Interconnector; and
- Woodland substation improvement works.

For this grid development project, each of the four proposed route options has a common connection point at Woodland substation.

3.1.1.2 Belcamp Substation – all routes travel to here

Belcamp 220kV substation is an existing substation in the Clonshaugh area of County Dublin around 7km from Dublin city centre. This substation is also of strategic importance in the electricity transmission grid, as it will accommodate further grid development projects in the coming years.

This 220kV substation needs to be extended and a new 400kV infrastructure needs to be developed to accommodate the planned underground cable development. The works will improve power quality and support future renewable generation, including offshore renewables, and growing demand in the North Dublin area.

Projects currently in development at Belcamp substation include:

- East Meath – North Dublin Grid Upgrade (the Proposed Development);
- Kildare – Meath Grid Upgrade (Associated works);
- Shellybanks to Belcamp 220kV cable;
- Finglas to Belcamp 220kV cable;
- Belcamp 220kV substation extension; and
- Offshore windfarm connection.

As with Woodland, for this grid development project, there is a common connection point at Belcamp for each of the four proposed route options.

3.1.1.3 Motorway crossings

All routes will cross the M3, M2 and M1 between Woodland and Belcamp.

It is likely these will be crossed using Horizontal Directional Drilling (HDD) to minimise disruption and impacts on existing infrastructure.

Horizontal Directional Drilling (HDD) is a method of drilling that installs underground pipelines and cables without digging trenches. It involves using a directional drilling machine to drill along the chosen path underneath the infrastructure and then installing the required pipe and cable.

3.1.1.4 Off-road corridors

The lengths of the four options range from 36km to 43km. Most of the cable route in each option can be laid in the existing road network. However, each option will require some of the cable route to be off-road. These off-road corridors will range from c.3km to c.9km of the cable route and are in locations where off-road routing is unavoidable. More detailed environmental and technical surveys will inform further assessment work in these locations in addition to ongoing engagement with landowners to refine the route design.

For this reason, we have shown an indicative route in a highlighted refinement area on each of the route maps. The off-road section may pass through any part of this corridor. We will minimise impacts on agricultural operations as far as possible by carefully routing the cable.

3.1.1.5 Construction Principles and Assumptions for All Route Options

All four proposed route options have been assessed to be acceptable in terms of technical aspects in addition to economic, deliverability, socio-economic and environmental factors based on the information currently available. Further design will be undertaken during subsequent steps in the Proposed Development to refine the location and nature of the construction works and allow an assessment of the potential social and environmental impacts of the Proposed Development. The further design will include matters such as construction sequencing, traffic management, management of excavated material, construction compounds, and ensuring existing utilities and structures are not affected. Mitigation, control and management measures will also be identified to avoid or minimise social and environmental impacts.

Engagement with key stakeholders has been undertaken in advance and in parallel with the Public Consultation period in September to November 2022 and will continue throughout the remaining steps of project development. From a constructability perspective, this will necessarily include discussions with statutory bodies such as Iarnród Éireann (Irish Rail), Transport Infrastructure Ireland (TII), Fingal County Council and Meath County Council. Utility operators have also been contacted to understand the location of existing services and further consultations will be undertaken. Landowners will also be engaged with directly.

Each of the four proposed route options will have significant groundworks associated with them whether that is following carriageways or across agricultural land. Due to the nature of this type of construction works there will be a requirement to temporarily stockpile large amounts of the excavated material during the ongoing works and this will be factored into the site setups and planning boundaries.

Dependent on road conditions and highways specification, there could be opportunities to reuse the initially removed asphalt surface, treatment and conditioning and returning to be used as a temporary road surface before the final permanent surface is applied. This would require an agreed crushing and treatment suite suitable for the chosen route. Whilst vehicles being used for the transport of aggregate and fills will be used at peak optimum (i.e. always travelling with a load), reuse of excavated materials on site may reduce the overall carbon footprint of the scheme and disruption to local communities. This will be considered further following ground investigations of the best performing route corridor.

All four of the proposed route options require three crossings of motorways. These crossings are not key differentiators in the assessment between the proposed route options.

A proposed construction sequence and methodology for the Proposed Development is as follows:

- Setup traffic management (road closure / lane closure / diversions);
- Saw cut and remove road surface;
- Address any existing utilities (the details will be confirmed with utility owners);
- Excavate trench;
- Install concrete base;
- Install ducts for High Voltage cables and control / pilot cables;
- Install concrete surround to ducts;
- Installation of cable identification tape / tiles;

- Back filling and compacting;
- Resurfacing and lining of the road surface; and
- Removal of traffic management.

These activities would then be repeated until a cable jointing bay is needed to be installed. Cable jointing bays will be provided approximately every 600m to 800m and will allow sections of cable to be linked together as well as providing future access points for maintenance. The jointing bays are installed below ground at fixed intervals corresponding to the cable length. Joint bays are firstly installed and then later used for cable installation and jointing. The jointing bays can be constructed in a number of different ways – one method is to use prefabricated joint bays or precast bays which can be delivered to site and lifted into position. Traffic passing bays will be located and assessed at the next step of the project. These temporary passing bays will be located adjacent to jointing bays and will allow traffic to flow around the bay during its construction, reducing the need for diversions or road closures.

Subsequent to the installation of ducts and jointing bays, the following activities occur:

- Pulling the cables into the ducts;
- Jointing of the cables; and
- Testing and commissioning of the entire cable at the end of the construction phase but prior to the operational phase.

Overall, it is estimated that the construction of the Proposed Development will have a duration of three years assuming no unforeseen delays. The construction programme and estimated duration will be refined at the next step of the Proposed Development (Step 5) when further design and assessment will be carried out.

3.1.2 Route Options not progressed

The process of how the route sections were designed and assessed is presented in Chapter 2 of this report. This section and Appendix E present the route sections not progressed which reduces the long list of potential route options to four end-to-end options that were taken forward to public consultation (see Section 2.3) and further detailed assessment.

Following the approach and methodology described in Chapter 2, it was determined that a number of route sections would not be taken forward. These route sections are shown in Figure 3-2 and described in tables in Appendix E. These tables include some route sections that are directly connected to sections that featured significant constraints such that they were not progressed.

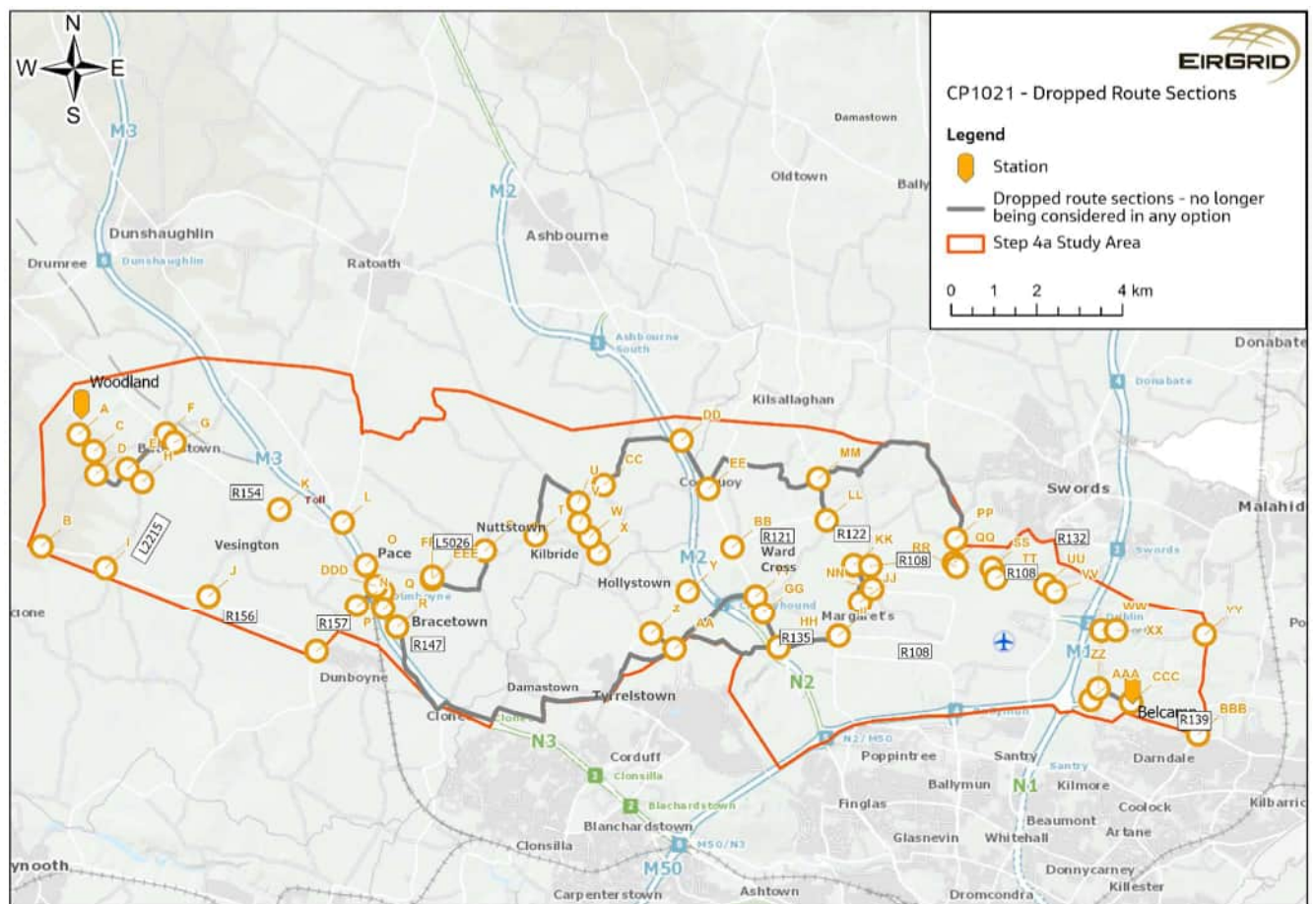


Figure 3-2: Route Sections Not Progressed

3.1.3 Overview of Proposed Route Options

Table 3.4 provides an overview of the four underground cable options considered for this project.

Table 3.4: Overview of Route Options

Option	Estimated overall length (km)	Estimated off-road sections (km)	Key aspects
Option A (Red)	37	9	Shortest route but affects largest amount of agricultural land.
Option B (Green)	38	7	Second shortest and avoids Hollystown.
Option C (Yellow)	43	2	Longest route. Goes through Batterstown village and southern suburbs of Swords. Least agricultural land.
Option D (Blue)	41	4	Second lowest agricultural land, second highest route length.

3.1.4 Route Option A (Red)

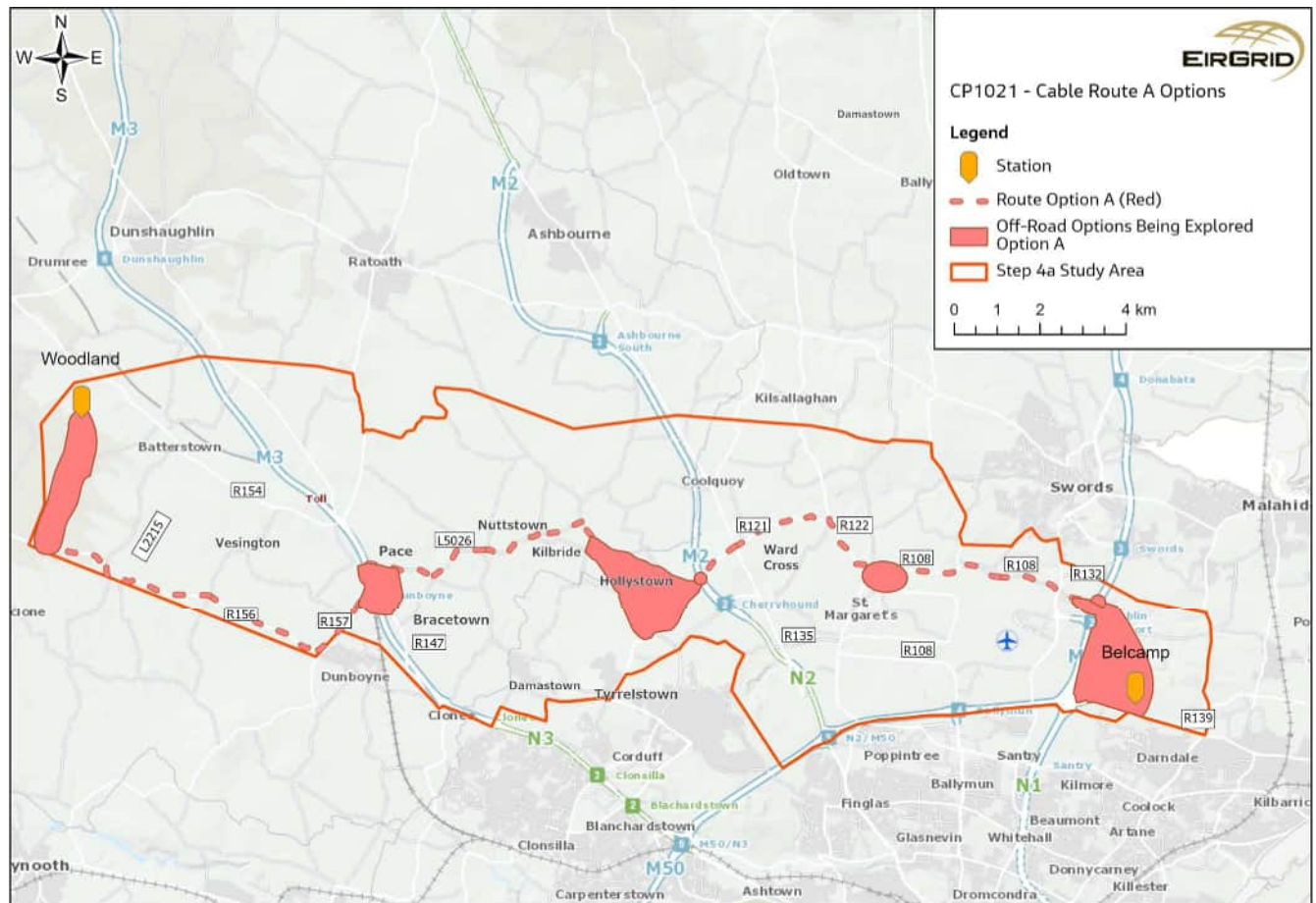


Figure 3-3: Route Option A (Red)

Route Option A (Red) is the shortest of the four cable route options at 37 km but has the longest off-road portion (9km). It potentially affects the largest amount of agricultural land of the four route options but has a relatively low impact on regional and local road networks.

From Woodland, Route Option A will travel south through fields for around 3 km until it joins the R156 at Barstown Industrial Estate. From there, the route will travel east as far as Dunboyne, turning north along the R157 once it reaches the north-western outskirts of the town.

It will cross the River Tolka, Railway at M3 Parkway and M3 Motorway at Junction 5.

The motorway itself is avoided as any crossing here will likely be via Horizontal Directional Drilling (HDD) or via a tunnel. A potential off-road corridor is shown for this crossing of the motorway. The route will then briefly progress north along the R147 before travelling east once more along the L5026 and local roads.

Route Option A advances east to Kilbride, with three crossings of the Ward River along the way. At Kilbride, the route turns south. A potential off-road corridor is shown for the route at, and to the south of, Kilbride. The route will pass through this corridor and join the R121 a short distance to the west of the M2. A further off-road corridor is shown for the crossing of the M2 motorway. Following the crossing, the route continues broadly east to the Ward Cross and stays east on the R121 until this road reaches the R122.

Route Option A will then progress south via Kilreesk Lane (also known as Tobermurr Link Road) and Kilreesk Road (also known as Tobermurr Road) to the R108 and Naul Road along the northern boundary of Dublin Airport as far as Cloghran Roundabout, northeast of Dublin Airport.

From there, Route Option A will briefly use Stockhole Lane travelling east to the M1 motorway. A potential off-road corridor is shown for this motorway crossing. Once across the motorway, Route Option A remains off-road; a potential off-road corridor is shown for the onward connection south to Belcamp substation.

3.1.5 Route Option B (Green)

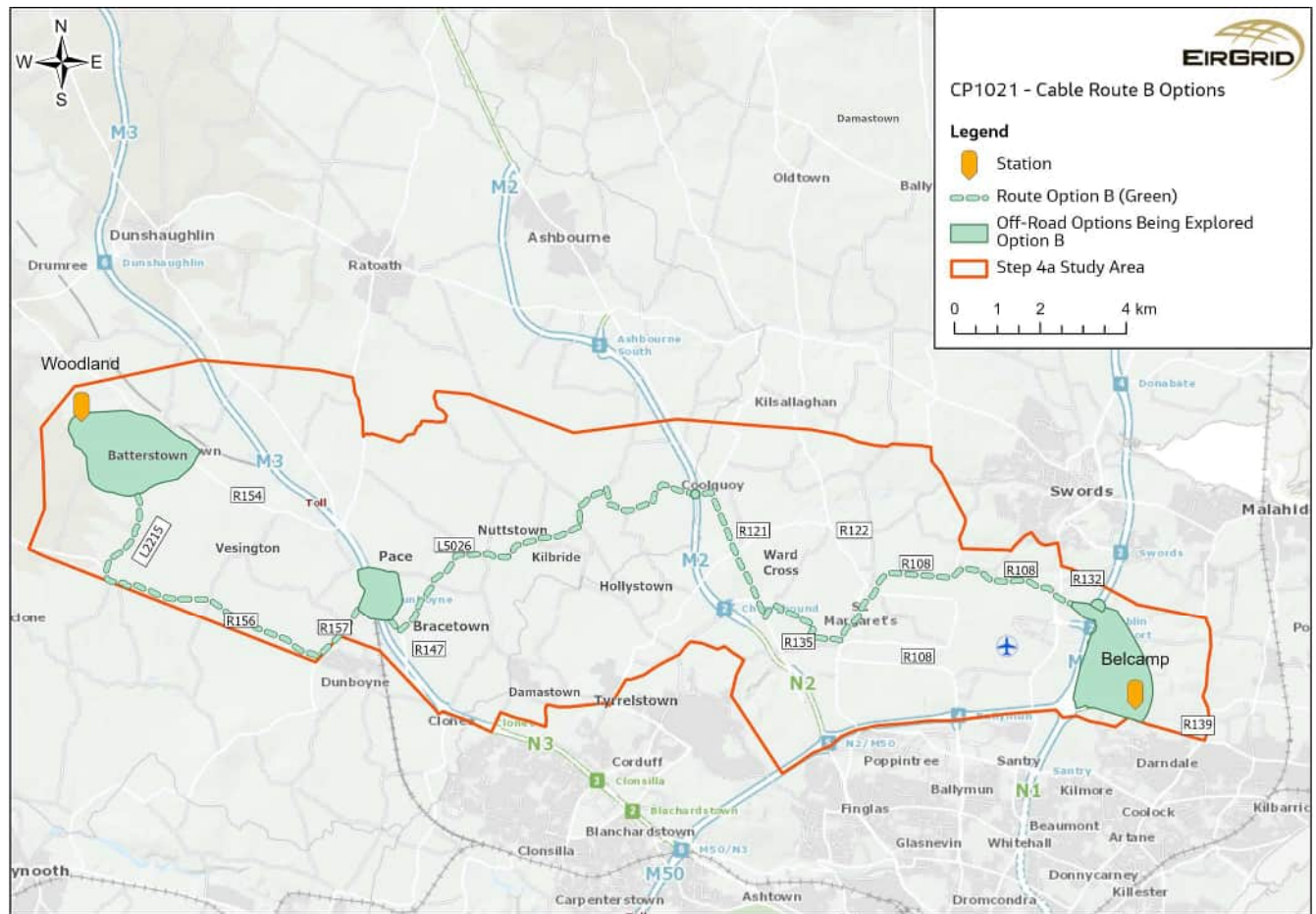


Figure 3-4: Route Option B (Green)

Route Option B (Green) is the second shortest of the proposed route options, with the second longest off-road portion. It shares a common route with Route Option A in multiple sections between Woodland and Belcamp but follows an alternative path for more than half of the course.

Route Option B will travel off-road in an east / southeast direction from Woodland until it reaches the L2215 in the townland of Lismahon. A potential off-road corridor is shown for this. At the L2215, the route travels south in the road to the R156. From there, the route option will advance east along the same route as Option A, avoiding Dunboyne.

It will cross the River Tolka, Railway at M3 Parkway and M3 Motorway at Junction 5.

Again, the motorway itself is avoided as any crossing here will most likely be via Horizontal Directional Drilling (HDD) or via a tunnel. A potential off-road corridor is shown for this motorway crossing.

The route will then re-join the R147 and progress south as far as Bracetown Business Park. It continues northeast along this road until it joins another shared section with Option A for the 4 km leading to Kilbride.

In Kilbride however, the proposed Route Option B travels north out of Kilbride and along a narrow road, through the townlands of Baytown, Mabestown and Irishtown.

Route Option B crosses the M2 Motorway at the flyover to the west of Coolquay, before joining the R135 in the village of Coolquay. A potential off-road corridor is shown for this motorway crossing. It travels south from there through the Ward Cross to Broughan. The route then travels east once more, joining the R122 via Broughan Lane and Newtown Cottages.

Route Option B runs close to St Margaret's and then joins the R108. Like Route Option A, the route will follow the northern boundary of Dublin Airport. From there, Route Option B will travel along Stockhole Lane before

crossing the M1 motorway. A potential off-road corridor is shown for this motorway crossing. Route Option B will also remain off-road for its onward connection Belcamp. A potential off-road corridor is shown for this.

3.1.6 Route Option C (Yellow)

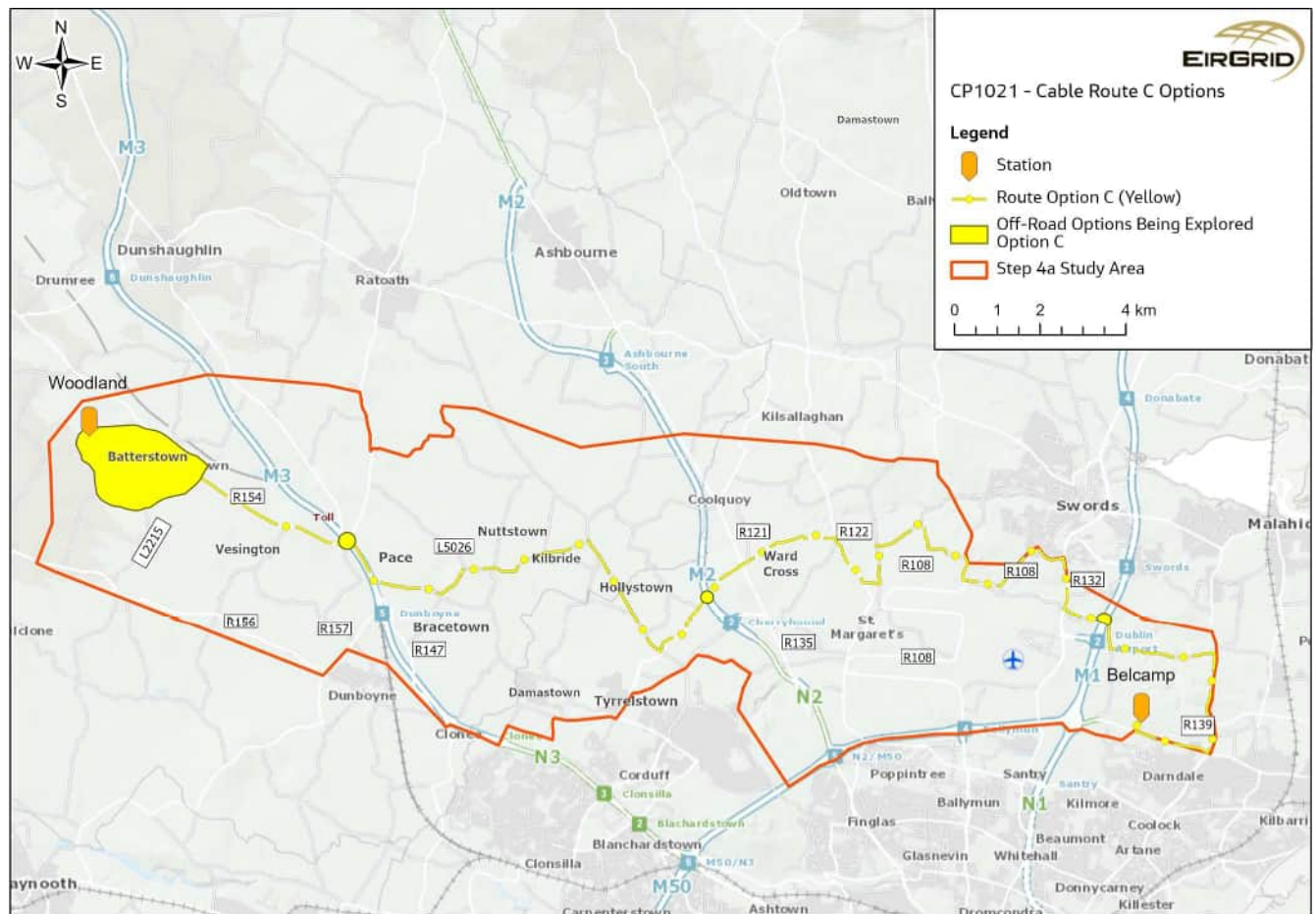


Figure 3-5: Route Option C (Yellow)

Route Option C is the longest of the cable route options but has the shortest off-road portion, with 2 km less off-road sections. Route Option C affects the least amount of agricultural land of the four shortlisted options.

Route Option C shares the initial 2 km route out of Woodland substation with Route Option B. A potential off-road corridor is shown for this. Upon joining the L2215, Route Option C will progress southeast to Batterstown. Here the route may pass off-road and so a potential off-road corridor is shown. Southeast of Batterstown it will travel along the R154 to the M3 motorway.

Route Option C will cross the River Tolka, then move off-road to cross the M3 Motorway to the south of the M3 Southern Toll Plaza, returning to the roadway at the roundabout to join the R147. A potential off-road corridor is shown for this motorway crossing

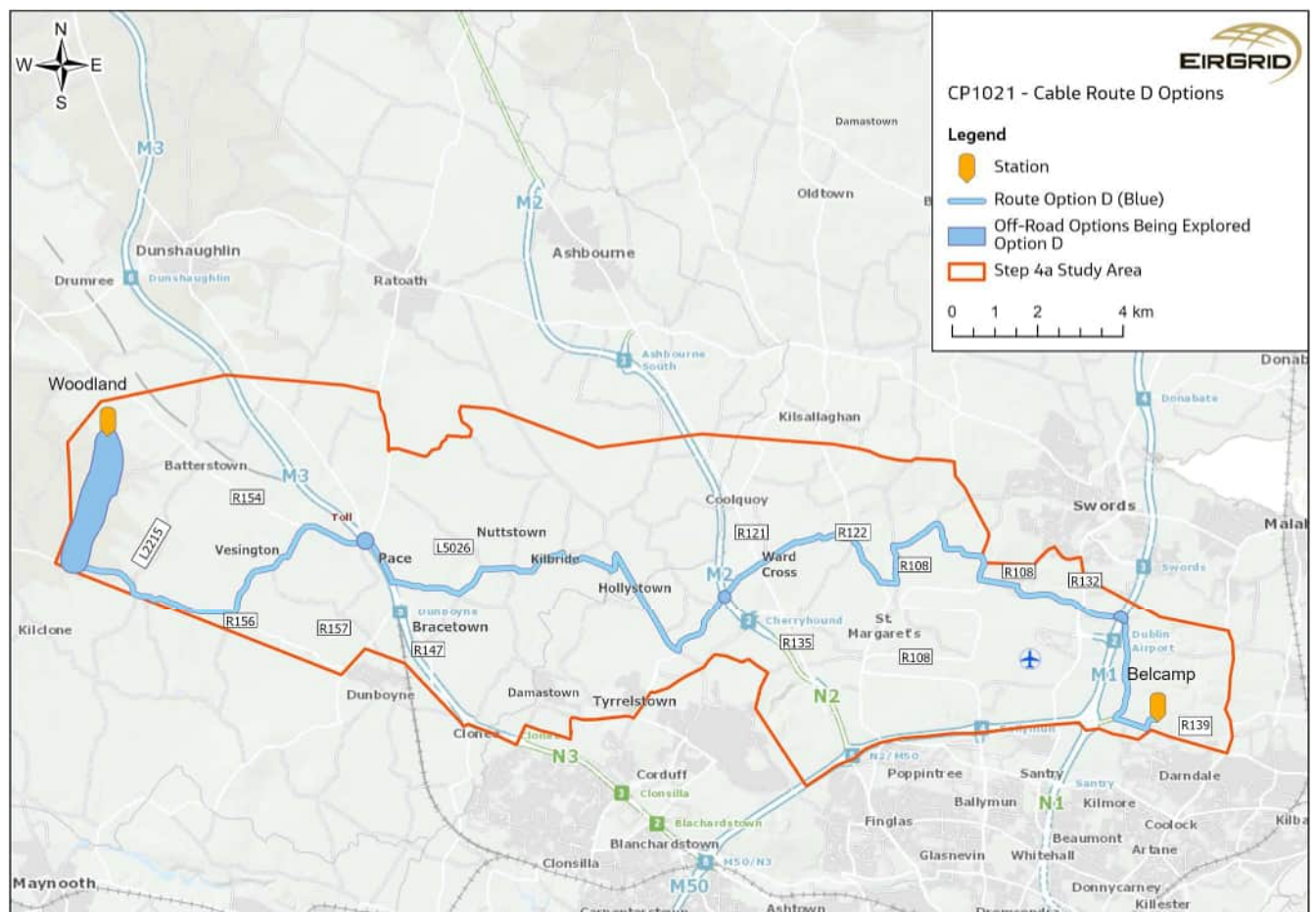
The route will then travel south along the R147 until the L5026 Pace, travelling east.

Route Option C will continue east through Nuttstown and into Kilbride. In Kilbride, it will pass Kilbride National School and progress south along the Kilbride Road. This route will enter Hollystown, turning northeast to join the R121 before reaching Hollywoodrath.

A potential off-road corridor is shown for the M2 motorway crossing. Following this, the route returns to the R121 and follows it through the Ward Cross until it finishes at the R122. Here, Route Option C will move east, using Kilreesk Lane (also known as Tobermurr Link Road) and then following Kilreesk Road north (also known as Tobermurr Road), then Killeek Lane eastwards, R108 southwards, Cooks Road eastwards and then northeast onto Forest Road. It will run along Forest Road next to Forrest Little Golf Club and into the southern suburbs of Swords, where the L2300 and R132 are used to return south to Cloghran Roundabout.

Route Option C will then follow Stockhole Lane, crossing the M1. A potential off-road corridor is shown for this motorway crossing. The proposed route option will then return to Stockhole Lane and turn east onto Baskin Lane which it will follow to the junction with the Malahide Road in Kinsealy. It will then move south, past Fingal Burial Ground, returning west along the R139 before turning north along the access road to reach Belcamp substation.

3.1.7 Route Option D (Blue)



Like Route Option C, Route Option D follows the R122 south, then uses Kilreesk Lane (also known as Tobermurr Link Road), then following Kilreesk Road north (also known as Tobermurr Road), Killeek Lane eastwards, R108 southwards and then Cooks Road eastwards. Like Route Options A and B, Route Option D then uses Naul Road on the northern border of Dublin airport.

From northeast of the airport, Route Option D would also briefly use Stockhole Lane before crossing the M1 motorway. A potential off-road corridor is shown for this motorway crossing., From the crossing of the motorway the route will return to Stockhole Lane travelling south before joining the R139. Here it will travel east and then north into Belcamp substation via the existing access road.

4. Environment

This chapter outlines the assessment of route options considering feedback received from the public consultation and the environment assessment criteria:

- Biodiversity (Flora and Fauna);
- Geology and Soils;
- Surface Water and Flood Risk;
- Planning Policy and Land Use;
- Landscape and Visual;
- Cultural Heritage (Archaeological and Architectural);
- Noise and Vibration; and
- Air Quality.

Chapter 2 provides further information regarding these subtopics, including the approach to the assessment and methodology.

4.1 Feedback

Feedback from the public consultation was received on several environment sub-topics comprising biodiversity, cultural heritage, surface water and flood risk, and planning policy and land use. This feedback, accompanied by a response from the project team for each comment, is summarised below.

Table 4.1: Biodiversity

Public Consultation Feedback	Project Team response
Concerns were raised about local effects on the environment (i.e., loss of trees and hedgerows). It was said that there was a lack of information about this, as well as restoration plans after the work is completed.	We have undertaken an initial assessment of potential impacts and further information is included in this chapter of the report. During the next stage (Step 4B) of the project development process, environmental surveys and further assessment work will be undertaken to understand the potential impacts including potential loss of habitat. Restoration and mitigation plans will similarly be developed during the next stage.

Table 4.2: Cultural Heritage

Public Consultation Feedback	Project Team response
Concerns were raised about impacts of the project on cultural and heritage sites.	We have undertaken an initial assessment of potential impacts and further information is provided in this chapter of the report. No direct impacts on known cultural heritage assets are anticipated and potential indirect impacts will be further assessed during the next stage of the project development process.

Table 4.3: Surface Water and Flood Risk

Feedback	Project Team response
Stakeholders commented that they had experienced previous issues with flooding of the River Boyne and the tributaries of the River Tolka.	We have undertaken a high-level review of flood risk and further information is provided in this chapter of the report. Flood risk will be further considered during the next stage of the project development process including preparation of a Flood Risk Assessment.

Table 4.4: Planning Policy and Land Use

Feedback	Project Team response
Stakeholders commented that Option B had the potential to impact on land intended for future development near St Margaret's and on their property.	Zoned areas and major planning applications have been reviewed as part of the initial assessment process and further information is provided in this chapter of the report.
It was noted that plans were already in place for the GAA (Gaelic Athletic Association) and County Board near Hollystown Golf club. Would this affect EirGrid's ability to execute Route Option A (Red).	Zoned areas and major planning applications have been reviewed as part of the initial assessment process and further information is provided in this chapter of the report. EirGrid will also continue to engage with the local community, including sport clubs, via our community forums.

4.2 Option A (Red)

4.2.1 Biodiversity (Flora and Fauna)

4.2.1.1 Internationally Designated Sites

Option A (Red) is not located within or directly adjoining any European site. The nearest European site is Baldoyle Bay SAC which is 4km to the east. Other European sites include North Dublin Bay SAC; Howth Head SAC; Baldoyle Bay SPA; North Bull Island SPA; South Dublin Bay, River Tolka Estuary SPA, Rockabill to Dalkey Island SAC; Ireland's Eye SAC; South Dublin Bay SAC; Rogerstown Estuary SAC; Lambay Island SAC; Ireland's Eye SPA; Howth Head Coast SPA; Rogerstown Estuary SPA; Lambay Island SPA and Dalkey Islands SPA.

Ramsar sites in the vicinity of the option include Baldoyle Bay Ramsar Site, Broadmeadow Estuary Ramsar Site, Rogerstown Estuary Ramsar Site, North Bull Island Ramsar Site, Sandymount Strand/Tolka Estuary Ramsar Site.

This route option is hydrologically linked to a number of these sites via watercourses which cross the route and ultimately discharge to coastal habitats.

4.2.1.2 National Sites

This option is not located within or directly adjoining any NHA's or pNHA's. The closest nationally important site is the Feltrim hill pNHA which is located 1.1km from this route option at its closest point.

4.2.1.3 Known or Presumed Locations of Species/Habitats of Conservation Interest

This route option runs alongside and through areas of supporting habitat for Light-bellied Brent Geese, particularly in the eastern extent of the study area close to Belcamp substation. This species will preferentially use foraging sites close to the SPA and there are records of Brent in habitats 9.8km from Malahide Estuary SPA. This supporting habitat is also suitable for other wintering bird species which are Species of Conservation Importance (SCI) species of the SPA.

There are numerous records for Annex 1 bird species in the vicinity of this route option.

There are numerous records of badger within close proximity of this route option, particularly in the western (Meath) section. There are also records of several other protected mammal species including otter, and bat species.

Invasive species, including giant rhubarb and winter heliotrope, have been observed along this route option. The NBDC search also returned records of giant rhubarb, Japanese knotweed, giant hogweed, and multiple other invasive plant species within the 10km grid square surrounding this option.

There are numerous lengths of treelines, hedgerows and wetland habitats which are important for biodiversity.

4.2.1.4 Potential Impacts

This option has 17 WFD Water Body crossings. There are eight water bodies crossed by the option, of these none are High or Good status, four are of Moderate and four are of Poor status²⁶. These water bodies connect and flow into Baldoyle Estuary, Malahide Estuary, the Tolka Estuary, and are therefore connected to numerous European sites. There are no designated salmonid rivers within the entire study area for the Proposed Development although some of the water bodies have wildlife and fisheries value, for instance due to the presence of otter and brown trout.

4.2.1.5 Summary of Assessment

This option has a relatively low number of watercourse crossings but has a significant length of off-road sections (8.5km). However, the fact there are no international designated sites in close proximity to this route option means it is not high risk. Records of protected species along sections of off-road, especially close to Belcamp substation, do present a greater risk of impacts on both habitats and species. These factors introduce the potential for at least a moderate risk. The relatively low number of water course crossings combined with it being the shortest route reduces the magnitude of potential impacts from Moderate-High. Therefore, Option A has been assessed as Moderate Risk.

Moderate

4.2.2 Geology and Soils

4.2.2.1 Geology

The Route Corridor Option A: Red is underlain predominantly by Carboniferous limestone bedrock with associated calcareous shales and sandstones. There are no mapped geological heritage sites recorded in the vicinity of the route.

Superficial deposits underlying the Route Option A (Red) are predominantly limestone till (carboniferous). To the west of the Study Area the superficial deposits are mainly comprised of shale and sandstone till (Namurian) with an area of alluvium to the north of the substation. There are small pockets of limestone sands and gravels, alluvium and bedrock at the surface.

This option crosses areas of potential economic deposits (sand and gravel, granular aggregate and crushed rock). The greatest potential impacts on soils and geology relate to the potential loss of economic deposits (Crushed Rock and Sand and Gravel).

Quantitatively, 17% of the Route Corridor Option lies over Crushed Rock reserves with economic potential in the central portion of the Route Corridor Option. However overall, such reserves are present across large parts of the region and the availability of these resources will therefore not be significantly affected by the Route Corridor Option. In addition, 5% of Route Corridor Option A: Red lies over economic potential Sand and Gravel deposits. No areas of peatland were detected within the route corridor option.

²⁶ River Waterbody WFD Status 2016-2021: <https://gis.epa.ie/EPAMaps/default>

4.2.2.2 Land Quality

Two EPA licensed facilities (holding an Industrial Emissions (IE) License and Integrated Pollution Prevention Control (IPPC) license) are located along the route corridor option. MSD International is located north of Dunboyne on the M3, ABP Food Group is located north of Dublin City Airport. Historic contaminated land sites obtained from Ordnance Survey mapping include a Marl Pit located in Vesingstown, Dunboyne c. 250m from Route Option A, a gravel pit located in Nuttstown c. 160m from the Route Corridor Option and a historic quarry located within Cloghran. No landfills were identified within the study area, however, a planning application for remediation of an unauthorised landfill of approximately 20,000m³ of mixed commercial/industrial, municipal and construction and demolition waste was submitted for a 1.4 hectare site northeast of the N32/Clonshaugh Road Junction, located c. 300m from the Route Corridor Option. The majority of Route Option A lies within the Dublin (poorly productive bedrock) WFD groundwater body.

4.2.2.3 Hydrogeology

The greatest potential impacts on hydrogeology relate to potential interaction with areas of vulnerable aquifer and associated risk of pollution and disruption of the groundwater resource. The majority of the route is underlain by bedrock classified as a Locally Important Aquifer (poorly productive bedrock). Quantitatively, 86% of the Route Corridor Option crosses an area of Locally Important Aquifer. 6% of the Route Corridor Option crosses an area of extreme groundwater vulnerability and 15% of the Route Corridor Option crosses an area of high groundwater vulnerability.

While no public water supplies are present in the study area, 3% of the Route Corridor Option crosses the inner aquifer protection zone of Dunboyne public water supply. Groundwater vulnerability is classified as high across the relevant study area of the proposed route option.

There are a large number of groundwater wells and springs mapped by the Geological Survey Ireland across the Study Area. However, consider of Transport Infrastructure Ireland (TII) guidance and the observation that low-yielding wells, which are used mainly for domestic and farm water supply are very common in Ireland, the assessment has focused on high yielding springs and wells used for public water supply and their surrounding protection zones and total number of wells and springs along each route corridor has not been used in assessing relative impacts between the route options at this stage.

At this stage of assessment, no groundwater dependent water bodies or groundwater dependent terrestrial ecosystems (GWDTEs) have been identified and so these features have not been used in assessing relative impacts between route options at this stage. However, the potential exists for such features to be present within the study area and it cannot be conclusively determined at this stage whether or not they may be a constraint for the proposed route.

4.2.2.3.1 Summary of Assessment

Potential impacts on mineral reserves are considered to be low risk. There are limited locations where there is potential for contaminated land to be encountered, however there are remediation works proposed at land to the west of Belcamp substation which this route option will pass through which presents some risk of impacts. There is a low risk of impacts to groundwater resources; only 6% of the route is within a zone of extreme vulnerability.

Taking together, in terms of soils, geology and groundwater the overall evaluation of potential risks for Option A is considered to be Low to Moderate.

Low to Moderate

4.2.3 Surface Water and Flood Risk

4.2.3.1 Surface Water

There are 17 crossings of water bodies by Route Option A (Red); eleven of Moderate status and six of Poor status²⁷. There are eight water bodies crossed in total, a number are crossed twice; one, the Ward_030 is crossed seven times. This water body is made up of a number of segments which are not all hydrologically linked to each except after their confluence to form the Ward_040. Notwithstanding this, there is potential for cumulative impacts on this water body as a result the numerous crossings from this option.

All of the water bodies are ultimately connected to designated sites along the Irish coast north of Dublin, however none of the crossing points is hydrologically connected less than 5km from the designated sites and so this is not considered close enough to impact on the sensitivity of the water body. The rankings according to sensitivity and crossing technique are provided in Table 4.5:Wa and **Error! Reference source not found..**

Table 4.5:Water Bodies Being Crossed

Waterbody	Status	Hydrological connection at closest crossing to SAC	Option A (Red) No. Crossings	Sensitivity	Impact Potential
Dunboyne Stream_010	Poor	>5km	2	1	2
Tolka_020	Moderate	>5km	2	3	6
Pinkeen_010	Moderate	>5km	1	3	3
Ward_010	Poor	>5km	2	1	2
Ward_020	Moderate	>5km	1	3	3
Ward_030	Moderate	>5km	7	3	21
Sluice_010	Poor	>5km	1	1	1
Mayne_010	Poor	>5km	1	1	1
Total	n/a	n/a	17	n/a	39
Ranking					Low to Moderate

Table 4.6: Crossing Techniques Ranking

Technique	Number of Crossings	Risk (crossings x risk score)
Open Cut likely	8	40
HDD	1	1
In-road	8	24
Total	17	65
Rank		Moderate to High

4.2.3.2 Flood Risk

4.2.3.2.1 Potential Impacts

The lengths and percentage of Option A (Red) located in flood zones are provided in Table 4.7Table 4.7: Lengths within PFRA Flood Zones. The overall length of Option A (Red) is 36.4km.

²⁷ River Waterbody WFD Status 2016-2021: <https://gis.epa.ie/EPAMaps/default>

Table 4.7: Lengths within PFRA Flood Zones

Flood Zone	Length (m)	%age of route	Ranking
Pluvial 10 year flood zone	73	0.2	Low
Fluvial 10 year flood zone	957	2.6	Moderate
Coastal 10 year flood zone	0	0	Low
Overall ranking			Moderate

4.2.3.2.2 Summary of Assessment

There are 17 crossings of eight different WFD water bodies, of relatively low sensitivity to change as a result of their existing conditions. Of these crossings it is likely that at least half will off-road via open cut crossing techniques. This presents a greater risk to water quality and hydromorphology than keeping the trench in the road or crossing via HDD.

The numerical scoring of the water courses and their crossing techniques allows benchmarking across all of the route options; the higher the score the greater the level of risk. Whilst the high number of off-road open cut crossings scores high and would suggest a moderate to high risk, the relatively low sensitivity of the water bodies being crossed reduces the overall significance of these impacts and the risk of such impacts occurring.

A very small proportion of the route is in any flood zone; notwithstanding, the potential for impact is of moderate risk, although these would be temporary during construction for the most part. There is a risk during operation, that there will be limited accessibility in flood zones and so these will be avoided wherever possible.

Combined score for surface water quality and flood risk:

Moderate

4.2.4 Planning Policy and Land Use

4.2.4.1 Planning Policy and Legislation

All of the route options traverse Meath and Fingal Administrative areas and the same policies will apply. Policy and legislation are therefore not a differentiator and so is not considered further in this assessment.

Within the Meath area of the Study Area, the only zoned area is Kilbride which is zoned for settlement and community infrastructure. All options pass through or in close proximity to Kilbride. Route Option A: Red is proposed to be in the road through the centre of Kilbride. There are no off-road sections proposed for Kilbride and therefore there is no sterilisation of land for future development.

Within Fingal administrative area, most of the land is zoned; route option A: red passes through land zoned for greenbelt. Whilst the majority of the route option will be installed within the public road network, the off-road sections proposed are in zoned greenbelt land. An UGC in greenbelt would not be inconstant with the objectives of this zoning.

This option does not go through any land zoned for future employment or industry apart from close to Belcamp substation; land to the east of the substation is zoned for High Technology business. The presence of a high voltage UGC in this area could present some sterilisation of land for development.

4.2.4.2 Planning Applications

Major planning applications at the time of writing, in proximity or potentially relevant to Route Option A, are listed below.

- Ballymacarney Solar Farm – this is under construction. Construction access is via the R121 to the south which is the road along which Options A (Red), C (Yellow) and D (Blue) would be routed to cross the M2 motorway. However, it is anticipated that construction will be completed ahead of any works beginning for the Proposed Development. There are no UGC connections in this road relating to the solar farm; it is connected via OHL to an existing 110kV OHL via a new 110kV ESB substation.
- Vesington Solar Farm – this is under construction and is accessed via the R156, which is proposed to be used for this route option. However it is anticipated that construction will be completed ahead of any works beginning for the Proposed Development. There are no UGC connections in local roads relating to the solar farm; it is connected via OHL to an existing 110kV OHL via a new 110kV ESB substation.
- Metrolink cable connections – this is currently in pre-planning stage. Metrolink has identified a preferred route for its connection to substations north and south of the airport and to Belcamp. The routes to the north of the airport would interface with this route option; and
- Greater Dublin Drainage project (Uisce Éireann) – this is paused awaiting a decision from ABP on how it might be progressed. This route option would cross the sewer connection to the major Wastewater Treatment plant proposed to be north of Belcamp substation. The routing has been chosen to minimise the interface with this project.

4.2.4.3 Summary of Assessment

This option is compliant with local planning policy and is only a risk to future development in the land to the west of Belcamp substation. Careful routing will minimise any impacts on this land, however, there remains a low to moderate risk. The major developments in proximity to this route option have been taken into account in the design of the option, however, there remains a low to moderate risk that it will impact those developments or be impacted upon by them. This is especially the case with GDD and Metrolink Connections which will have a direct interface with the Proposed Development.

Therefore, Option A has been assigned **Low to Moderate risk (Green)** in terms of the combined impacts to land use and planning policy.

Low to Moderate

4.2.5 Landscape and Visual Impact

4.2.5.1 Potential Impacts

Option A (Red), like the others, involves a piece of linear underground infrastructure which, similar to water and waste pipes, are, by their very nature, difficult to discern once operational. Construction activity will be localised, transitory and will largely occur along the road network. For these reasons, the sensitivity of the landscape character within the Study Area to a project of this nature is deemed to be low-negligible.

For all route options, the conductor will be installed below-ground in a 1.5m wide and 1.3m deep trench with joint bays (and associated temporary passing bays) positioned at intervals along the route; thus, the physical impact of the trench on the landscape is modest in scale, contained within already modified ground, temporary in duration, transient in location and reversible. Impacts on the land-cover will be limited to a 12m wide swathe within which some vegetation will need to be removed. During the construction phase, there may be a small degree of impact at certain locations within this swathe; however, it would not be at a scale that would have any material impact on the overall landscape fabric or on the landscape character along the route. Although construction activity may alter the landscape character in the immediate vicinity of where the cable is being laid, it will be transitory and temporary. Impacts will predominantly occur on the road network where vehicular movements are already part of the existing character.

The trenches will be backfilled, top soiled and vegetation will be reinstated having regard for agricultural land-use and/or biodiversity requirements. Any potentially noticeable permanent changes will be highly localised and will generally be limited to river crossings and where it was not possible to reinstate vegetation directly over the cable trench/within the permanent wayleave (noting that pre-existing hedged or wooded habitats cannot be re-instated over the cable duct). For these reasons, the magnitude of impact on the landscape character within the Study Area due to the Proposed Development will be low-negligible during the construction phase and negligible during the operational phase.

When the magnitude of impact on the landscape character is considered in conjunction with the low-negligible sensitivity of the landscape within the Study Area, it is anticipated that the significance of the impacts will be Imperceptible during the construction phase and Imperceptible during the operational phase.

Table 4.8: Summary of Impacts – Landscape Character

Landscape Character Area/Type	Summary of landscape character assessment in County Development Plan	Landscape sensitivity	Likely construction phase magnitude of impact	Likely operational significance of impact
Meath 10. The Ward Lowlands	<ul style="list-style-type: none"> Landscape Character Type: Lowland Landscape Value: Low Importance: Regional Sensitivity: High Potential capacity to accommodate development - underground services: Low 	Low-negligible	Negligible	Imperceptible
Meath: 11. South East Lowlands	<ul style="list-style-type: none"> Landscape Character Type: Lowland Landscape Value: Very High Importance: Regional Sensitivity: Medium Potential capacity to accommodate development - underground services: Medium 	Low-negligible	Negligible	Imperceptible
Meath: 12. Tara Skryne Hills	<ul style="list-style-type: none"> Landscape Character Type: Hills and Upland Areas (southern portion of this area that does not encompass Hill of Tara or Skryne Hill) Value: Exceptional Importance: National/International Sensitivity: High Potential capacity to accommodate development - underground services: Low 	Low-negligible	Negligible	Imperceptible
Fingal: Low Lying agriculture	<ul style="list-style-type: none"> Low sensitivity Can absorb a certain amount of development once the scale and forms are kept simple 	Low-negligible	Negligible	Imperceptible

There is the potential for visual impacts at scenic designations, residential dwellings and along public roads, with scenic designations carrying a greater potential for risk. No scenic designations were identified within the portion of the Study Area that occurs within County Meath or County Fingal.

4.2.5.2 Summary of Assessment

This route Option involves hedgerow removal along an off-road section through an area zoned Green Belt near Belcamp. It also includes a 2.82 km off-road section through the High Sensitivity Tara Skryne Hills

Landscape Character Area near Woodland, involving hedgerow removal. However, potential for physical impacts will be limited in scale and localised. Significant impacts on landscape character or on visual receptors is unlikely; therefore, this Route Option is considered to be Low.

Low

4.2.6 Archaeology, Architectural Heritage, & Cultural Heritage

4.2.6.1 Archaeology

No National Monuments or sites with Preservation Orders, or sites on the RHM, were identified within the study area for Option A (Red).

A total of 15 Recorded Monuments are located within the study area for Option A (Red). These comprise early medieval ringforts and enclosures (AY_18, AY_29, AY_41, AY_43, and AY_61), medieval and post-medieval churches and their associated graveyards (AY_23, AY_24, AY_30, AY_44 and AY_45) and a holy well (AY_22), post-medieval houses (AY_27 and AY_42) and a mound and a castle, both of unknown date (AY_47 and AY_25 respectively).

A total of nine sites recorded on the SMR (AY_07, AY_19, AY_28, AY_31, AY_46, AY_48, AY_57, AY_58 and AY_59) were also identified within the study area for Option A (Red). These are characterised by cropmark enclosures and field systems identified from aerial imagery.

Further information of the archaeological constraints identified within the study area for Option A (Red) is included in Appendix B.

4.2.6.1.1 Archaeological Potential

Alluvium identified along the route has the potential to preserve previously unknown archaeological monuments and remains, including paleoenvironmental remains and preserved organic materials. There is also the potential for votive offerings, objects apparently deposited for religious reasons, in rivers such as the Pinkeen River and Ward River, as well as in minor watercourses.

Previous archaeological investigations within the study area for Option A (Red) have identified evidence of activity dating from the prehistoric period onwards (see Section 3.1.3 of Appendix B for information). The potential for the presence of previously unknown archaeological remains is higher in less developed areas, including within the Batterstown South off-road focus area, Dunboyne / Avoca / Bracetown off-road focus area, Belgree East off-road focus area and Belcamp off-road focus area. While the potential for the presence of previously unknown archaeological remains within the on-road sections for this route option is lower, given the construction of the road network may have removed or truncated any archaeological remains that have been present, there is also the potential for historic road surfaces to survive within pre-1840 roadways.

4.2.6.2 Architectural Heritage

Architectural heritage constraints within the study area for Option A (Red) comprise:

- Four Protected Structures, comprising two churches (AH_04 and AH_06), a stone well (AH_10), and a country house (AH_22).
- Three structures recorded on the NIAH (AH_05, AH_12 and AH_13), assessed by the NIAH to be of Regional importance.
- 16 GDLs comprising nine recorded by the Survey of Historic Gardens and Designed Landscapes and seven identified from historic mapping (Ordnance Survey 6", 1837 – 1842).

No Architectural Conservation Areas (ACAs) were identified within the study area for Option A (Red).

Further information of the architectural heritage constraints identified within the study area for Option A (Red) is included in Appendix B.

4.2.6.3 Cultural Heritage

A total of 26 cultural heritage sites have been identified within the study area for Option A (Red) from the sources identified in Section 2.3.2.5. These are largely characterised by post-medieval built heritage including stone road bridges, houses, and agricultural buildings. Further information on these sites is presented in Appendix B.

4.2.6.4 Potential Impacts on Archaeological, Architectural and Cultural Heritage

4.2.6.4.1 Construction - Direct Impacts

Archaeology

Where Option A (Red) is located within the Zone of Notification associated with a Recorded Monument, this has been assessed as a direct impact. While the option would not directly impact the Recorded Monument itself, excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive within this zone.

Option A (Red) is located within the Zones of Notification of eight Recorded Monuments (AY_23, AY_24, AY_25, AY_27, AY_29, AY_30, AY_41 and AY_43).²⁸ Within these zones the option is located in the carriageway of existing roads the construction of which is more than likely to have removed or truncated any archaeological remains associated with these monuments that may have been present. However, construction, including the excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive. Construction would also have a direct impact on any archaeological remains associated with these Recorded Monuments that may survive within any additional land take required for construction.

Two Recorded Monuments (AY_47 and AY_61) and 5 sites on the SMR (AY_46, AY_48, AY_57, AY_58 and AY_59) have been identified within the off-road focus areas for Option A (Red). While the route of the cable within the off-road focus areas for Option A (Red) is not yet known, there is the potential to directly impact these constraints during construction.

Excavation of the cable trench and joint bays, and the excavation of temporary launch and reception pits for directional drilling may also result in a direct impact any previously unknown archaeological remains that may be present within the land required for Option A (Red). The potential for this impact is considered to be higher in previously undeveloped areas than within the existing carriageways, the construction of which is likely to have likely to have removed or truncated any archaeological remains that may have been present.

Architectural Heritage

A stone well (AH_10), a Protected Structure, is located on the alignment of Option A (Red). Therefore construction of the option would require the removal of this structure.

Should Option A (Red) require additional land take for construction, the removal of boundary features would have a direct impact on two GDLs (DL_04 and DL_09). In addition, eight GDLs are also located within the offroad focus areas for Option A (Red) (DL_05, DL_14 – 18, DL_19, DL_26, and DL_27) and construction of Option A (Red) may remove features associated with these demesnes should the option pass through them.

Two Protected Structures (AH_04 and AH_22) and three structures assessed by the NIAH to be of Regional importance (AH_05, AH_12, and AH_13) are located within the offroad focus areas for Option A (Red). While the route of the cable within the off-road focus areas is not yet known, existing buildings within these areas will be avoided.

²⁸ While the locations of AY_29 and AY_43 have been developed, these sites are recorded on the RMP and therefore have been included as constraints.

Cultural Heritage

Two post-medieval road bridges (CH_14 and CH_15) are located on the existing road network and therefore there is the potential for accidental damage to these cultural heritage constraints and loss of historic fabric as a result of construction.

In addition, while the route of the cable within the off-road focus areas is not yet known the following cultural heritage constraints are located within these areas:

- Two cultural heritage constraints (CH_41 and CH_42) in the Batterstown off-road focus area;
- Four cultural heritage constraints (CH_19, and CH_51, CH_52, and CH_53) in the Belgree off-road focus area; and
- Ten cultural heritage constraints (CH_30 – CH_35 and CH_54 – CH_57) in the Belcamp off-road focus area.

While upstanding buildings and structures within these areas will be avoided, there is the potential to directly impact these constraints during construction.

4.2.6.4.2 Construction – Indirect Impacts

Archaeology

Two Recorded Monuments comprising a church (AY_23, also a Protected Structure; AH_06) and graveyard (AY_24) are located within 20m of Option A (Red). While construction activities may be visible in views south-east towards the R121, it is anticipated any intrusion would be temporary (lasting the duration of construction in this location).

While the route of the cable within the off-road focus areas for Option A (Red) is not yet known, construction activities within the cable corridor also have the potential to affect the setting of all the archaeological constraints within the off-road focus areas; however, these impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

Architectural Heritage

Option A (Red) is located approximately 20m to the south-east of a Protected Structure (AH_06) that is also a Recorded Monument (AY_23). To avoid double counting impacts, no impact has been assessed on AH_06 as an impact has already been assessed on AY_23 (see above).

Construction activities within the cable corridor also has the potential to affect the setting of all the architectural heritage constraints within the off-road focus areas. These impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

Cultural Heritage

Construction activities would have an indirect impact on the setting of seven cultural heritage sites (CH_01, CH_04, CH_12, CH_13, CH_24, CH_25 and CH_29). However, it is anticipated any intrusion would be temporary (lasting the duration of construction in each location).

Construction activities within the cable corridor also have the potential to affect the setting of twelve cultural heritage constraints within the off-road focus areas (CH_19, CH_30, CH_33, CH_34, CH_35, CH_42, CH_51, CH_52, CH_54, CH_55, CH_56 and CH_57). These impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

4.2.6.4.3 Operational Impacts

Option A (Red) would be located beneath the road surface, and any off-road sections would be reinstated after construction no impacts on archaeological, architectural or cultural heritage constraints have been assessed as a result of the operation of Option A (Red).

4.2.6.5 Summary of Assessment

Considering the number of potential impacts on archaeology, architectural heritage and cultural heritage constraints overall and the length of off-road sections (c.8.5km), Option A (Red) has been assigned a risk of **'Moderate (Dark Green)'**.

A Route Corridor Summary Matrix for archaeology, architectural heritage and cultural heritage is provided in Appendix B.

Moderate

4.2.7 Noise and Vibration

4.2.7.1.1 Noise and Vibration Sensitive Receptors

As Table 4.9 shows there are 298 receptors within 100m and 606 receptors within 300m of this option. Most of the receptors are residential but there are other non-residential sensitive receptors within 300m of this option including:

- Dunboyne Nursing Home on R156 (Section I-J)
- Kilbride National School on Kilbride Road (Section V-W)
- New Park Care Centre Nursing Home (Section BB-LL)
- DIATA Aviation Training College (Section UU-VV)
- Trinity Care Nursing Home (Section VV-XX)

It also shows that there are 566 receptors within 100m of off-road sections and 901 receptors within 300m of off-road sections. Most of the receptors are residential properties with large numbers of dwellings located in Hollystown that could potentially be affected. Other sensitive receptors include Trinity Care Nursing Home which is located within the Belcamp off-road section.

Table 4.9: Residential Property Counts within 300m of Option A (Red)

Option	Number of receptors within 100m of route	Number of receptors within 300m of route	Number of receptors within 100m of off-road sections	Number of receptors within 300m of off-road sections	Number of receptors within 100m of motorway crossings	Number of receptors within 300m of motorway crossings
A	298	606	566	901	49	86

There are 49 receptors within 100m of motorway crossings and 86 receptors within 300m of motorway crossings. Most of the receptors potentially affected are residential though Trinity Care Nursing Home is within 300m of the M1 crossing and could potentially experience adverse noise and/or vibration impacts during construction.

4.2.7.1.2 Potential Noise and Vibration Impacts

This option has the potential to cause noise and vibration impacts during construction which will be temporary in nature. No permanent operational impacts are expected.

Areas of Potential Horizontal Directional Drilling (HDD)

There is greater potential for adverse noise and/or vibration impacts at sensitive receptors where construction activities would occur over a longer period (e.g. at trenchless crossings). It is recognised that certain construction activities at certain trenchless crossings could be required to take place outside of normal working hours, which would increase the likelihood of adverse noise effects occurring. In addition, certain potential trenchless crossing techniques that may be employed (e.g. HDD) also have the potential to cause adverse vibration impacts at nearby receptors.

Open Cut Trenches

For the majority of the proposed route option, the underground cables are expected to be installed using 'Open Cut' techniques. Where 'Open Cut' works are undertaken adjacent to the existing road network, there is a relatively low potential for temporary impacts due to construction noise. This is due to the relatively high levels of local environmental noise that are typically experienced adjacent to roads. Also, as the works are expected to progress in sections, noise levels at any receptor would only be elevated for a relatively short period of time. However, where 'Open cut' works are undertaken in relatively quiet areas (such as offline sections) close to sensitive receptors there is the potential for adverse temporary impacts due to construction noise.

4.2.7.2 Summary of Assessment

This option impacts a relatively small number of receptors, most of which are dwellings, but the option also passes within 100m of a school and two nursing homes. Therefore, an overall risk score of Low to Moderate (light green) has been applied.

Low to Moderate

4.2.8 Air Quality

4.2.8.1 Sensitive receptors

Table 4.10 shows the total receptor counts within each distance band for Option A (Red). These figures are, however, 'end to end' totals. Air quality has the greatest impact at a very localised level and so therefore the number of sensitivity receptors at these distances was also counted between route nodes.

No ecological designations were identified within 50m of the Option A: Red centreline and therefore have been excluded from further assessment. Human receptors, including residential properties and one school (Little Moo Playschool, an assumed 30-pupil pre-school, within 20m of the centreline), were identified and have been factored into the receptors counts below.

Table 4.10 Sensitive Receptors within 300m of Option A (Red)

Option	No. of sensitive receptors 0-20m	No. of sensitive receptors 0-50m	No. of sensitive receptors 0-100m	No. of sensitive receptors 0-350m
A	51	231	320	914

4.2.8.2 Assessment

The IAQM dust guidance states that "for almost all construction activity, the aim should be to prevent significant impacts on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual impact will normally be not significant." With the good practice mitigation that would be implemented, which would reduce the maximum risks, a risk score higher than moderate was not considered suitable so a maximum risk score of 3 was adopted.

If applied on the counts of sensitive receptors 'end to end', this route would have a moderate risk rating. However, at the local level, between nodes, only one section scored a moderate risk rating, and this was because of the presence of a local primary school. An average risk rating along the length of the route option was determined to be 1.4.

4.2.8.3 Potential Impacts

This option has the potential to cause air quality impacts during construction, which will be temporary in nature. No permanent operational impacts are expected.

Construction activities associated with the Proposed Development have the potential to generate fugitive dust emissions. These may give rise to annoyance due to the soiling of surfaces, risk of health effects due to

the increase in exposure to fine particulates such as PM₁₀ and PM_{2.5} and damage to vegetation and ecosystems (where very high levels of dust soiling occur).

The main construction activities associated with the Proposed Development that could generate dust include earthworks, trench excavation and material storage. Dust may also be generated by vehicle movements through resuspending dust from haul roads and surfaces. The works associated with the construction of the Proposed Development would be split into several stages, which would involve different periods of earthworks, construction (including setting up compounds and pipeline installation) and trackout²⁹ and activity levels would not necessarily peak simultaneously. Also, as the works are expected to progress in sections, potential dust generation would only occur for a relatively short period of time at any one location.

4.2.8.4 Assessment Summary

Option A (red) has an average risk score of 1.4 along the length of the route option and has a relatively low number of sensitive receptors within all of the distance bands. Although there are no ecological designations within 200m of Option A (Red), there are several sensitive human receptors including dwellings and a school (Little Moo Moos Playschool) within 20m. Therefore, an overall risk score of '**Low-Moderate (Light Green)**' has been applied.

Low to Moderate

4.3 Option B (Green)

4.3.1 Biodiversity (Flora and Fauna)

4.3.1.1 Overview

The baseline for biodiversity for Option B (Green) is largely the same as for Option A and so the reader is referred to that text; it is not repeated here.

4.3.1.2 Potential Impacts

This option has 16 WFD Water body crossings. There are seven water bodies crossed by the options, of these none are High or Good status, four are of Moderate and three are of Poor status. There are also up to ten crossings of unnamed tributaries of these water bodies. These water bodies connect and flow into Baldoyle Estuary, Malahide estuary, the Tolka Estuary, and are therefore connected to numerous European sites. There are no designated salmonid rivers within the study area for the Proposed Development although some of the water bodies have wildlife and fisheries value due to the presence of otter and brown trout.

4.3.1.3 Summary of Assessment

This option has a relatively low number of watercourse crossings and a moderate distance of off-road sections (c. 6.3km). However, the fact there are no international designated sites in close proximity to this route option means it is not high risk. There are, however, records of protected species and the relatively long sections of off-road, especially close to Belcamp substation, do present some risk of impacts on both habitats and species. However, the relatively low number of water course crossings and considering the length of off-road sections, this option has been assessed as Low - Moderate.

Low to Moderate

²⁹ The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

4.3.2 Geology and Soils

4.3.2.1 Geology

The Route Corridor Option B (Green) is underlain predominantly by Carboniferous limestone bedrock with associated calcareous shales and sandstones. There are no mapped karst features or geological heritage sites recorded in the vicinity of the route.

Superficial deposits underlying the Route Option B (Green) are predominantly limestone till (carboniferous). To the west of the Study Area the superficial deposits are mainly comprised of shale and sandstone till (Namurian) with an area of alluvium to the north of the substation. There are small pockets of limestone sands and gravels, alluvium and bedrock at the surface.

Route Option B (Green) crosses areas of potential geological economic deposits (Crushed Rock and Sand and Gravel). Quantitatively 25% of the route option lies over economic deposits of crushed rock reserves in the central portion of the route corridor option. However, such reserves are more widespread elsewhere in the region and the availability of these resources will not be significantly affected. In addition, 6% of the Route Corridor Option lies over economic potential sand and gravel deposits.

4.3.2.2 Land Quality

Four limestone mines are crossed by Route Corridor Option B. No areas of peatland were detected along the route corridor option. Two EPA licensed facilities (holding an Industrial Emissions (IE) License and Integrated Pollution Prevention Control (IPPC) license) are located along the route corridor option. Historic contaminated land sites obtained from Ordnance Survey Mapping include a gravel pit c. 180m from the Route Corridor Option located at Priest Town and a historic quarry at Cloghran. The majority of Route Option B lies within the Dublin (poorly productive bedrock) WFD groundwater body. Between the M1 and M2 Route Option B lies within Swords (poorly productive) WFD groundwater body.

4.3.2.3 Hydrogeology

The greatest potential impacts on hydrogeology relate to potential interaction with areas of vulnerable aquifer and associated risk of pollution and disruption of the groundwater resource. The majority of the route is underlain by bedrock classified as Locally Important Aquifer (poorly productive bedrock) quantitatively, 87% of the Route Corridor Option crosses an area of Locally Important Aquifer. 10% of the Route Corridor Option crosses an area of extreme vulnerability and 14.61% of the Route Corridor Option crosses an area of high groundwater vulnerability.

While no public water supplies are present in the study area, 3% of the Route Corridor Option crosses the inner aquifer protection zone of Dunboyne public water supply. Groundwater vulnerability is classified as high across the relevant study area of the proposed route option.

There are a large number of groundwater wells and springs mapped by the Geological Survey Ireland across the Study Area. However, considering Transport Infrastructure Ireland (TII) guidance and the observation that low-yielding wells, which are used mainly for domestic and farm water supply are very common in Ireland, the assessment has focused on high yielding springs and wells used for public water supply and their surrounding protection zones and total number of wells and springs along each route corridor has not been used in assessing relative impacts between the route options at this stage.

4.3.2.4 Summary of Assessment

Potential impacts on mineral reserves are considered to be low risk. There are limited locations where there is potential for contaminated land to be encountered, however there are remediation works proposed at land to the west of Belcamp substation which this route option will pass through which presents some risk of impacts. There is a low risk of impacts to groundwater resources; only 10% of the route is within a zone of extreme vulnerability.

In terms of soils, geology and groundwater the overall evaluation of potential risks for Option B are Low-moderate.

Low to Moderate

4.3.3 Surface Water and Flood Risk

4.3.3.1 Surface Water

4.3.3.1.1 Potential Impacts

For Route Option B (Green), there are 16 crossings of water bodies; seven of Moderate status and nine of Poor status. There are seven water bodies crossed in total, a number are crossed twice; the Tolka_020 is crossed five times and the Ward_030 is crossed four times. The Ward_030 is made up of a number of segments which are not all hydrologically linked to each except after their confluence to form the next water body. Notwithstanding this, there is potential for cumulative impacts as a result the numerous crossings from this option.

All of the water bodies are ultimately connected to designated sites along the north Dublin coastline, however none of the crossing points is hydrologically connected less than 5km from the designated sites and so this is not considered close enough to impact on the sensitivity of the water body. The rankings for sensitivity and crossing technique are provided in Table 4.11 and Table 4.12.

Table 4.11 Water Bodies Being Crossed

Waterbody	Status	Hydrological connection at closest crossing to SAC	Option B (Green) No. Crossings	Sensitivity	Impact Potential
Tolka_020	Moderate	>5km	5	3	15
Pinkeen_010	Moderate	>5km	2	3	6
Ward_010	Poor	>5km	1	1	1
Ward_020	Moderate	>5km	2	3	6
Ward_030	Moderate	>5km	4	3	12
Sluice_010	Poor	>5km	1	1	1
Mayne_010	Poor	>5km	1	1	1
Total	n/a	n/a	16	n/a	42
Ranking					Low to Moderate

Table 4.12 Crossing Techniques Ranking

Technique	Number of Crossings	Risk (crossings x risk score)
Open Cut likely	9	45
HDD	2	2
In-road	5	15
Total	16	62
Rank		Moderate to High

4.3.3.2 Flood Risk

4.3.3.2.1 Potential Impacts

The lengths and percentage of the Option B (Green) are provided in Table 4.13. The length of Option B (Green) is 37.9km.

Table 4.13 Lengths within PFRA Flood Zones

Flood Zone	Length (m)	%age of route	Ranking
Pluvial 10 year flood zone	115	0.3	Low
Fluvial 10 year flood zone	889	2.3	Low to moderate
Coastal 10 year flood zone	0	0	Low
Overall			Low to Moderate

4.3.3.2.2 Summary of Assessment

There are 16 crossings of seven different water bodies, which are relatively low sensitivity to change as a result of their existing conditions. Of these crossings it is likely that at least half will be off-road via open cut crossing techniques. This presents a greater risk to water quality and hydromorphology than keeping the trench in the road or crossing via HDD.

The numerical scoring of the water courses and their crossing techniques allows benchmarking across all of the route options; the higher the score the greater the level of risk. Whilst the high number of off-road open cut crossings score high and would suggest a moderate to high risk, the relatively low sensitivity of the water bodies being crossed reduces the overall significance of these impacts and the risk of such impacts occurring.

A very small proportion of the route is in any flood zone; notwithstanding, the potential for impacts is of moderate risk, although these would be temporary during construction for the most part. There is a risk during operation, that there will be limited accessibility in flood zones and so these will be avoided wherever possible.

Combined score for surface water quality and flood risk:

Moderate

4.3.4 Planning Policy and Land Use

4.3.4.1 Planning Policy and Legislation

All of the route options traverse Meath and Fingal Administrative areas and the same policies will apply. Policy and legislation are therefore not a differentiator and so is not considered further in this assessment.

The zoned areas of Meath and Fingal are the same for all of the options. Option B: green has the same potential for impacts on Kilbride and the land identified for industrial uses to the west of Belcamp as Option A.

4.3.4.2 Planning Applications

Major planning applications at the time of writing, in proximity or potentially relevant to Route Option B, are listed below.

- Ballymacarney Solar Farm – this is under construction. Construction access is via the R121 to the south. The road to the north, along which Option B (Green) is routed is likely to be the main access point during its operation. There are no UGC connections in this road relating to the solar farm; it is connected via OHL to an existing 110kV OHL via a new 110kV ESB substation.

- Vesington Solar Farm – this is under construction and is accessed via the R156, which is proposed to be used for this route option. There are no UGC connections in local roads relating to the solar farm; it is connected via OHL to an existing 110kV OHL via a new 110kV ESB substation.
- Metrolink cable connections – this is currently in pre-planning stage. Metrolink has identified a preferred route for its connection to substations north and south of the airport and to Belcamp. The routes to the north of the airport would interface with this route option; and
- Greater Dublin Drainage project (Uisce Éireann) – this was consented and then the consent was held back following legal challenge. It is currently paused awaiting a decision from ABP on how it might be progressed. This route option would cross the sewer connection to the major Wastewater Treatment plant proposed to be north of Belcamp substation.

4.3.4.3 Summary of Assessment

Taking the above into account, Option B (Green) has the potential to interact with a few granted and live planning applications, Therefore, Option B (Green) has been assigned Low to **Moderate risk (Green)** in terms of the combined impacts to land use and planning policy.

Low to Moderate

4.3.5 Landscape and Visual Impacts

4.3.5.1 Potential Impacts

The nature of the potential impacts on the landscape and on visual receptors is as is described in Section 4.2.5.1.

The same landscape character areas are crossed by this option as for Option A (Red) – see Table 4.8:.

4.3.5.2 Summary of Assessment

Route Option involves hedgerow removal along an off-road section through an area zoned Green Belt near Belcamp. However, potential for physical impacts will be limited in scale and localised. When the magnitude of impact on the landscape character is considered in conjunction with the low-negligible sensitivity of the landscape within the Study Area, it is anticipated that the significance of the impacts will be Imperceptible during the construction phase and Imperceptible during the operational phase.

Significant impacts on landscape character or on visual receptors is unlikely; therefore, this Route Option is considered to be Low.

Low

4.3.6 Archaeology, Architectural Heritage and Cultural Heritage

4.3.6.1 Archaeology

No National Monuments or sites with Preservation Orders, or sites on the RHM, were identified within the study area for Option B: Green and therefore no impacts have been identified on these types of constraint.

A total of 15 Recorded Monuments are located within the study area. These comprise ringforts and enclosures (AY_18, AY_41, AY_43 and AY_61), mounds (AY_03 and AY_47), a motte (AY_20) and moated site (AY_62), a field system of unknown date (AY_63), churches and graveyards (AY_02, AY_44, and AY_45), a holy well (AY_04), and a post-medieval house and roadside inn (AY_20 and AY_26).

A total of ten sites on the SMR (AY_01, AY_05, AY_07, AY_19, AY_32, AY_46, AY_48, AY_57, AY_58 and AY_59) have been identified within the study area for Option B (Green). These are largely characterised by cropmark enclosures.

Further information on the archaeological constraints identified within the study area for Option B: Green is included in Appendix B.

6.1.6.1.1 Archaeological Potential

Areas of alluvium within the study area for Option B: Green have the potential to preserve previously unknown archaeological monuments and remains, including paleoenvironmental remains and preserved organic materials. There is also the potential for votive offerings, objects apparently deposited for religious reasons, in rivers such as the Pinkeen River and Ward River, as well as in minor watercourses.

Similar to Option A (Red) evidence of activity dating to the prehistoric period onwards has been identified during archaeological excavations within the Study area for Option B (Green) (see Section 3.2.3 of Appendix B for information). Therefore, there is the potential for the presence of previously unknown archaeological remains, particularly in areas that are less developed including Batterstown North off-road focus area, Dunboyne / Avoca / Bracetown off-road focus area and Belcamp off-road focus area.

Given the construction of the road network is likely to have removed or truncated any archaeological remains that may have been present in on-road sections of Option B (Green), the potential for the presence of previously unknown archaeological remains is lower in the on-road sections. However, there is the potential for historic road surfaces to survive within pre-1840 roadways.

4.3.6.2 Architectural Heritage

Architectural heritage within the study area for Option B (Green) comprises:

- Five Protected Structures characterised by three churches (AH_02, AH_03 and AH_09), a stone well (AH_10), and an early 19th century house (AH_11).
- Three structures recorded on the NIAH (AH_01, AH_12 and AH_13), assessed by the NIAH to be of Regional importance.
- 15 GDLs comprising nine recorded by the Survey of Historic Gardens and Designed Landscapes and six identified from historic mapping (Ordnance Survey 6", 1837 – 1842).

No Architectural Conservation Areas (ACAs) were identified within the study area for Option B (Green).

Further information on the architectural constraints identified within the study area for Option B (Green) is included in Appendix B.

4.3.6.3 Cultural Heritage

A total of 34 cultural heritage sites have been identified within the study area for Option B (Green) from the sources identified in Section 2.3.2.5. These are largely characterised by post-medieval built heritage including stone road bridges, houses, and agricultural buildings. Further information on these sites is presented in Appendix B.

4.3.6.4 Potential Impacts on Archaeological, Architectural and Cultural Heritage

4.3.6.4.1 Construction - Direct Impacts

Archaeology

Where Option B (Green) is located within the Zone of Notification associated with a Recorded Monument, this has been assessed as a direct impact. While the option would not directly impact the Recorded Monument itself, excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive within this zone.

Option B (Green) is located within the Zones of Notification of six Recorded Monuments (AY_18, AY_26, AY_41, AY_43, AY_44, and AY_45)³⁰. Within these zones the option is located in the carriageway of existing roads the construction of which is more than likely to have removed or truncated any archaeological remains

³⁰ While the location AY_43 has been developed, this site is recorded on the RMP and therefore has been included as a constraint.

associated with these monuments that may have been present. However, construction, including the excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive. Construction would also have a direct impact on any archaeological remains associated with these Recorded Monuments that may survive within any additional land take required for construction.

Six Recorded Monuments (AY_03, AY_04, AY_47, AY_61, AY_62, and AY_63) and five sites on the SMR (AY_46, AY_48, AY_57, AY_58 and AY_59) have been identified within the off-road focus areas for Option B (Green). While the route of the cable within the off-road focus areas for Option B (Green) is not yet known, there is the potential to directly impact these constraints during construction.

Excavation of the cable trench and joint bays, and the excavation of temporary launch and reception pits for directional drilling may also result in a direct impact any previously unknown archaeological remains that may be present within the land required for Option B (Green). The potential for this impact is considered to be higher in previously undeveloped areas than within the existing carriageways, the construction of which is likely to have likely to have removed or truncated any archaeological remains that may have been present.

Architectural Heritage

One Protected Structure (AH_02) and two structures assessed by the NIAH to be of Regional importance (AH_12, and AH_13) are located within the offroad focus areas for Option B (Green). While the route of the cable within the off-road focus areas is not yet known, existing buildings within these areas will be avoided.

Option B (Green) is located within Limepark (DL_13) and may remove features associated with this GDL. In addition, should Option B (Green) require additional land take for construction, the removal of boundary features would have a direct impact on five further GDLs (DL_01, DL_03, DL_04, DL_07 and DL_11). In addition, nine GDLs are also located within the off-road focus areas for Option B (Green) (DL_02, DL_14 – 18, DL_19, DL_26, and DL_27) and construction of Option B (Green) may remove features associated with these demesnes should the option pass through them.

Cultural Heritage

Five post-medieval road bridges (CH_03, CH_14, CH_15, CH_16, and CH_26) are located on the existing road network and therefore there is the potential for accidental damage and loss of historic fabric to these cultural heritage constraints as a result of construction.

In addition, while the route of the cable within the off-road focus areas is not yet known the following cultural heritage constraints are located within these areas:

- Eight cultural heritage constraints (CH_05 – CH_07, and CH_43 – CH_47) in the Batterstown off-road focus area; and
- Ten cultural heritage constraints (CH_30 – CH_35 and CH_54 – CH_57) in the Belcamp off-road focus area.

While upstanding buildings and structures within these areas will be avoided, there is the potential to directly impact these constraints during construction.

4.3.6.4.2 Construction - Indirect Impacts

Archaeology

Three Recorded Monuments comprising an inn (AY_26) on the R135, and a church (AY_44) within a walled graveyard (AY_45) are located within 30m of Option B (Green). While construction activities may add noise and visual intrusion in the setting of these constraints, it is anticipated any intrusion would be temporary (lasting the duration of construction in this location) and, for AY_44 and AY_45, filtered through established boundary vegetation.

While the route of the cable within the off-road focus areas for Option B (Green) is not yet known, construction activities within the cable corridor also have the potential to affect the setting of four Recorded Monuments (AY_03, AY_47, AY_61 and AY_62) and 4 sites on the SMR (AY_46, AY_48, AY_58 and AY_59) within the off-road focus areas; however, these impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

Architectural Heritage

Option B (Green) is located approximately 30m to the south of Kilbride Catholic Church (AH_03), a Protected Structure. Construction may add noise and visual intrusion into the setting of this constraint; however, it is anticipated any intrusion would be temporary (lasting the duration of construction in each location).

Construction activities within the cable corridor also has the potential to affect the setting of all the architectural heritage constraints within the off-road focus areas. However, these impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

Cultural Heritage

Construction activities would have an indirect impact on the setting of nine cultural heritage sites (CH_02, CH_04, CH_17, CH_18, CH_21, CH_22, CH_24, CH_27, and CH_28). However, it is anticipated any intrusion would be temporary (lasting the duration of construction in each location).

Construction activities within the cable corridor also have the potential to affect the setting of 14 cultural heritage constraints within the off-road focus areas (CH_05, CH_07, CH_30, CH_33, CH_34, CH_35, CH_43, CH_44, CH_45, CH_47, and CH_54 – CH_57). These impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

4.3.6.4.3 Operational Impacts

Option B (Green) would be located beneath the road surface, and any offline sections would be reinstated after construction no impacts on archaeological, architectural or cultural heritage constraints have been assessed as a result of the operation of Option B (Green).

4.3.6.5 Summary of Assessment

Considering the number of potential impacts on archaeology, architectural heritage and cultural heritage constraints and the length of off-road sections (c.6.3km), Option B (Green) has been assigned a risk of 'Moderate-High (Blue)'.

A Route Corridor Summary Matrix for archaeology, architectural heritage and cultural heritage is provided in Appendix B.

Moderate to High

4.3.7 Noise and Vibration

4.3.7.1 Noise and Vibration Sensitive receptors

As Table 4.14 shows there are 383 receptors within 100m and 776 receptors within 300m of this option. Most of the receptors are residential but there are other non-residential sensitive receptors within 300m of this option including:

- Ballymaglassan Stud Farm (Section H-I)
- Saint Keiran's Church (Section H-I)
- Dunboyne Nursing Home on R156 (Section I-J)
- Kilbride National School on Kilbride Road (Section T-V)
- Dunsogly Castle and St. Margaret's Well (Section GG-II)
- St. Margaret's National School (Section II-JJ)
- St. Margaret's Church (Section II-JJ)
- DIATA Aviation Training College (Section UU-VV)
- Trinity Care AnovoCare Nursing Home (Section VV-WW)

There are 216 receptors within 100m of off-road sections and 286 receptors within 300m of off-road sections. Most of the receptors are residential properties. Other sensitive receptors include Rathregan National School in the Batterstown off-road section and Trinity Care Nursing Home located in the Belcamp off-road section for this option.

Table 4.14: Residential Property Counts within 300m of Option B (Green)

Option	Number of receptors within 100m of route	Number of receptors within 300m of route	Number of receptors within 100m of off-road sections	Number of receptors within 300m of off-road sections	Number of receptors within 100m of motorway crossings	Number of receptors within 300m of motorway crossings
Option B	383	776	216	286	47	85

There are 47 receptors within 100m of motorway crossings and 85 receptors within 300m of motorway crossings. Most of the receptors potentially affected are residential though Trinity Care Nursing Home is within 300m of the M1 crossing and could potentially experience adverse noise and/or vibration impacts during construction.

4.3.7.2 Potential Noise and Vibration Impacts

This option has the potential to cause noise and vibration impacts during construction which will be temporary in nature. No permanent operational impacts are expected.

As was described for Option A, there is greater potential for noise impacts on sensitive receptors where HDD is used to cross major obstacles, such as motorways. The majority of this option will be installed using 'Open cut' techniques, which are less impactful on sensitive receptors. There will be three crossings of motorways; this option has 57 sensitive receptors within 100m of a motorway crossing.

4.3.7.3 Summary of Assessment

This option impacts a relatively small number of receptors, most of which are dwellings but the option also passes within 100m of a church, two nursing homes and a school. Therefore an overall risk score of Low to Moderate (light green) has been applied.

Low to Moderate

4.3.8 Air Quality

4.3.8.1 Sensitive receptors

The same approach as is set out in Section 4.2.8 was used to determine the potential impacts on sensitive receptors with respect to Air Quality. For human exposure to air pollutants, sensitive receptors (termed 'human receptors') include, for example, residential properties, schools and care homes. Air pollutants can also impact on sensitive vegetation and habitats (termed 'ecological receptors'). These include the following ecological receptor designations:

- Special Area of Conservation (SAC);
- Special Protection Area (SPA);
- Ramsar site;
- Natural Heritage Area (NHA) and proposed NHA (pNHA); and
- Ancient Woodland.

The Institute of Air Quality Management (IAQM) dust guidance³¹, has been adapted for the purposes of this assessment.

A semi quantitative assessment was carried out using GIS to count the number of (human) air quality receptors within set distance bands of the design option centreline. For ecological receptors, distance bands of 20m and 50m were assessed, whereas human receptors utilised 20m, 50m, 100m and 350m.

Table 4.15 shows the total receptor counts within each distance band for Option B (green). No ecological designations were identified within 50m of the Option B (Green) centreline and therefore have been excluded from further assessment. Human receptors, including residential properties and one school (St Margaret's National School, a 92-pupil primary school, within 50m of the centreline), were identified and have been factored into the receptors counts below.

Table 4.15 Sensitive Receptors within 300m of Option B (Green)

Option	No. of sensitive receptors 0-20m	No. of sensitive receptors 0-50m	No. of sensitive receptors 0-100m	No. of sensitive receptors 0-350m
B	40	341	466	1,212

4.3.8.2 Assessment Criteria

The same approach as is set out in Section 4.2.8 was used to determine the risk ratings for potential dust impacts.

If applied on the counts of sensitive receptors 'end to end', this route would have a moderate risk rating. However, at the local level, between nodes, no section scored a moderate risk rating. An average risk rating along the length of the route option was determined to be 1.6.

4.3.8.3 Potential Impacts

The potential impacts are the same as those described in Section 4.2.8.3.

4.3.8.4 Summary of Assessment

Option B (Green) has an average risk score of 1.6 along the length of the route option, is the second shortest route option (37.9km) and has the second fewest number of sensitive receptors within all of the distance bands. Although there are no ecological designations within 200m of Option B (Green), there are several sensitive human receptors including dwellings and a school (St Margaret's National School) within 50m. Therefore, an overall risk score of Low to Moderate (Light Green) has been applied.

Low to Moderate

4.4 Option C (Yellow)

4.4.1 Biodiversity (Flora and Fauna)

4.4.1.1 Overview

The baseline for biodiversity for Option C (Yellow) is largely the same as for Option A (Red) and so the reader is referred to that text; it is not repeated here.

³¹ Institute of Air Quality Management. 2016. Guidance on the assessment of dust from demolition and construction. Version 1.1. <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

4.4.1.2 Potential Impacts

This option is 42.9km and features numerous narrow roads creating greater potential for impacts on roadside hedgerows and ditches.

This option has 15 WFD water body crossings. There are eight water bodies crossed by the options, of these none are High or Good status, four are of Moderate and four are of Poor status. However, it also has up to 15 more crossings of unnamed tributaries of these water bodies. All of the water bodies connect and flow into Baldoyle Estuary, Malahide estuary, the Tolka Estuary, and are therefore connected to numerous European sites. There are no designated salmonid rivers within the study area for the Proposed Development although some of the water bodies have wildlife and fisheries value due to the presence of otter and brown trout.

1.7km of this route option is off-road which presents a relatively low potential impact by linear distance to habitats and species in terms of off-road sections. In particular, it remains on-road enroute to Belcamp and this presents a low risk of impacts to protected species.

4.4.1.3 Summary of Assessment

This option has a significant number of watercourse crossings (30) but also has the shortest length of off-road sections (c. 1.7km). The fact there are no internationally designated sites in close proximity to this route option means it is not high risk. It remains on-road enroute to Belcamp which reduces risk to protected species such as Brent Geese, however considering the significant number of watercourse crossings, this option has been assessed as Moderate risk.

Moderate

4.4.2 Geology and Soils

4.4.2.1 Geology

The Route Corridor Option C (Yellow) is underlain predominantly by Carboniferous limestone bedrock with associated calcareous shales and sandstones. There are no geological heritage sites recorded in the vicinity of the route.

Superficial deposits underlying Route Option C (Yellow) are predominantly limestone till (carboniferous). To the west of the Study Area the superficial deposits are mainly comprised of shale and sandstone till (Namurian) with an area of alluvium to the north of the substation. There are small pockets of limestone sands and gravels, alluvium and bedrock at the surface.

Route Option C (Yellow) crosses areas of potential geological economic deposits (Crushed Rock and Sand and Gravel). Quantitatively 15% of the route option lies over economic deposits of crushed rock reserves in the central portion of the route corridor option. However, such reserves are more widespread elsewhere in the region and the availability of these resources will not be significantly affected. In addition, 13% of the Route Corridor Option lies over economic potential sand and gravel deposits.

One karst feature is located within Option C (Yellow).

No areas of peatland are located along the route corridor option.

4.4.2.2 Land Quality

Two EPA licensed facilities are located along the Route Corridor Option. No historic landfills were located along the Route Corridor Option. Contaminated land sites identified from historic mapping include a brewery located at Ballymacartle and a quarry located at Cloghran. The majority of Option C (Yellow) lies within the Dublin (poorly productive bedrock) WFD groundwater body. Between the M1 and M2 it lies within Swords (poorly productive) WFD groundwater body.

4.4.2.3 Hydrogeology

The greatest potential impacts on hydrogeology relate to potential interaction with areas of vulnerable aquifer and associated risk of pollution and disruption of the groundwater resource. The majority of the route is underlain by bedrock classified as Locally Important Aquifer (poorly productive bedrock). Quantitatively, 76% of the Route Corridor Option crosses an area of Locally Important Aquifer. 5% of the Route Corridor Option crosses an area of extreme vulnerability and 14% of the Route Corridor Option crosses an area of high groundwater vulnerability.

There are a large number of groundwater wells and springs mapped by the Geological Survey Ireland across the Study Area. However, considering Transport Infrastructure Ireland (TII) guidance and the observation that low-yielding wells, which are used mainly for domestic and farm water supply are very common in Ireland, the assessment has focused on high yielding springs and wells used for public water supply and their surrounding protection zones and total number of wells and springs along each route corridor has not been used in assessing relative impacts between the route options at this stage.

At this stage of assessment, no groundwater dependent water bodies or groundwater dependent terrestrial ecosystems (GWDTEs) have been identified within the study area and so these features have not been used in assessing relative impacts between route options at this stage. The nearest known significant site is Malahide Estuary SPA, 3.9km from route Option C (Yellow) which is designated for petrifying springs with tufa formation. At this distance direct groundwater dewatering effects would not be expected based on current knowledge and any reduction in groundwater baseflow would be localised and not expected to be significant at this scale of this watercourse.

4.4.2.4 Summary of Assessment

Potential impacts on mineral reserves are considered to be low risk. There is one karst feature. There are limited locations where there is potential for contaminated land to be encountered, however there are remediation works proposed at land to the west of Belcamp substation, however this option will not pass through that land as it remains on-road enroute to Belcamp. There is a low risk of impacts to groundwater resources; only 5% of the route is within a zone of extreme vulnerability.

In terms of geology, soils and groundwater the overall evaluation of potential risks for Option C (Yellow) is considered to be low-moderate, based on currently available information.

Low to Moderate

4.4.3 Surface Water and Flood Risk

4.4.3.1 Surface Water

4.4.3.1.1 Potential Impacts

For Route Option C (Yellow), there are 16 crossings of WFD water bodies; nine of Moderate status and seven of Poor status. There are eight water bodies crossed in total, a number are crossed more than once; the Tolka_020 and Mayne_010 are crossed three times and the Ward_030 is crossed four times. The Ward_030 is made up of a number of segments which are not all hydrologically linked to each other except after their confluence to form the next water body. Notwithstanding this, there is potential for cumulative impacts as a result the numerous crossings from this option.

All of the water bodies are ultimately connected to designated sites along the north Dublin coastline, however only one of the crossing points is hydrologically connected less than 5km from the designated sites (Mayne_010 has a Poor WFD status and is hydrologically connected approximately 2.5km from Baldoyle SAC). The rankings for sensitivity and crossing technique are provided in Table 4.16 and Table 4.17.

Table 4.16 Water Bodies Being Crossed

Waterbody	Status	Hydrological connection at closest crossing to SAC	Option C (Yellow) No. Crossings	Sensitivity	Impact Potential
Tolka_010	Poor	>5km	1	1	1
Tolka_020	Moderate	>5km	3	3	9
Pinkeen_010	Moderate	>5km	1	3	3
Ward_010	Poor	>5km	2	1	3
Ward_020	Moderate	>5km	1	3	3
Ward_030	Moderate	>5km	4	3	12
Sluice_010	Poor	>5km	1	1	1
Mayne_010	Poor	2.5km (2-5km)	3	3	9
Total	n/a	n/a	16	n/a	41
Ranking					Low to Moderate

Table 4.17 Crossing Techniques Ranking

Technique	Number of Crossings	Risk (crossings x risk score)
Open Cut likely	11	55
HDD	1	1
In-road	5	15
Total	16	70
Rank		Moderate to High

4.4.3.2 Flood Risk

4.4.3.2.1 Potential Impacts

The lengths and percentages of the Option C (Yellow) are provided in Table 4.18. The length of Option C (Yellow) is 43km.

Table 4.18 Lengths within PFRA Flood Zones

Flood Zone	Length (m)	%age of route	Ranking
Pluvial 10 year flood zone	186	0.4	Low
Fluvial 10 year flood zone	820	1.9	Low to moderate
Coastal 10 year flood zone	0	0	Low
Overall			Low to Moderate

4.4.3.2.2 Summary of Assessment

There are 16 crossings of eight different water bodies of relatively low sensitivity to change as a result of their existing conditions. Of these crossings it is likely that most will be off-road via open cut crossing techniques. This presents a greater risk to water quality and hydromorphology than keeping the trench in the road or crossing via HDD.

The numerical scoring of the water courses and their crossing techniques allows benchmarking across all of the route options; the higher the score the greater the level of risk. Whilst the high number of off-road open cut crossings scores high and would suggest a moderate to high risk, the relatively low sensitivity of the water bodies being crossed reduces the overall significance of these impacts and the risk of such impacts occurring.

A very small proportion of the route is in any flood zone; notwithstanding, the potential for impacts is of moderate risk, although these would be temporary during construction for the most part. There is a risk during operation, that there will be limited accessibility in flood zones and so these will be avoided wherever possible.

Combined score for surface water quality and flood risk:

Moderate

4.4.4 Planning Policy and Land Use

4.4.4.1 Planning Policy

All of the route options traverse Meath and Fingal Administrative areas and the same policies will apply. Policy and legislation are therefore not a differentiator and so is not considered further in this assessment.

The zoned areas of Meath and Fingal are the same for all of the options. Option C (Yellow) has the same potential for impacts on Kilbride as Options A (Red) and B (Green), however it will not impact upon the zoned land to the west of Belcamp substation.

4.4.4.2 Planning Applications

Major planning applications at the time of writing, in proximity or potentially relevant to Route Option C, are listed below.

- Ballymacarney Solar Farm – this is under construction. Construction access is via the R121 to the south which is the road along which Options A (Red), C (Yellow) and D (Blue) would be routed to cross the M2 motorway. However it is anticipated that construction will be completed ahead of any works beginning for the Proposed Development. There are no UGC connections in this road relating to the solar farm; it is connected via OHL to an existing 110kV OHL via a new 110kV ESB substation.
- Metrolink cable connections – this is currently in pre-planning stage. Metrolink has identified a preferred route for its connection to substations north and south of the airport and to Belcamp. The routes to the substation along Baskin Lane and Malahide Road would interface with this route option; and
- NISA – a proposed off-shore wind farm which plans to connect into Belcamp substation via Malahide Road. This requires a high voltage (220kV) connection and it is proposed for this to be in-road.

The combination of the Metrolink and NISA connections, both proposed to be in Malahide Road and the R139 to connect to Belcamp substation would potentially make Option C (Yellow) unviable if they were to be granted consent and in place ahead of the Proposed Development. They are, however, both dependent upon the consenting of the applications for the schemes which require the connections and it is not guaranteed that both (or either) will be granted consent, or, if they are, whether that will be ahead of the Proposed Development. As such, Option C (Yellow) via Malahide Road remains a viable option.

4.4.4.3 Summary of Assessment

The avoidance of the zoned industrial land west of Belcamp somewhat reduces the risk to future development from Option C (Yellow) when compared to Options A (Red) and B (Green), however the potential for Malahide Road to become unviable as a route as a result of Metrolink and NISA connections increases the risk to the Proposed Development. Therefore, as an end to end option, Option C (Yellow) has been assigned **Moderate to High risk (Blue)**.

Moderate to High

4.4.5 Landscape and Visual Impacts

4.4.5.1 Overview

The approach to identifying potential impacts on landscape and visual receptors is as described in Section 2.4.1.5.1.

4.4.5.2 Potential Impacts

The nature of the potential impacts on the landscape and on visual receptors is as described in Section 4.2.5.1. The same Landscape Character Areas have the potential to be impacted upon as set out in Table 4.8: and are not repeated here. A section of this Route Option adjoins an area designated as a Highly Sensitive Landscape (Kinsealy) and where there is the Specific Objective to Protect & Preserve Trees, Woodlands and Hedgerows within the St Doolaghs Church Nature Objective Area but the requirement for vegetation removal is unlikely as the trench will be within the road pavement, therefore, potential for physical impacts will be limited in scale and localised.

4.4.5.3 Summary Assessment

When the magnitude of impact on the landscape character is considered in conjunction with the low-negligible sensitivity of the landscape within the Study Area, it is anticipated that the significance of the impacts will be Imperceptible during the construction phase and Imperceptible during the operational phase. Significant impacts on landscape character or on visual receptors is unlikely; therefore, this Route Option is considered to be Low risk.

Low

4.4.6 Archaeology, Architectural Heritage, and Cultural Heritage

Baseline information on the archaeology, architectural heritage and cultural heritage constraints identified within the study area for Option C (Yellow) is provided in Appendix B.

Archaeological, architectural and cultural heritage constraints are shown in Appendix B.

4.4.6.1 Archaeology

No National Monuments or sites with Preservation Orders, or sites on the RHM, were identified within the study area for Option C (Yellow) and therefore no impacts have been identified on these types of constraint.

A total of 28 Recorded Monuments are located within the study area for Option C (Yellow). These comprise churches and chapels (AY_23, AY_37, AY_39, AY_44, AY_53), graveyards and burial grounds (AY_24, AY_30, AY_36, AY_40, AY_45 and AY_51), ecclesiastical enclosures (AY_35 and AY_50), a roadside cross (AY_56) and four ritual sites (AY_04, AY_22, AY_54 and AY_55), ringforts and enclosures (AY_18, AY_29, AY_34, and AY_38), a mound (AY_03), a moated site (AY_62), two post-medieval houses (AY_27 and AY_42), a field system (AY_63), and a castle of unknown date (AY_25).

Seven sites on the SMR (AY_05, AY_19, AY_28, AY_31, AY_33, AY_49 and AY_52) have been identified within the study area for Option C (Yellow). These comprise cropmark enclosures and a ring ditch, a field system, and the locations of a font and architectural fragments.

Further information on the archaeological constraints identified within the study area for Option C (Yellow) is included in Appendix B.

4.4.6.1.1 Archaeological Potential

Alluvium has the potential to preserve previously unknown archaeological monuments and remains, including organic and paleoenvironmental remains, and there is also the potential for votive offerings in rivers such as the Tolka River, Pinkeen River, Ward River and Mayne River and minor watercourses.

While previous archaeological excavations within the study area for Option C (Yellow) have identified evidence of prehistoric activity, Option C (Yellow) is largely within the existing road network, and the potential for previously unknown archaeological remains is lower given the construction of these roads may have removed or truncated any archaeological remains that may have been present. However, there is the potential for historic road surfaces to survive within pre-1840 roadways.

There is a higher potential for the presence of previously unknown archaeological remains in less developed areas, such as within the Batterstown North off-road focus area.

4.4.6.2 Architectural Heritage

Architectural heritage constraints within the study area for Option C (Yellow) comprise:

- Eleven Protected Structures characterised by six churches and graveyards (AH_02, AH_04, AH_06, AH_08, AH_09 and AH_14), a stone well (AH_10), a mile stone (AH_16), and houses and gate lodges (AH_07, AH_17 and AH_21)
- Seven structures recorded on the NIAH (AH_05, AH_12, AH_13, AH_15, AH_18, AH_19 and AH_20), assessed by the NIAH to be of Regional importance.
- 19 GDLs comprising nine recorded by the Survey of Historic Gardens and Designed Landscapes and ten identified from historic mapping (Ordnance Survey 6", 1837 – 1842).

No Architectural Conservation Areas (ACAs) were identified within the study area for Option C (Yellow).

Further information on the architectural constraints identified within the study area for Option C (Yellow) is included in in Appendix B.

4.4.6.3 Cultural Heritage

A total of 25 cultural heritage sites have been identified within the study area for Option C (Yellow). These are largely characterised by post-medieval built heritage including stone road bridges, houses, and agricultural buildings. Further information on these sites is presented in Appendix B.

4.4.6.4 Potential Impacts on Archaeological, Architectural and Cultural Heritage

4.4.6.4.1 Construction - Direct Impacts

Archaeology

Where Option C (Yellow) is located within the Zone of Notification associated with a Recorded Monument, this has been assessed as a direct impact. While the option would not directly impact the Recorded Monument itself, excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive within this zone.

Option C (Yellow) is located within the Zones of Notification of 17 Recorded Monuments (AY_18, AY_23, AY_24, AY_25, AY_27, AY_29, AY_30, AY_34, AY_39, AY_40, AY_42, AY_50, AY_51 and AY_53, AY_54, AY_55, AY_56)³². Within these zones the option is located in the carriageway of existing roads the construction of which is more than likely to have removed or truncated any archaeological remains associated with these monuments that may have been present. However, construction, including the excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive. Construction would also have a direct impact on any archaeological remains associated with these Recorded Monuments that may survive within any additional land take required for construction.

³² While the location of AY_29 has been developed, this site is recorded on the RMP and therefore has been included as a constraint.

Four Recorded Monuments (AY_03, AY_04, AY_62 and AY_63) have been identified within the off-road focus areas for Option C (Yellow). While the route of the cable within the off-road focus areas for Option C (Yellow) is not yet known, there is the potential to directly impact these constraints during construction.

Excavation of the cable trench and joint bays, and the excavation of temporary launch and reception pits for directional drilling may also result in a direct impact any previously unknown archaeological remains that may be present within the land required for Option C (Yellow). The potential for this impact is considered to be higher in previously undeveloped areas than within the existing carriageways, the construction of which is likely to have likely to have removed or truncated any archaeological remains that may have been present.

Architectural Heritage

Belcamp House (AH_12 and AH_13), assessed by the NIAH to be of regional importance, is located on the alignment of Option C (Yellow). While the house has been demolished, construction of the option would remove any archaeological remains associated with this structure.

Should Option B (Green) require additional land take for construction, the removal of boundary features would have a direct impact on eleven GDLs (DL_04, DL_13, DL_16, DL_17, DL_18, DL_20, DL_21, DL_23, DL_22, DL_24, and DL_25).

One Protected Structure (AH_02) is located within the Batterstown offroad focus area for Option C (Yellow). While the route of the cable within the off-road focus areas is not yet known, existing buildings within these areas will be avoided. One GDL is also located within the Batterstown offroad focus area for Option C (Yellow) and construction may remove features associated with this demesne should the option pass through it.

Cultural Heritage

Four post-medieval road bridges (CH_14, CH_15, CH_37 and CH_40) are located on the existing road network and therefore there is the potential for accidental damage and loss of historic fabric to these cultural heritage constraints as a result of construction.

Option C (Yellow) crosses the alignment of the M.G.W.R (Dublin and Navan Branch) railway (CH_48) to the west of the M3 motorway. The excavation of temporary launch and reception pits for directional drilling in this location may remove of any surviving remains associated with this constraint.

In addition, while the route of the cable within the off-road focus areas is not yet known eight cultural heritage constraints (CH_05 – CH_07, and CH_43 – CH_47) are located in the Batterstown off-road focus area. While upstanding buildings and structures within this area will be avoided, there is the potential to directly impact these constraints during construction.

4.4.6.4.2 Construction - Indirect Impacts

Archaeology

Option C (Yellow) is located within 20m of a church (AY_23, also a Protected Structure; AH_06) and its associated graveyard (AY_24) in Ward Lower and within 60m of a graveyard (AY_36) and ruinous church (AY_37) in Killeek. While construction activities may add noise and visual intrusion in the setting of these constraints, it is anticipated any intrusion would be temporary (lasting the duration of construction in this location).

Option C (Yellow) is located within 5m of the Saint Doolagh's ecclesiastical complex (AY_50, AY_51 and AY_53 – AY_56, also a Protected Structure; AH_14). Noise and visual intrusion from construction plant may have an indirect impact on this complex. However, it is anticipated any intrusion would be temporary (lasting the duration of construction in this location).

While the route of the cable within the off-road focus areas for Option C (Yellow) is not yet known, construction activities within the cable corridor also have the potential to affect the setting of two Recorded Monuments (AY_02 and AY_62) however, these impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

Architectural Heritage

Construction activities may add noise and visual intrusion into the setting of the following five Protected Structures:

- a Church of Ireland Church and Graveyard in Hollystown (AH_04) is located approximately 15m to the north-east of Option C (Yellow);
- a thatched dwelling in Killeek (AH_07) is located approximately 5m to the east of Option C (Yellow);
- the site of 'Cloghran Church' and graveyard (AH_09) is located approximately 80m to the south of Option C (Yellow)
- Wellfield House (AH_17) is located approximately 30m to the east of Option C (Yellow); and
- the gate lodge to Saint Doolagh's Park (AH_21) is located approximately 5m to the east of Option C (Yellow).

However, it is anticipated any intrusion would be temporary (lasting the duration of construction in each location).

Option C (Yellow) is also located 20m of a church (AH_06), Killeek Church and graveyard (AH_08), and within 5m of the Saint Doolagh's complex (AH_14), all Protected Structures. These are also Recorded Monuments (AY_23, AY_36, AY_37, AY_50, AY_51 and AY_53 – AY_56) and to avoid double counting impacts, no impact has been assessed on AH_06, AH_08 and AH_14 as an impact has already been assessed on AY_23, AY_36, AY_37, AY_50, AY_51 and AY_53 – AY_56 (see above).

Option C (Yellow) is located within 20m of three gate lodges (AH_05, AH_15 and AH_18), assessed by the NIAH to be of Regional importance. Construction may add noise and visual intrusion into the setting of these constraints; however, it is anticipated any intrusion would be temporary (lasting the duration of construction in these locations) and limited by intervening boundary features.

Construction activities within the cable corridor also has the potential to affect the setting of all the architectural heritage constraints within the off-road focus areas. However, these impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

Cultural Heritage

Construction activities would have an indirect impact on the setting of ten cultural heritage sites (CH_12, CH_13, CH_19, CH_24, CH_25, CH_29, CH_35, CH_36, CH_38 and CH_39). However, it is anticipated any intrusion would be temporary (lasting the duration of construction in each location).

Construction activities within the cable corridor also have the potential to affect the setting of six cultural heritage constraints within the off-road focus areas (CH_05, CH_07, CH_43, CH_44, CH_45 and CH_47). These impacts are anticipated to be temporary (lasting the duration of construction in each location) and localised along the wayleave corridor.

4.4.6.4.3 Operational Impacts

Option C (Yellow) would be located beneath the road surface, and any off-road sections would be reinstated after construction no impacts on archaeological, architectural or cultural heritage constraints have been assessed as a result of the operation of Option C (Yellow).

4.4.6.5 Summary of Assessment

Considering the number of potential impacts on archaeology, architectural heritage and cultural heritage, Option C (Yellow) has been assigned a risk of 'Moderate-High (Blue)'.

A Route Corridor Summary Matrix for archaeology, architectural heritage and cultural heritage is provided in Appendix B.

Moderate to High

4.4.7 Noise and Vibration

4.4.7.1 Noise and Vibration Sensitive receptors

As Table 4.19 shows there are 1 167 receptors within 100m and 3 132 receptors within 300m of this option. Most of the receptors are residential but there are other non-residential sensitive receptors within 300m of this option including:

- Rathregan National School (Section G-K)
- Kilbride National School on Kilbride Road (Section V-W)
- New Park Care Centre Nursing Home (Section BB-LL)
- Oakwood Lodge Nursing Home (Section OO-PP)
- Tara Winthrop Private Clinic Care Home (Section SS-VV)
- Kilronan Equestrian Centre (Section SS-VV)
- DIATA Aviation Training College (Section UU-VV)
- Trinity Care AnovoCare Nursing Home (Section VV-WW)
- Kinsealy Riding Centre Dublin (Section XX-YY)
- Malahide/Portmarnock Educate Together National School (Section YY-BBB)
- St Doulagh's Church (Section YY-BBB)
- Care Choice Malahide Care Home (Section YY-BBB)

There are 103 receptors within 100m of off-road sections and 146 receptors within 300m of off-road sections. Most of the receptors are residential properties. Other sensitive receptors include Rathregan National School in the Batterstown off-road section and Trinity Care Nursing Home located in the Belcamp off-road section.

Table 4.19: Residential Property Counts within 300m of Option C (Yellow)

Option	Number of receptors within 100m of route	Number of receptors within 300m of route	Number of receptors within 100m of off-road sections	Number of receptors within 300m of off-road sections	Number of receptors within 100m of motorway crossings	Number of receptors within 300m of motorway crossings
Option C	1 167	3 122	130	146	2	18

There are two receptors within 100m of motorway crossings and 18 receptors within 300m of motorway crossings. Most of the receptors potentially affected are residential though Trinity Care Nursing Home is within 300m of the M1 crossing and could potentially experience adverse noise and/or vibration impacts during construction. This option (along with Option D (Blue)) crosses the M3 at a regional road therefore there is less potential for significant adverse noise effects compared to the other options which cross the M3 Motorway.

4.4.7.2 Potential Noise and Vibration Impacts

This option has the potential to cause noise and vibration impacts during construction which will be temporary in nature. No permanent operational impacts are expected.

As was described for Option A (Red), there is greater potential for noise impacts on sensitive receptors where HDD is used to cross major obstacles, such as motorways. The majority of this option will be installed using 'Open cut' techniques, which are less impactful on sensitive receptors. There will be three crossings of motorways; this option has 60 sensitive receptors within 100m of a motorway crossing.

4.4.7.2.1 Summary of Assessment

This option impacts a relatively large number of receptors as it passes close to the town of Swords. The majority of receptors are dwellings but the option also passes within 100m of three schools, three nursing homes, an equestrian centre and a church. Therefore an overall risk score of Moderate (dark green) has been applied.

Moderate

4.4.8 Air Quality

4.4.8.1 Sensitive receptors

The same approach as is set out in Section 4.2.8 was used to determine the potential impacts on sensitive receptors with respect to Air Quality.

Table 4.20 shows the total receptor counts within each distance band for Option C (yellow). No ecological designations were identified within 50m of the Option C centreline and therefore have been excluded from further assessment. Human receptors, including residential properties and two schools (Little Moo Moos Playschool, an assumed 30-pupil pre-school (within 20m), and Rathregan National School, a 94-pupil primary school (within 50m)), were identified and have been factored into the receptors counts below.

Table 4.20 Sensitive Receptors within 350m of Option C (Yellow)

Option	No. of sensitive receptors 0-20m	No. of sensitive receptors 0-50m	No. of sensitive receptors 0-100m	No. of sensitive receptors 0-350m
C	143	754	1,280	4,815

4.4.8.2 Assessment Criteria

The same approach as is set out in Section 4.2.8 was used to determine the risk ratings for potential dust impacts.

At the local level, between nodes, six sections scored a moderate risk rating. An average risk rating along the length of the route option was determined to be 1.9.

4.4.8.3 Potential Impacts

The potential impacts are the same as those described in Section 4.2.8.3.

4.4.8.4 Summary of Assessment

Option C (Yellow) has an average risk score of 1.9 along the length of the route option, and has the largest number of sensitive receptors within all of the distance bands. Although there are no ecological designations within 200m of Option C (Yellow), there are several sensitive human receptors including dwellings and two schools (Little Moo Playschool and Rathregan National School) within 20m and 50m. Therefore, an overall risk score of 'Moderate (Dark Green)' has been applied.

Moderate

4.5 Option D (Blue)

4.5.1 Biodiversity (Flora and Fauna)

4.5.1.1 Overview

The baseline for biodiversity for Option D (Blue) is largely the same as for Option A (Red) and so the reader is referred to that text; it is not repeated here.

4.5.1.2 Potential Impacts

This option is the second longest at 40.2km. With so many narrow roads, the longer the route the greater the potential for impacts on roadside hedgerows and ditches.

This option has 15 WFD water body crossings. There are eight water bodies crossed by the options, of these none are High or Good status, four are of Moderate and four are of Poor status. However, it also has up to 14 more crossings of unnamed tributaries of these water bodies. All of the water bodies connect and flow into Baldoyle Estuary, Malahide estuary, the Tolka Estuary, and are therefore connected to numerous European sites. There are no designated salmonid rivers within the study area for the Proposed Development although some of the water bodies have wildlife and fisheries value for instance due to the presence of otter and brown trout.

4.2km of this route option is offline which presents a higher impact by linear distance to habitats and species in terms of off-road sections. However it remains on-road enroute to Belcamp and this presents a lower risk of impacts to protected species than Options A (Red) and B (Green) in this location.

4.5.1.3 Summary of Assessment

This option is longer (40.2km) than Option A (Red) & B (Green) (36.3km and 37.8km respectively), but not the longest (Option C (Yellow), 42.9km), has more watercourse crossings (29) than Options A (Red) & B (Green) (26 each) but fewer than Option C (Yellow) (30). It also has a shorter off-road length (4.2km) than Option C (Yellow). On balance, therefore this option has been assessed as being of similar risk to Option B, Low - Moderate.

Low to Moderate

4.5.2 Geology and Soils

4.5.2.1 Geology

The Route Corridor Option D (Blue) is underlain predominantly by Carboniferous limestone bedrock with associated calcareous shales and sandstones. There are no geological heritage sites recorded in the vicinity of the route. Superficial deposits underlying the Route Option D (Blue) are predominantly limestone till (carboniferous). To the west of the Study Area the superficial deposits are mainly comprised of shale and sandstone till (Namurian) with an area of alluvium to the north of the substation. There are small pockets of limestone sands and gravels, alluvium and bedrock at the surface.

Route Option D (Blue) crosses areas of potential geological economic deposits (Crushed Rock and Sand and Gravel). Quantitatively, 15% of the route option lies over economic deposits of crushed rock reserves in the central portion of the route corridor option. However, such reserves are more widespread elsewhere in the region and the availability of these resources will not be significantly affected. In addition, 7% of the Route Corridor Option lies over economic potential sand and gravel deposits.

No areas of peatland have been identified along the Route Corridor Option.

4.5.2.2 Land Quality

Two EPA licensed facilities are located along the Route Corridor Option. Contaminated land sites identified from historical mapping included a graveyard at Vasingstown, Dunboyne c. 250m from the Route Corridor Option and a gravel pit located at Nuttstown c.50m from the Route Corridor Option. The Route Corridor will cross an area of unauthorised landfill northeast of the N32/Clonsilla Road Junction. Previous ground investigations have shown that the unauthorised landfill contains up to 20,000m³ of mixed commercial/industrial, construction and demolition waste. The majority of Route Option D (Blue) lies within the Dublin (poorly productive bedrock) WFD groundwater body. Between the M1 and M2 Route Option D (Blue) lies within Swords (poorly productive) WFD groundwater body.

4.5.2.3 Hydrogeology

The greatest potential impacts on hydrogeology relate to potential interaction with areas of vulnerable aquifer and associated risk of pollution and disruption of the groundwater resource. The majority of the route is underlain by bedrock classified as Locally Important Aquifer (poorly productive bedrock). Quantitatively, 82% of the Route Corridor Option crosses an area of Locally Important Aquifer. 6% of the Route Corridor Option crosses an area of extreme vulnerability and 14% of the Route Corridor Option crosses an area of high groundwater vulnerability.

There are a large number of groundwater wells and springs mapped by the Geological Survey Ireland across the Study Area. However, considering Transport Infrastructure Ireland (TII) guidance and the observation that low-yielding wells, which are used mainly for domestic and farm water supply are very common in Ireland, the assessment has focused on high yielding springs and wells used for public water supply and their surrounding protection zones and total number of wells and springs along each route corridor has not been used in assessing relative impacts between the route options at this stage.

4.5.2.4 Summary of Assessment

Potential impacts on mineral reserves are considered to be low risk. There are limited locations where there is potential for contaminated land to be encountered. There are remediation works proposed at land to the west of Belcamp substation, however this option will not pass through that land as it remains on-road enroute to Belcamp. There is a low risk of impacts to groundwater resources; only 6% of the route is within a zone of extreme vulnerability.

In terms of geology and soils the overall evaluation of potential risks for Option D (Blue) is considered to be moderate based on currently available information.

Moderate

4.5.3 Surface Water and Flood Risk

4.5.3.1 Surface Water

4.5.3.1.1 Potential Impacts

For Route Option D (Blue), there are 15 crossings of water bodies; seven of Moderate status and eight of Poor status. There are seven water bodies crossed in total, a number are crossed twice; the Tolka_020 is crossed five times and the Ward_030 is crossed four times. The Ward_030 is made up of a number of segments which are not all hydrologically linked to each other except after their confluence to form the next water body. Notwithstanding this, there is potential for cumulative impacts as a result the numerous crossings from this option.

All of the water bodies are ultimately connected to designated sites along the north Dublin coastline, however only one of the crossing points is hydrologically connected less than 5km from the designated sites (Mayne_010 has a Poor WFD status and is hydrologically connected approximately 4.5km from Baldoyle SAC). The rankings for sensitivity and crossing technique are provided in Table 4.21 and Table 4.22.

Table 4.21 Water Bodies Being Crossed

Waterbody	Status	Hydrological connection at closest crossing to SAC	Option D (Blue) No. Crossings	Sensitivity	Impact Potential
Dunboyne Stream_010	Poor	>5km	3	1	3
Tolka_010	Poor	>5km	1	1	1
Tolka_020	Moderate	>5km	2	3	6
Pinkeen_010	Moderate	>5km	1	3	3
Ward_020	Moderate	>5km	1	3	3
Ward_030	Moderate	>5km	3	3	9
Sluice_010	Poor	>5km	2	1	2
Mayne_010	Poor	4.5km (between 2-5km)	3	3	9
Totals	n/a	n/a	15	n/a	36
Ranking					Low to Moderate

Table 4.22 Crossing Techniques Ranking

Technique	Number of Crossings	Risk (crossings x risk score)
Open Cut likely	12	60
HDD	1	1
In-road	3	9
Total	15	70
Rank		Moderate to High

4.5.3.2 Flood Risk

4.5.3.2.1 Potential Impacts

The lengths and percentage of the Option D (Blue) are provided in Table 4.23. The overall length of Option D (Blue) is 40.2km.

Table 4.23 Lengths within PFRA Flood Zones

Flood Zone	Length (m)	%age of route	Ranking
Pluvial 10 year flood zone	130	0.3	Low
Fluvial 10 year flood zone	1152	2.9	Moderate
Coastal 10 year flood zone	0	0	Low
Overall			Moderate

4.5.3.2.2 Summary of Assessment

There are 15 crossings of eight different water bodies of relatively low sensitivity to change as a result of their existing conditions. Of these crossings it is likely that most will be off-road via open cut crossing techniques. This presents a greater risk to water quality and hydromorphology than keeping the trench in the road or crossing via HDD.

The numerical scoring of the watercourses and their crossing techniques allows benchmarking across all of the route options; the higher the score the greater the level of risk. Whilst the high number of off-road open cut crossings scores high and would suggest a moderate to high risk, the relatively low sensitivity of the water bodies being crossed reduces the overall significance of these impacts and the risk of such impacts occurring.

A very small proportion of the route is in any flood zone; notwithstanding, the potential for impacts is of moderate risk, although these would be temporary during construction for the most part. There is a risk during operation, that there will be limited accessibility in flood zones and so these will be avoided wherever possible.

Combined score: for surface water quality and flood risk:

Moderate

4.5.4 Planning Policy and Land Use

4.5.4.1 Planning Policy and Legislation

All of the route options traverse Meath and Fingal Administrative areas and the same policies will apply. Policy and legislation are therefore not a differentiator and so is not considered further in this assessment.

The zoned areas of Meath and Fingal are the same for all of the options. Option D (Blue) could impact upon land zoned for settlements in Kilbride and therefore impact the future development of this land. However it will not impact upon the zoned land to the west of Belcamp substation.

4.5.4.2 Planning Applications

Major planning applications at the time of writing, in proximity or potentially relevant to Route Option D, are listed below.

- Ballymacarney Solar Farm – this is under construction. Construction access is via the R121 to the south which is the road along which Options A (Red), C (Yellow) and D (Blue) would be routed to cross the M2 motorway. However it is anticipated that construction will be completed ahead of any works beginning for the Proposed Development. There are no UGC connections in this road relating to the solar farm; it is connected via OHL to an existing 110kV OHL via a new 110kV ESB substation.
- Vesington Solar Farm – this is under construction and is accessed via the R156, and an unnamed road between the R156 and R154, both of which are proposed to be used for this route option. However it is anticipated that construction will be completed ahead of any works beginning for the Proposed Development. There are no UGC connections in this road relating to the solar farm; it is connected via OHL to an existing 110kV OHL via a new 110kV ESB substation;
- Metrolink cable connections – this is currently in pre-planning stage. Metrolink has identified a preferred route for its connection to substations north and south of the airport and to Belcamp. The routes to the north of the airport would interface with this route option; and
- Aviation Fuel Line: planning permission has been granted for the installation of an aviation fuel line which is proposed to be routed along the R139 and in Stockhole Lane for approximately half of its length east of Dublin Airport before turning west to the airport under the M1. Consent was granted in 2017 however construction has yet to commence. Increased demand for fuel and traffic congestion limiting deliveries of fuel to the airport via tanker mean there is likely to be a need for the fuel line in the coming years³³. It is therefore likely that it will be constructed and commissioned within the next several years.

³³ Stakeholder Engagement Meeting with DAA Ltd – the fuel line was discussed and the likely requirement identified by DAA, although DAA will not own or operate it.

4.5.4.3 Summary of Assessment

There is some risk of impacts on the development of land earmarked for settlements in Kilbride and there is a risk associated with the potential presence of an aviation fuel line in Stockhole Lane. For the former, careful routing would minimise any sterilisation of land; for the latter, timing is critical to the potential risks from this development. If it is not installed ahead of the Proposed Development being constructed, it is unlikely to present a risk. The Proposed Development does not present any risk to the fuel line once it is installed; construction activities are the greatest risk to it.

This has been assigned **Moderate risk (Green)**.

Moderate

4.5.5 Landscape and Visual Impacts

4.5.5.1 Potential Impacts

The nature of the potential impacts on the landscape and on visual receptors is as is described in Section 4.2.5.1

4.5.5.2 Summary Assessment

This route Option includes a 2.82 km off-road section through the High Sensitivity Tara Skryne Hills Landscape Character Area near Woodland, involving hedgerow removal. However, potential for physical impacts will be limited in scale and localised. Significant impacts on landscape character or on visual receptors is unlikely; therefore, this Route Option is considered to be at Low risk of resulting in significant impacts.

Low

4.5.6 Archaeology, Architectural Heritage and Cultural Heritage

Baseline information on the archaeology, architectural heritage and cultural heritage constraints identified within the study area for Option D (Blue) is provided in Appendix B.

Archaeological, architectural and cultural heritage constraints are illustrated in Appendix B.

4.5.6.1 Archaeology

No National Monuments or sites with Preservation Orders, or sites on the RHM, were identified within the study area for Option D (Blue) and therefore no impacts have been identified on these types of constraint.

A total of 20 Recorded Monuments are located within the study area for Option D (Blue). These comprise a barrow mound (AY_06), ringforts and enclosures (AY_18, AY_29, AY_34, AY_38 and AY_43), a castle of unknown date (AY_25), chapels and churches (AY_23, AY_37, AY_39 and AY_44), graveyards and a burial ground (AY_24, AY_30, AY_36, AY_40 and AY_45) and ecclesiastical enclosure (AY_35), a holy well (AY_22), and two post-medieval houses (AY_27 and AY_42).

Five sites on the SMR have been identified within the study area for Option D (Blue). These comprise cropmark enclosures and a ring ditch (AY_19, AY_28, AY_31, AY_33 and AY_46).

Further information on the archaeological constraints identified within the study area for Option D (Blue) is included in Appendix B.

4.5.6.1.1 Archaeological Potential

Alluvium and lacustrine sediments have the potential to preserve previously unknown archaeological monuments and remains, including organic and paleoenvironmental remains, and there is also the potential for votive offerings in rivers such as the Tolka River, Pinkeen River, and Mayne River and minor watercourses.

Similar to other options, evidence of dating from the prehistoric period onwards has been identified in the study area for Option D (Blue) from previous archaeological excavations undertaken in advance of development (see Section 3.4.3 of Appendix B for information). Therefore there is the potential for the presence of previously unknown archaeological remains particularly in less developed areas, including the Batterstown South off-road focus area and Belgree West off-road focus area. While sections of the option are located within the existing road network, and the potential for the presence of previously unknown archaeological remains is less in these locations given their construction may have removed or truncated any archaeological remains that may have been present, historic road surfaces may survive within pre-1840 roadways.

4.5.6.2 Architectural Heritage

Architectural heritage constraints within the study area for Option D (Blue) comprise:

- Six Protected Structures comprising four churches and graveyards (AH_04, AH_06, AH_08 and AH_09), a stone well (AH_10), and a thatched house (AH_07).
- Two structures recorded on the NIAH (AH_05 and AH_13), assessed to be of Regional importance.
- Twelve GDLs comprising five recorded by the Survey of Historic Gardens and Designed Landscapes and seven identified from historic mapping (Ordnance Survey 6", 1837 – 1842).

No Architectural Conservation Areas (ACAs) were identified within the study area for Option D (Blue).

Further information on the architectural constraints identified within the study area for Option D (Blue) is included in Appendix B.

4.5.6.3 Cultural Heritage

A total of 23 cultural heritage sites have been identified within the study area for Option D (Blue). These are largely characterised by post-medieval built heritage including stone road bridges, houses, and agricultural buildings. Further information on these sites is presented in Appendix B.

4.5.6.4 Potential Impacts on Archaeological, Architectural and Cultural Heritage

4.5.6.4.1 Construction - Direct Impacts

Archaeology

Where Option D (Blue) is located within the Zone of Notification associated with a Recorded Monument, this has been assessed as a direct impact. While the option would not directly impact the Recorded Monument itself, excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive within this zone.

Option D (Blue) is located within the Zones of Notification of 12 Recorded Monuments (AY_18, AY_23, AY_24, AY_25, AY_27, AY_29, AY_30, AY_34, AY_39, AY_40, AY_42 and AY_43). Within these zones the option is located in the carriageway of existing roads the construction of which is more than likely to have removed or truncated any archaeological remains associated with these monuments that may have been present. However, construction, including the excavation of the cable trench and joint bays would have a direct impact on any archaeological remains that may survive. Construction would also have a direct impact on any archaeological remains associated with these Recorded Monuments that may survive within any additional land take required for construction.

Excavation of the cable trench and joint bays, and the excavation of temporary launch and reception pits for directional drilling may also result in a direct impact any previously unknown archaeological remains that may be present within the land required for Option D (Blue). The potential for this impact is considered to be higher in previously undeveloped areas than within the existing carriageways, the construction of which is likely to have likely to have removed or truncated any archaeological remains that may have been present.

Architectural Heritage

No direct impacts have been identified on Protected Structures or structures on the NIAH.

Should Option D (Blue) require additional land take for construction, the removal of boundary features would have a direct impact on four GDLs (DL_07, DL_13, DL_16, and DL_17).

One GDL (DL_04) is also located within the Belgree offroad focus area for Option D (Blue) and construction may remove features associated with this demesne should the option pass through it.

Cultural Heritage

Five post-medieval road bridges (CH_08, CH_09, CH_10, CH_11, and CH_14) are located on the existing road network and therefore there is the potential for accidental damage and loss of historic fabric to these cultural heritage constraints as a result of construction.

Option D (Blue) crosses the location of 'Shane's Ford' (CH_31) in Stockhole and crosses the alignment of the M.G.W.R (Dublin and Navan Branch) railway (CH_48) to the west of the M3 motorway. Excavation of the cable trench and joint bays, and the excavation of temporary launch and reception pits for directional drilling in this location may remove of any surviving remains associated with these constraints.

In addition, while the route of the cable within the off-road focus areas is not yet known six cultural heritage constraints (CH_15, CH_16, CH_41, CH_42, CH_49 and CH_50) are located in the Batterstown and Belgree off-road focus areas for Option D (Blue). While upstanding buildings and structures within these areas will be avoided, there is the potential to directly impact these constraints during construction.

4.5.6.4.2 Construction - Indirect Impacts

Archaeology

Option D (Blue) is located within 20m of a church (AY_23, also a Protected Structure; AH_06) and its associated graveyard (AY_24) in Ward Lower and within 60m of a graveyard (AY_36) and ruinous church (AY_37) in Killeek. While construction activities may add noise and visual intrusion in the setting of these constraints, it is anticipated any intrusion would be temporary (lasting the duration of construction in this location).

No known archaeological constraints are located in the offroad focus areas for Option D (Blue); therefore, no additional indirect impacts are anticipated within these areas.

Architectural Heritage

Construction activities may add noise and visual intrusion into the setting of the following three Protected Structures:

- a Church of Ireland Church and Graveyard in Hollystown (AH_04) is located approximately 15m to the north-east of Option D (Blue);
- a thatched dwelling in Killeek (AH_07) is located approximately 5m to the east of Option D (Blue); and
- the site of 'Cloghran Church' and graveyard (AH_09) is located approximately 80m to the south of Option D (Blue).

However, it is anticipated any intrusion would be temporary (lasting the duration of construction in each location).

Option D (Blue) is also located 40m of a church (AH_06) and Killeek Church and graveyard (AH_08). These are also Recorded Monuments (AY_23, AY_36, and AY_37) and to avoid double counting impacts, no impact has been assessed on AH_06 and AH_08 as an impact has already been assessed on AY_23, AY_36, and AY_37 (see above).

Option D (Blue) is located within 12m of a gate lodge (AH_05), assessed by the NIAH to be of Regional importance. Construction may add noise and visual intrusion into the setting of this constraint; however, it is anticipated any intrusion would be temporary (lasting the duration of construction in these locations) and limited by intervening boundary features.

Cultural Heritage

Construction activities would have an indirect impact on the setting of nine cultural heritage sites (CH_01, CH_04, CH_12, CH_13, CH_19, CH_24, CH_25, CH_29, and CH_30). However, it is anticipated any intrusion would be temporary (lasting the duration of construction in each location).

Construction activities within the cable corridor also have the potential to affect the setting of one cultural heritage constraint within the off-road focus areas (CH_42). This impact is anticipated to be temporary (lasting the duration of construction in this location) and localised along the wayleave corridor.

4.5.6.4.3 Operational Impacts

Option D (Blue) would be located beneath the road surface, and any off-road sections would be reinstated after construction, therefore no impacts on archaeological, architectural or cultural heritage constraints have been assessed as a result of the operation of Option D (Blue).

4.5.6.5 Summary of Assessment

Considering the number of potential impacts for archaeology, architectural heritage and cultural heritage overall, and the length of off-road sections (c.4.2km), Option D (Blue) has been assigned a risk of 'Low-Moderate (Light Green)'.

Low to Moderate

4.5.7 Noise and Vibration

4.5.7.1 Noise and Vibration Sensitive receptors

Table 4.24 shows there are 561 receptors within 100m and 1336 receptors within 300m of this option. Most of the receptors are residential but there are other non-residential sensitive receptors within 300m of this option including:

- Dunboyne Nursing Home on R156 (Section I-J)
- New Park Care Centre Nursing Home (Section BB-LL)
- Oakwood Lodge Nursing Home (Section OO-PP)
- DIATA Aviation Training College (Section UU-VV)
- Trinity Care AnovoCare Nursing Home (Section VV-XX)

There are 70 receptors within 100m of off-road sections and 127 receptors within 300m of off-road sections. Most of the receptors are residential properties. Other sensitive receptors include Kilbride National School in the Belgree off-road section and Trinity Care Nursing Home located in the Belcamp off-road section for this option.

Table 4.24: Residential Property Counts within 300m of Option D (Blue)

Option	Number of receptors within 100m of route	Number of receptors within 300m of route	Number of receptors within 100m of off-road sections	Number of receptors within 300m of off-road sections	Number of receptors within 100m of motorway crossings	Number of receptors within 300m of motorway crossings
Option D (Blue)	561	1316	70	127	2	18

There are two receptors within 100m of motorway crossings and 18 receptors within 300m of motorway crossings. Most of the receptors potentially affected are residential though Trinity Care Nursing Home is within 300m of the M1 crossing and could potentially experience adverse noise and/or vibration impacts during construction. This option (along with Option C (Yellow)) crosses the M3 at a regional road therefore

there is less potential for significant adverse noise effects compared to the options which cross the M3 Motorway.

4.5.7.2 Potential Noise and Vibration Impacts

This option has the potential to cause noise and vibration impacts during construction which will be temporary in nature. No permanent operational impacts are expected.

As was described for Option A (Red), there is greater potential for noise impacts on sensitive receptors where HDD is used to cross major obstacles, such as motorways. The majority of this option will be installed using 'Open cut' techniques, which are less impactful on sensitive receptors. There will be three crossings of motorways; this option has 60 sensitive receptors within 100m of a motorway crossing.

4.5.7.2.1 Summary of Assessment

This option impacts a relatively small number of receptors, most of which are dwellings but the option also passes within 100m of four nursing homes. Therefore, an overall risk score of Low to Moderate (light green) has been applied.

Low to Moderate

4.5.8 Air Quality

4.5.8.1 Sensitive receptors

The same approach as is set out in Section 4.2.8 was used to determine the potential impacts on sensitive receptors with respect to Air Quality.

Table 4.25 shows the total receptor counts within each distance band for Option D (Blue). No ecological designations were identified within 50m of the Option D (Blue) Option D centreline and therefore have been excluded from further assessment. Human receptors, including residential properties and one school (Little Moo Playschool, an assumed 30-pupil pre-school, within 20m of the centreline), were identified and have been factored into the receptors counts below.

Table 4.25 Sensitive Receptors within 300m of Option D (Blue)

Option	No. of sensitive receptors 0-20m	No. of sensitive receptors 0-50m	No. of sensitive receptors 0-100m	No. of sensitive receptors 0-350m
D	96	380	579	2101

4.5.8.2 Assessment Criteria

The same approach as is set out in Section 4.1.8 was used to determine the risk ratings for potential dust impacts. If applied on the counts of sensitive receptors 'end to end', this route would have a Moderate (Dark Green) moderate risk rating. However, at the local level, between nodes, six three sections scored a Moderate (Dark Green) moderate risk rating. An average risk rating along the length of the route option was determined to be 1.8.

4.5.8.3 Potential Impacts

The potential impacts are the same as those described in Section 4.2.8.3.

4.5.8.4 Summary of Assessment

Option D (Blue) has an average risk score of 1.8 along the length of the route option and has the second largest number of sensitive receptors within all of the distance bands. Although there are no ecological designations within 200m of Option D (Blue), there are several sensitive human receptors including dwellings

and a school (Little Moo Playschool) within 20m. Therefore, an overall risk score of 'Low- to Moderate (Light Green)' has been applied.

Low to Moderate

This chapter outlines the assessment of route options considering feedback received from the public consultation and the deliverability assessment criteria and the following associated sub-topics:

- Traffic and Transport
- Amenity
- Health
- Employment and Economy (& Tourism)
- Land-use (and Land-take)
- Agriculture (including Equine)
- Utilities

Chapter 2 provides further information regarding these subtopics, including the approach to the assessment and methodology.

5. Socio-Economic

This chapter outlines the assessment of route options considering feedback received from the public consultation and the deliverability assessment criteria and the following associated sub-topics:

- Traffic and Transport
- Amenity
- Health
- Employment and Economy (& Tourism)
- Land-use (and Land-take)
- Agriculture (including Equine)
- Utilities

Chapter 2 provides further information regarding these subtopics, including the approach to the assessment and methodology.

5.1 Feedback

Feedback from the public consultation was received for the subtopics traffic and transport, amenity, health, agriculture (including equine), and utilities. This feedback, accompanied by a response from the project team, is summarised below.

Table 5.1: Traffic and Transport

Public Consultation Feedback	Project Team response
Stakeholders noted the presence of farm HGVs (Heavy Goods Vehicles) on the green (Option B) route.	During Step 4B of the project development process, traffic survey data will be acquired and a traffic study will assess delays and disruption due to traffic management during the construction phase.
Frustration was expressed at the amount of other infrastructure projects going on in the area. Traffic concerns were cited as well as safety concerns about dirt on roads associated with construction.	During Step 4B of the project development process, we will consider what measures may be necessary to be put in place by the contractor to control dust and debris. This may include the use of tarpaulins, wheel washing and cleaning of public roads. As noted, above traffic disruption will also be assessed further.
A particular area of focus regarding multiple projects and traffic disruption was Kilbride where all four-route options pass through. It was said that there has been a lot of construction in that area causing frustration for residents.	During Step 4B of the project development process, we will work with local communities and landowners to identify suitable site construction compounds and to identify appropriate haul routes. Where possible we will seek to avoid routes through towns, villages and other residential areas.
Stakeholders were keen to understand how the construction of the project might affect schools in the area. Concern was expressed about getting their children to and from school if there was road disruption. It was suggested that work causing disruption near schools would be best planned in the summer while schools are closed.	During Step 4B of the project development process, traffic survey data will be acquired and a traffic study will assess delays and disruption due to traffic management during the construction phase. As part of our ongoing socio-economic assessment work we will consider disruption to roads in the vicinity of sensitive receptors such as schools, nurseries and hospitals.

Table 5.2: Amenity

Public Consultation Feedback	Project Team response
Concerns were raised that the route is near GAA grounds and requests that EirGrid ensures 24/7 access to the grounds is maintained for both players and emergency services. Furthermore, it was requested that access to the walkway around the main pitch is maintained as it provides a site for community exercise.	The contractor will be required to maintain vehicular access to properties adjacent to the road, including St. Margarets GAA Club. It is also not envisaged that the walkway around the main pitch will be affected.
One respondent expresses concern about the potential impact of Option C on local communities.	Impacts on local communities was considered as part of the assessment of all route options. Regarding Option C (Yellow), potential impacts on local communities such as Batterstown, Hollinstown, Swords and Kinsealy were considered.

Table 5.3: Health

Feedback	Project Team response
Stakeholders had queries about the impact of electric and magnetic fields (EMFs) and some commented that the open day events should have had information on EMFs and potential health impacts of the project.	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/
Concern was expressed that Route Options C (Yellow) and D (Blue) could impact the health of a local resident with a condition that causes hypersensitivity to magnetic fields.	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.

Table 5.4: Agriculture

Feedback	Project Team response
Concerns raised that Route Option A (Red) would be the most disruptive to agriculture.	Route Option A (Red) may require off-road sections where in specific locations it is not technical feasible to follow an on-road route alignment. In these locations, EirGrid is working closely with directly affected landowners to develop an appropriate route design while seeking to minimise impacts to agriculture.
Concerns that Option C would impact their equine business due to road closures which could limit access to the business and the potential noise disruption which would adversely impact their livestock.	Farming (including equine) business surveys will be carried out by our specialists to understand farming operations including access from public roads and how the land is used. This information will be used to inform the development of the route design in off-road sections and to understand the potential impacts and mitigation that may be required during the construction phase.
Concerns that there may be a requirement for EirGrid to access their land during construction and that the noise of the project could represent a safety issue for their clients and their livestock.	

Table 5.5: Utilities

Feedback	Project Team response
Stakeholders expressed concerns about any potential impacts of the project on the overall price of electricity and whether it could lead to blackouts.	<p>The project will help meet the growing demand for electricity in the east of the country due to the increased economic activity in recent years, reducing the likelihood of blackouts.</p> <p>It will also facilitate increasing amounts of renewable electricity that is generated by windfarms in the West and South and transported for use in the east of the country.</p>
Stakeholders asked whether there had been consideration of joined up thinking around the presence of other ongoing local utilities and renewable construction projects.	EirGrid is engaging on a regular basis with ESB Networks and other developers to identify potential opportunities to work more closely together and reduce disruption to the public from construction activities.
Stakeholders commented that there were too many culverts. Some noted the presence of fibre broadband on the R122/R108 after Keelings.	<p>The project team has acquired utility records from multiple sources including National Broadband Ireland and Uisce Éireann.</p> <p>This information has been considered and used to inform the development and assessment of route options.</p>
Concerns that Route Options A (Red), C (Yellow) and D (Blue) uses Ward Road which has water pipes near the road. It was also commented that the presence of sewage pipes on the R135 between Coolquay and Finglas.	
Concerns about disruption to other utilities that might mean schools would have to close last minute.	Disruption to essential utilities such as power and water supply during the construction phase will be kept to a minimum however where necessary any outages will be communicated in advance. Any disruption to schools will be avoided wherever possible.

5.2 Option A (Red)

5.2.1 Traffic and Transport

5.2.1.1 Overview of the Route Option

From a traffic perspective all the potential route options identified for the Proposed Development aim to maximise the use of national, regional, and local roads by avoiding, where possible, the motorways, going off-road, through private land and through agricultural land and have been assessed based on number of themes as below.

Option A (Red) is the shortest of the route options at 36.4km. It also has the greatest proportion of off-road sections, and as such a lower percentage of the route option affects the regional and local road networks. This option leaves Woodland and heads directly south to the R156 and continues on this road towards Dunboyne, where it turns north to cross the M3 motorway. The motorway itself is avoided as any crossing here will most likely be via Horizontal Directional Drilling (HDD) or via a tunnel. This route is proposed to cross to the north of the motorway junction and join the R147 up to the MSD Pharmaceuticals/Avoca junction. From here it travels east on local roads to Kilbride village. Heading south for a period on Kilbride Road, this option goes off road to reach the R121, avoiding the residential areas further to the south and a busy roundabout on the R121. A short distance into the R121, the route crosses the M2. Again, this will be via HDD or tunnel, although it is not determined at this stage exactly where such a crossing would be, until discussions with landowners has progressed further. After the crossing, the route option stays largely on regional roads after this, following the R121, the R122 and on to the R108 to the northwest of Dublin Airport. Heading east on the R108, the route crosses the M1, via HDD or tunnel; the exact location of the crossing to be determined also. From here, however, this option remains off-road and heads directly south towards Belcamp substation. The exact route off-road has still to be determined.

Table 5.6: Option A (Red) Road Classification

Option	Total Length (km)	Road Length Percentage Distribution			Residential Properties 0-50m
		Regional	Local Roads and Smaller	Off-road and other Land Types	
Option A (Red)	36.4	46%	31%	23%	201

5.2.1.2 Potential Impacts

The high level of regional roads used, and off-road sections of this route minimises the potential for full road closures. However, it is anticipated that full or partial lane closures would be required on these roads. The local roads between Avoca and Kilbride are narrow and full road closures with diversions may be required. This would be the case for all options, given that alternatives to using these local roads have been discounted at earlier stages of the design process as a result of significant constraints, such as the presence of a significant numbers of services, or high levels of potential traffic congestion.

Some of these road closures have been identified and discussed in Section 7.2.2 under Deliverability. It is acknowledged that these closures and diversions will likely have an impact on vehicles in terms of additional delay and journey time reliability during periods of the day. However to minimise this impact, these temporary closures and diversions will be tested and assessed in robust traffic management plans prior to implementation. Where road closures are not required, some localised traffic management measures will also be introduced in a traffic management plan.

A review of the Option A (Red) also highlights that the construction works will likely impact a number of key junctions and roundabouts. These sections are also identified in Section 7.2.2. Similar to the route sections there might be a requirement to temporarily divert traffic or restrict certain vehicle movements at these locations. Traffic management measures would be assessed on a case-by-case basis for each signalised junction and standard roundabout.

Option A (Red) has a relatively low number of properties within 0 to 50 meters from the roadway centreline (201 properties), however it is anticipated that there will still be local traffic disruption to access during construction. It passes the access to Scoil Bhride Primary School in Priest Town, Kilbride and Dunboyn Nursing Home in Waynestown, Dunboyne.

5.2.1.3 Summary of Assessment

Option A (Red) is the shortest of the options although it does affect a significant amount of regional roads (46% of route). This option also has a significant proportion of the route off-road (23% of route) with greater impact on agricultural land and has relatively low number of residential properties within 0-50m (201). Despite the potential impact on regional roads, and therefore potentially more traffic, this route is likely to have the second least amount of road closures due to a greater number of wider roads with hard shoulders. Impacts to local roads will be comparatively easier to divert than regional roads with several options. This option also has a low number of key junctions along the route. It passes the access to Scoil Bhride Primary School in Priest Town, Kilbride and Dunboyn Nursing Home in Waynestown, Dunboyne.

This is considered to be a Moderate-High rating.

Moderate-High

5.2.2 Amenity

This section outlines the likely impact on the amenity of residential, commercial, and community (and recreational) receptors, collectively, by way of consideration of contributing environmental effects.

Table 5.7: Known Commercial and Community Receptors Adjacent to the Alignment of Option A (Red)

Commercial receptors:	Community receptors:
Barstown Commercial Park	Dunboyne Nursing Home
Karlswood High Performance Equestrian Centre	Dunboyne AFC
Thornton Recycling	M3 Parkway Train Station
Avoca Dunboyne	Scoil Bhride (Kilbride)
Kilsaran Head Office	The Ward Graveyard (R121)
Gordon Barron Crash Repairs	New Park Care Centre
Ballintry Stud Farm	Little Moo Moos Playschool (Creche)
Derryglen Stud Farm	St Margaret's GAA Club
Top Oil Kilbride Service Station	Cloghran Cemetery
Belgree Enterprise Park	Trinity Care AnovoCare Nursing Home
Pallas (Dublin Office)	Baskin Lane Playing Pitches
New Park Motor Services	Craobh Ciaran GAA Pitches
St Margaret's Golf and Country Club	
Dublin Airport	
Keelings Farm Shop	
Forrest Little Golf Club	
The Coachman's Inn	
National Show Centre	

Outlined above are details of potential impacts considered likely during the construction of Option A (Red) according to each environmental effect, with a concluding paragraph summing up the overall impact on amenity. Given that the Proposed Development would be underground, there are no operational impacts anticipated on amenity.

Table 5.8 outlines the assessment ratings and associated justifications for each of the contributing environmental effects that, when in-combination, may result in an impact on amenity.

Table 5.8: Ratings and Associated Justifications for Environmental Effects Contributing to Potential Impact on Amenity

Air Quality	Noise (and vibration)	Visual	Traffic and Transport
Low to moderate	Low to moderate	Low	Moderate to High

5.2.2.1 Summary of Assessment

The Amenity assessment combines the assessment findings of other topics as shown above. In relation to the assigned scoring for potential impacts relating to Air Quality, Noise (and vibration), Visual and Traffic and Transport, it is considered likely that, in a worse-case scenario, there is the potential for considerable but not significant impacts on amenity. Therefore, a rating of 'Moderate (Dark Green)' has been assigned.

Moderate

5.2.3 Health

5.2.3.1 Overview

The SAOI is largely considered to be 'marginally above average' in terms of the deprivation indices provided for 'my Pobal' (Pobal, 2016), although there are a number of Electoral Divisions (EDs) within the Study Area which are considered to be 'affluent', such as Airport and Balgriffin. It should also be noted that there are a number of EDs in the Study Area that are considered to be 'marginally below average', namely Kilsallaghan,

and Priorswood A, while the EDs of Priorswood B and Priorswood C are considered to be 'very disadvantaged' and 'disadvantaged' respectively. According to the Institution of Public Health (in Ireland), people in higher socio-economic groups are a lower risk of chronic conditions and associated disability than those in lower socio-economic groups (Institute of Public Health, 2020).

5.2.3.2 Potential Impacts

5.2.3.2.1 Amenity

Using the outcomes of the amenity assessment, it is considered unlikely that the construction of Option A (red) would result in significant impacts on human health. This is primarily because processes and activities required during construction of the Proposed Development are temporary in nature, while the nature and scale of the Proposed Development means that construction activity would occur at any one location for a limited time; thereby not significantly impacting human health. The potential for stress caused by disruption to local roads is acknowledged however and so a low to moderate risk is identified for health.

5.2.3.2.2 Electromagnetic Fields (EMFs)

Electric and Magnetic Fields together with optical radiation, which includes infrared (IR), visible light (and laser), and ultraviolet radiation, collectively make up the non-ionising radiation (NIR) spectrum. This type of radiation does not have enough energy to break up (ionise) atoms or molecules. It is therefore different to ionising radiation such as X-rays or radioactive substances, that can break up molecules and is known to cause damage to human cells.

EMFs are generated when electricity is produced and distributed, by a number of man-made sources including everyday items such as mobile phones and electrical appliances. There are also natural sources of EMFs, such as the earth's magnetic field and the sun.

EirGrid has published a series of evidence-based studies relating to the potential environmental effects of the transmission network; one of these is for EMF (EirGrid, 2014).

This study took the form of a literature review of the extremely low frequency (ELF) EMF health evidence base, and consideration of measurements taken of EMF from high-voltage electricity transmission infrastructure in Ireland during 2012-2013, with the combined objective of informing future grid infrastructure planning and more effectively addressing commonly raised community health concerns.

The review explored a range of possible health effects from ELF EMF on human health; core documents on the topic published by international organisations including the World Health Organisation (WHO) show that the evidence for an association between ELF EMF exposure and carcinogenic effects, particularly leukaemia, is limited; however, the research does not rule in or out the possibility of a causal link.

As a precautionary approach, public exposure guidelines have been set by an independent body, the International Commission on Non-Ionizing Radiation Protection (ICNIRP). It is considered appropriate by health protection bodies to remain within guidelines set to manage known health risks and where possible to further reduce unnecessary exposure.

For EirGrid's study, measurements of EMF undertaken during 2012-13 were taken from single and double circuit OHLs at 110kV, 220kV and 400kV, transformer substations at these voltages, and UGCs at 110 kV and 220 kV. The measurement results were compared to the ICNIRP guidelines 'reference levels' of 5kV/m for electric fields and 200 microteslas (µT) for magnetic fields and discussed along with the underpinning health evidence base in the literature review section. The results of the study were as follows:

- UGCs produce no electric field above ground;
- The maximum electric field strength measured at all Overhead Lines (OHL) and substation perimeters surveyed was just below the ICNIRP reference level, however, points to note:
 - The ICNIRP reference level - this reference level is set on a highly conservative basis that ensures that the ICNIRP basic restriction for electric field exposure cannot be exceeded by external field strengths below the reference level; and

- For a 400kV single circuit OHL is close to the ICNRP's reference level directly under the OHL however there is a dramatically decreasing level of electric field with increasing distances from OHLs.
- The maximum magnetic field strength recorded among the overhead power lines was well below the 2010 ICNIRP guideline reference level for general public exposure; and
- As with electric fields, the magnetic field strength recorded for all types of overhead power lines and underground power cables under all load conditions falls rapidly with distance from their centrelines.

5.2.3.2.3 Summary of Assessment

Given the expected potential impacts a scoring of '**Low-Moderate (Light Green)**' has been assigned for the consideration of potential impacts on human health.

Low to moderate

5.2.4 Employment and Economy (and Tourism)

5.2.4.1 Employment

5.2.4.1.1 Overview

During construction and operation, impacts on employment as well as the national, regional, and local economy are anticipated to be similar among each of the proposed route options given that they are all similar in nature, extent and scale, and located in close proximity to one another within the same Study Area.

There is currently no information on the expected size or composition of the construction workforce required to construct any of the proposed route options, however given the similarities in extent and scale, it is considered that the size and composition of any construction workforce would be broadly the same to construct any of the proposed route options. Such a construction workforce is expected to be at relatively low numbers given the likely scale of works and envisaged construction methodology (i.e. a 'section-by-section' piecemeal construction method is expected to be employed). Furthermore, any employment opportunities are expected to be limited given there is considered to be low unemployment within the Study Area at present (the unemployment rate across all key settlement areas within the Study Area is estimated to be 4.5%) (CSO, 2021³⁴). It is also likely that skilled workers with particular experience in laying underground cables will be required rather than currently unemployed, unskilled, workers, thereby further reducing the possibility for new employment.

Due to the above factors and assumptions, potential impacts on employment during the construction of any of the proposed route options are expected to be positive, albeit limited and not significant. There is expected to be no impact on the labour market during the operation of the Proposed Development given its nature (i.e. underground cables between two unmanned electricity sub-stations).

5.2.4.1.2 Potential Impacts

In respect to potential impacts on the national, regional, and local economy during the construction of any of the proposed route options, these are expected to be positive, limited and not significant. This is due to the expectation that there would be limited economic activity associated with the construction workforce given its small size but also the skilled nature of such employment which is likely to be sourced from outside of the Study Area. Furthermore, given the specialist nature of the equipment being installed, it is likely that most of the capital expenditure would be outside of the Study Area, thereby also limiting supply-chain opportunities.

The operation of the Proposed Development (by way of any of the proposed route options) is expected to have a positive, potentially significant impact on the local, regional and national economies, primarily given

³⁴ <https://cso.maps.arcgis.com/apps/webappviewer/index.html?id=4d19cf7b1251408c99ccde18859ff739>

its purpose to ensure the security of the electricity supply for consumers which will contribute to the regional economy and support foreign direct investment. The Proposed Development is also expected to provide benefits for local communities, promote sustainability, and stimulate competition in the electricity supply market, as outlined in Section **Error! Reference source not found.** These benefits will be achieved regardless of which route option is selected and therefore there is no differentiation as a result.

No tourism receptors were encountered along the route of any of the proposed route options, therefore there is not expected to be any impact on tourism receptors or the tourism sector during the construction of any of the proposed route options.

5.2.4.2 Summary of Assessment:

Given the expected potential impacts, it is appropriate to assign a score of '**Low (Cream)**' for the consideration of potential impacts on 'Employment and Economy' (applicable to all route options as there is no differentiation).

Low

5.2.4.3 Land-use (and Land Take)

5.2.4.3.1 Overview

Option A (Red) is 36.4km in length, with the majority of the alignment routed along regional and local roads between Woodland substation and Belcamp substation. Some sections of the route alignment are not routed along roadways and are instead aligned across open agricultural land. Approximately 23% of Option A (Red) is routed through open greenfield land, largely classed as 'pastures or non-irrigated land' according to 2018 Corine Land Class data. The impacts on agricultural land (including land-take) are considered in Section 4.2.6.

5.2.4.3.2 Potential Impacts

It can be expected that there will be temporary land-take requirements to facilitate the construction of the Proposed Development along the route of Option A (Red). However, it is envisaged that construction activities would proceed on a section-by-section basis, thereby limiting the extent of such land-take requirements to a relatively small area at any one time. Furthermore, given the nature and scale of the Proposed Development, land-take requirements are expected to be minor and, as mentioned above, largely confined to regional and local roads. As such, there is anticipated to be no requirement for land-take from any residential, commercial or community receptors.

5.2.4.3.3 Summary of Assessment

Given the nature of the Proposed Development, there are no impacts on land-use and land take for residential, commercial or community receptors envisaged during the operational phase. Therefore, it is considered appropriate to assign a score of '**Low (Cream)**' for issues relating to land-use (and land-take), for non-agricultural land / receptors.

Low

5.2.5 Agriculture (including Equine)

This section addresses potential effects on agricultural land use. Where the construction of the Proposed Development crosses agricultural land there will be direct impacts on agricultural land-use and the operation of individual farms. The permanent land-take will be restricted to locations where inspection booths and other small structures associated with HVAC cable construction may be located. The use of temporary construction compounds located on agricultural land adjoining the works may be required. In general, the permanent land-take requirement will be very low and for the majority of the route crossing agricultural land the impacts will be restricted to soil disturbance and potential compaction due to excavation. This has the

potential to affect the quality of the land along the working area and affect land drainage. For the majority of the route the land over the cable will be re-instated after construction is complete and returned to the farmer.

The potential effects of EMF are addressed in Section 2.4.2 of this report. The author refers to a large number of scientific references to back up the conclusion that effects on agriculture from EMF associated with the proposed HVAC cable are not significant. Disturbance caused by maintenance and inspection of the proposed HVAC cable is not significant.

During the construction period there will be temporary disturbances to the operation of farms. The works area will be temporarily fenced off and this could result in temporary severances of access to fields or farmyards and to water and power supplies (e.g. power supplies to electric fencing and water supplies to water troughs). The excavation works and construction traffic movements have the potential to create noises and movements which may disturb sensitive livestock such as thoroughbred horses. Other potential impacts include the introduction of invasive species and impacts on permanent low input pastures due to disturbance of topsoil. The construction duration will generally be for a period of a few weeks or a few months on most farms. There may be extended periods where alternative construction techniques are required (e.g. directional boring beneath rivers) or where project infrastructure is required. Construction of public utilities such as gas pipelines and water mains on agricultural land is commonplace in Ireland and with best practice (discussed below) the temporary construction impacts do not cause significant effects on agriculture. The risk of significant impacts rises with increasing farm enterprise sensitivity and therefore this assessment compares the numbers of high sensitivity enterprises, such as equine and dairy, along each option.

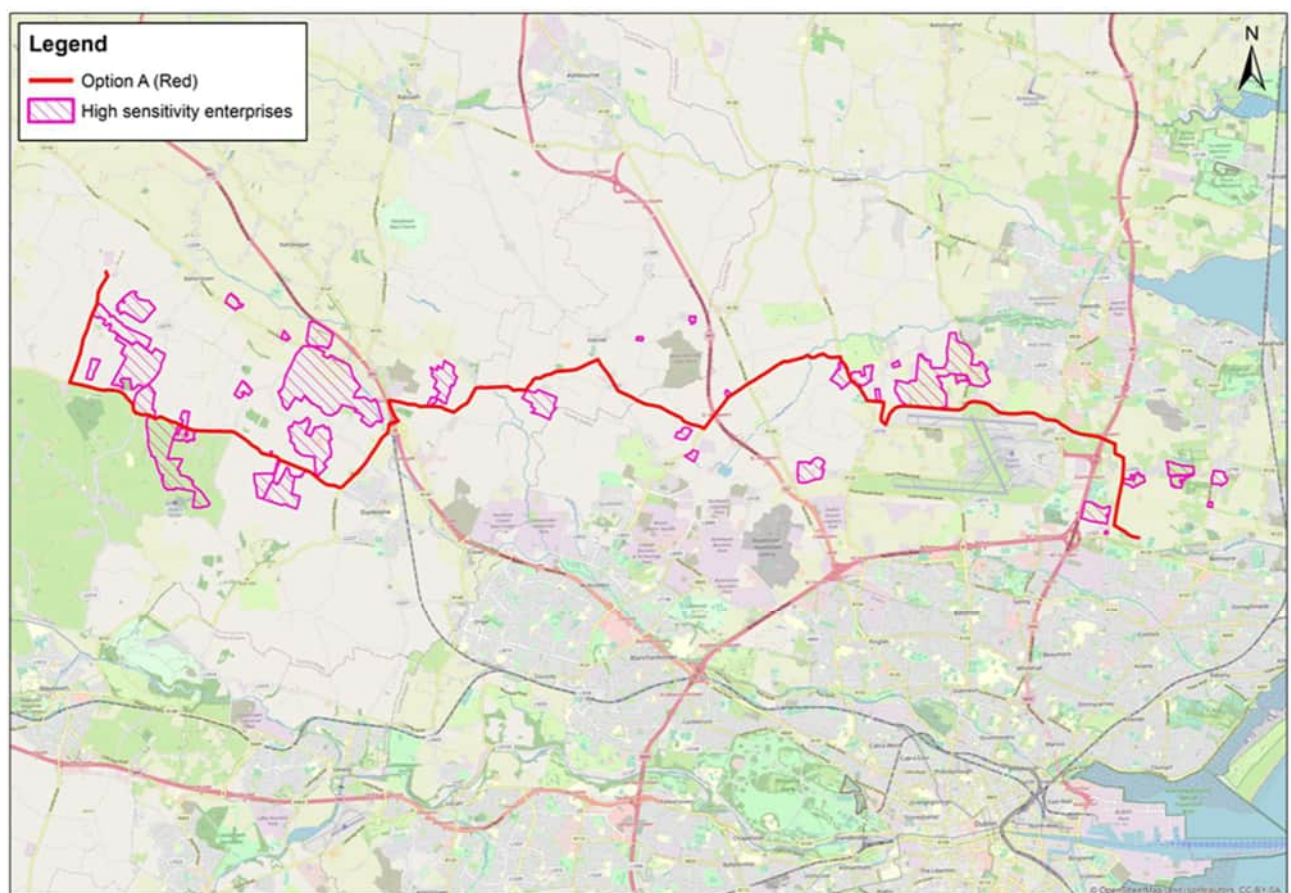


Figure 5-1 High Sensitivity Enterprises affected by Option A: Red

5.2.5.1 Potential Effects on Agriculture from Construction on Public Roads

Where the construction of the Proposed Development is confined to public roads the impacts on agricultural land-use and the operation of individual farms will be minimal. Farmers (and livestock) use the local road

network to access fields and farmyards and for the transportation of livestock and goods. Therefore, there will be temporary disturbances to farms located along the route while construction is in progress. This period is likely to be a few weeks or months at any one location. The in-road construction will cross entrances to fields and farmyards, potentially causing temporary disturbance to access. Excavation works and construction traffic movements have the potential to create noises and movements which may disturb sensitive livestock (such as Thoroughbred horses) on lands adjoining the public road. Construction of public utilities in public roads is commonplace in Ireland and with best practice (discussed below) the temporary impacts do not cause significant effects on agriculture.

5.2.5.2 Best Practices Which Minimise Impacts on Agriculture

This assessment assumes the implementation of the principle of best practice during the construction and operation of the Proposed Development. Best practices in relation to safety and EMF involve laying the proposed HVAC cable in a concrete type of material beneath the field surface. Adherence to this methodology ensures safety of farm machinery operators and livestock. To ensure EMF levels from electricity cables remain within the safe limits for human health, EirGrid's design standards require all UGCs to operate within existing public exposure guidelines from the International Commission on Non-Ionising Radiation Protection (ICNIRP), therefore EMFs from UGCs are unlikely to be a cause of public concern for local communities. Such potential impacts are the same for all proposed route options.

The contractor will engage with all landowners along the route of construction and discuss their requirements for access. The contractor will maintain reasonable access at all times. Reasonable access will respond to the individual needs of farmers and stud farms on a case by case basis. For example it would be essential to allow access for milk lorries into dairy farms whereas, with agreement, it may not be necessary to maintain continuous access to some roadside field gates when alternative access is available through the farmer's land. It may also be reasonable to restrict access to land for a period of time which is agreed in advance with the farmer. The contractor will notify the adjoining landowners in advance when construction noises may occur so that landowners have time to manage sensitive livestock such as thoroughbred horses. The contractor will maintain services such as water and power to ensure livestock have continuous access to water or provide an alternative source where necessary. It is best practice that the contractor provides a key contact person whom landowners can contact on an on-going basis during construction. Agricultural land, land drainage, local roads and affected accesses will be re-instated to pre-works condition. Services will be diverted where necessary should they be impacted by the construction works and access to severed sections of land will be arranged as necessary with landowners during the construction works.

5.2.5.3 Summary of Assessment

Option A (Red) is 36.4km in length and crosses through predominantly agricultural areas for approximately 95% of its entire length. There are good quality mineral soils along its entire length, Approximately 8.6km of the option will be offline through agricultural land. There are 13 high sensitivity enterprises along the length of the route corridor.

The ranking score for Option A (Red) is considered to be 'Low - Moderate' (Light Green) given the moderate length across agricultural land and absence of direct impacts on high sensitivity enterprises.

Low to Moderate

5.2.6 Utilities

5.2.6.1 Overview

There are numerous underground utilities in the regional road network between Woodland and Belcamp, including other electricity cables; telephone and broadband cables; sewers; and public and private water supplies. The public water supply is extensive in the area, with the network predominately using the road network for local residential supply while other larger mains being located off-road in agricultural land. There is no known group water supply with protected areas within the Study Area.

The assessment of Option A: Red, based on mapping provided by the utility owners, has found that it crosses existing high pressure gas pipeline (2 times), existing medium pressure gas pipelines (3 times), existing water supply network (48 times) and existing wastewater network (5 times). The count of crossing locations includes points within the same roads. For example, Option A (Red) meets the existing water supply network in multiple locations along its length, namely along the R108 / Naul Road on the northern boundary of Dublin Airport where the existing water supply network is crossed five times.

5.2.6.2 Potential Impacts

It is expected that all utilities encountered during construction will either remain in-situ or, where absolutely necessary, appropriate diversions or modifications carried out (with the permission of the respective provider) so as to ensure disruption to surrounding communities is kept to an absolute minimum and that any required service disruption will only be permitted for an agreed set period of time per day (generally a set number of hours) and will not be permitted to be continuous for full days at a time. Any required disruptions would be carefully planned so as to ensure that the duration of disruption is minimised in so far as is possible.

All route options predominantly run parallel to local, small diameter utilities and on occasion larger diameter utilities.

The primary differentiator is the crossings of large diameter and strategic infrastructure. In this regard, Option A is the least constrained.

Most notable constraints are the crossing of a 915mm water main, and running parallel to the proposed Ballystruan to Forest Little HV cable for lengths of the route for the entirety of the length in Naul Road/R122. The length is however shorter than for Option B (Green). Further consideration of utilities is given in the Deliverability section of this report.

5.2.6.3 Summary of Assessment

Given the number and type of utility interfaces along the length of Option A (Red), along with the potential for disruption to people and neighbouring communities, it is appropriate to assign a risk score of **'Low-Moderate (Light Green)'**.

Low-Moderate

5.3 Option B (Green)

5.3.1 Traffic and Transport

5.3.1.1 Overview of the Route Option

Option B (Green) takes a different route from Woodland substation; after leaving the substation to the southwest, it travels in south easterly direction, off-road. It crosses the Red Road to the south of the substation and heads across agricultural land to the L2215. Here it turns south to join the R156 and continues along the same route as Option A (Red) until the crossing of the M3. At the crossing of the M3, it is proposed that this route would take a southern approach via the Dunboyne Park and Ride car park to join the R147 south of the motorway junction. From here, the route would travel south for a short period before turning east at Bracetown Industrial Park. It would follow local roads and then join the same route as Option A (Red) towards Kilbride. At Kilbride Option B (Green) takes a different route to Option A (Red), travelling north towards Muckerstown for a short distance and then taking an unnamed local road travelling east towards Coolquoy. Immediately before Coolquoy, the route would cross the M2. Again it is not clear exactly where the crossing would be, however it is likely to be HDD or tunnelled. From Coolquoy, the route would head south on the R135, through the Ward Cross to Broughan. Here the route would travel east along Broughan Lane and past Newtown Cottages to join the R122, south of St Margaret's. From here the route would travel north along the R122 and joins the same route as Option A (Red) along the R108, Naul Road. This option would follow Naul Road up to the Stockhole Lane roundabout and then come off road, avoiding Stockhole Lane. Here it is proposed the route would travel off-road to the south of Stockhole Lane and then

cross the M1. The exact location of the crossing to be confirmed. After crossing the M1, the route would remain off-road, close to the eastern edge of the motorway for a short stretch before heading east to join the route of Option A (Red) and travel south to Belcamp substation.

Table 5.9 presents the break-down of road classifications for Option B (Green).

Table 5.9: Option B (Green) Road Classification

Option	Total Length (km)	Road Length Percentage Distribution			Number of properties 0-50m
		Regional	Local Roads and Smaller	Off-road and other Land Types	
Option B	37.9	37%	46%	17%	249

5.3.1.2 Potential Impacts

Similar impacts on the road network as described for Option A (Red) can be expected. However, Option B (Green) has a significant proportion of narrow local roads that would require a greater number of full road closures. The unnamed road to Coolquoy, for example, would need to be closed in full in some sections, resulting in potentially lengthy diversions for those wishing to cross the M2 from the Kilbride area. Broughan Lane is also narrow, however it also has reasonably wide verges in places so a full road closure may be able to be avoided.

5.3.1.3 Summary of Assessment

Option B (Green) is within regional roads for approximately 37% of its length. It also has a significant length of the route following off-road sections (17%) and requires a moderate number of full closures with feasible local diversions. A relatively low number of key junctions would be impacted along the route. It also has a relatively low number of properties within 0-50m (249). This is considered to be a Moderate-High rating.

Moderate to High

5.3.2 Amenity

5.3.2.1 Overview

This section outlines the likely impact on amenity of residential, commercial, community (and recreational) and tourism receptors, collectively, by way of consideration of contributing environmental effects. Issues of access and severance are outlined in Section 5.3.1. All residential, commercial and community (and recreational) receptors are shown in Appendix C.

The alignment of Option B (Green) passes through both rural and urban areas along its length. **Error! Reference source not found.** Table 5.10 lists the known commercial and community receptors that are situated immediately adjacent to the route alignment (this list is not exhaustive but represents a high-level analysis for the purposes of informing the Step 4A selection process). No tourism receptors (i.e. receptors whose main function is aimed at visitors to its locality) were encountered along the alignment of Option B (Green), while one-off or ribboned residential receptors are located along all sections of the route (aside from off-line sections). Option B (Green) is also routed in close proximity or within a number of built-up areas, such as Kilbride, the western fringes of Dunboyne, southern edge of Swords, Collinstown (i.e. Dublin Airport), and the northern extent of Darndale.

Table 5.10: Known Commercial and Community Receptors Adjacent to the Alignment of Option B (Green)

Commercial receptors:	Community receptors:
Karlswood High Performance Equestrian Centre	Dunboyne Nursing Home
Thornton Recycling	Dunboyne AFC
Tom Hand Cars / Circle K Bracetown	M3 Parkway Train Station
Drummonds Farm Shop	Scoil Bhride (Kilbride)

Commercial receptors:	Community receptors:
Rennicks Signs Ireland Bracetown Business Park Doyle Truck & Trailer Components / Quinn Tanker Services Top Oil Kilbride Service Station Sweeneys of Kilbride Rabbitte Catering Services Ltd. Coolquoy Lodge Brady's Top Oil / Spar Coolquoy The White House Hotel / Footgolf Dublin Ward Golf Centre Airport Driving School The Brock Inn Bar and Restaurant / Brock Inn Pitch and Putt Broughan Motors K&K Produce & Packs St. Margaret's Recycling Keelings Farm Shop Forrest Little Golf Club The Coachman's Inn National Show Centre	Kilbride GFC Meath St Brigids Church, Kilbride St Margaret's National School St Margaret's Church St Margaret's Graveyard Dublin Airport Cloghran Cemetery Trinity Care AnovoCare Nursing Home AUL Complex (Sports Facilities) Craobh Ciaran GAA Pitches

5.3.2.2 Potential Impacts

Outlined below are details of potential impacts considered likely during the construction of Option B (Green) according to each environmental effect, with a concluding paragraph summing up the overall impact on amenity. Given that the Proposed Development would be underground, there are no operational impacts anticipated on amenity.

Table 5.11 outlines the assessment ratings and associated justifications for each of the contributing environmental effects that, when in-combination, may result in an impact on amenity.

Table 5.11: Ratings and Associated Justifications for Environmental Effects Contributing to Potential Impact on Amenity

Air Quality	Noise (and vibration)	Visual	Traffic and Transport
Option B (Green) has an average risk score of 1.6 along the length of the route option, and has the second fewest number of sensitive receptors within all of the distance bands. Although there are no ecological designations within 200m of Option B (Green), there are several sensitive human receptors including dwellings and a school (St Margaret's National School) within 50m. Therefore, an overall risk score of Low to Moderate (light green) has been applied.	This option impacts a relatively small number of receptors, most of which are dwellings, but the option also passes within 100m of a church, two nursing homes and a school. Therefore, an overall risk score of Low to Moderate (light green) has been applied.	Route Option involves hedgerow removal along an off-road section through an area zoned Green Belt near Belcamp. However, potential for physical impacts will be limited in scale and localised. Significant impacts on landscape character or on visual receptors is unlikely; therefore, this Route Option is considered to be Low.	Option B (Green) is within regional roads for approximately 37% of its length, second least amount of all options. It also has the second most length of its route off-road (17%) and it requires slightly less full closures than Route A with a few options for traffic diversion. The same number of key junctions would be impacted along the route compared to Option A (Red), less than the other two. It has second least number of properties within 0-50m (249).

5.3.2.3 Summary of Assessment

In relation to the assigned scoring for potential effects relating to Air Quality, Noise (and vibration), Visual and Traffic and Transport, it is considered likely that, in a worse-case scenario, there is the potential for considerable but not significant impacts on amenity. Therefore, a risk scoring of 'Moderate (Dark Green)' has been assigned.

Moderate

5.3.3 Health

5.3.3.1 Overview

The same baseline conditions as described for Option A (Red) apply to this option and are not repeated.

5.3.3.2 Potential Impacts

5.3.3.2.1 Amenity

Option B (Green) passes through the same EDs within the Study Area as Option A (Red). Using the outcome of the amenity assessment, it is considered unlikely that the construction of Option B (Green) would result in significant impacts on human health. This is primarily because processes and activities required during the construction of the Proposed Development are temporary in nature, while the nature and scale of the Proposed Development means that construction activity would occur at any one location for a limited time; thereby not significantly impacting human health.

5.3.3.2.2 EMF

The same potential impacts in relation to EMFs as are described for Option A (Red) apply to this option and are not repeated here.

5.3.3.3 Summary of Assessment

Given the similarities in the nature and extent of potential impacts on human health between Option B (Green) and Option A (Red), Option B (Green) is also assigned a risk scoring of 'Low-Moderate (Light Green)'.

Low to Moderate

5.3.4 Employment and Economy (and Tourism)

5.3.4.1 Employment

5.3.4.2 Overview

The baseline conditions for employment are the same as those for Option A (Red) and are not repeated here.

5.3.4.3 Potential Impacts

There is currently no information on the expected size or composition of the construction workforce required to construct Option B (Green), however it is considered that the size and composition of any construction workforce would be relatively low numbers given the likely scale of works and envisaged construction methodology (i.e. a 'section-by-section' piecemeal construction method is expected to be employed). Furthermore, given the specialist nature of construction (to construct / lay underground electricity cables), skilled workers are likely to be required, further reducing general employment opportunities.

Given the nature of the project during its operation, there is expected to be no opportunity for gainful employment and as such no impacts are anticipated.

In regard to Economy, the construction of Option B (Green) is expected to be positive, albeit limited, and not significant given the scale of construction, while during the operational phase, positive, potentially significant impacts, are anticipated on the local, regional and national economies, primarily because of its purpose to ensure the security of the electricity supply for consumers which will contribute to the regional economy support foreign direct investment.

5.3.4.4 Summary of Assessment

The potential impacts on the employment and the national, regional and local economy are the same as that outlined in Section 7.5, and therefore a risk scoring of 'Low (Cream)' has been assigned to Option B (Green).

Low

5.3.4.5 Land-use (and Land Take)

5.3.4.6 Overview

Option B (Green) is 37.9m in length, with the majority of the alignment routed along regional and local roads between Woodland substation and Belcamp substation. Some sections of the route alignment are not routed along roadways and are instead aligned across open agricultural land. Approximately 17% of Option B (Green) is routed through open greenfield land, largely classed as 'pastures or non-irrigated land' according to 2018 Corine Land Class data. The impacts on agricultural land (including land-take) are considered in Section 5.2.6.

5.3.4.6.1 Potential Impacts

It can be expected that there will be temporary land-take requirements to facilitate the construction of the Proposed Development along the route of Option B (Green). However, it is envisaged that construction activities would proceed on a section-by-section basis, thereby limiting the extent of such land-take requirements to a relatively small area at any one time. Furthermore, given the nature and scale of the Proposed Development, land-take requirements are expected to be minor and, as mentioned above, largely confined to regional and local roads. As such, there is anticipated to be no requirement for land-take from any residential, commercial or community receptors.

5.3.4.7 Summary of Assessment

Given the nature of the Proposed Development, there are no impacts on land-use and land take for residential, commercial or community receptors envisaged during the operational phase. Therefore, it is considered appropriate to assign a score of 'Low to Moderate' for issues relating to land-use (and land-take), for non-agricultural land / receptors.

Low to Moderate

5.3.5 Agriculture (including Equine)

5.3.5.1 Overview

The Option B (Green) is 37.9km in length. It adjoins agricultural land for approximately 37kms and it crosses agricultural land for approximately 6kms (17% of the entire length) – it crosses two dairy farms for approximately 1.3kms. There are good quality mineral soils along its entire length, approximately 64% is a Surface Water Gley, 31% is a Luvisol and 5% is a low lying wet alluvial soil. From Woodland Substation to Belcamp Substation there are twelve high sensitivity enterprises located along Option B (Green) – eight equine enterprises, two dairy enterprises and two horticultural enterprises.

5.3.5.2 Potential Impacts

The same type of impacts and management measures as have been described for Option A (Red) apply to this option and are not repeated here. There are different high sensitivity enterprises potentially affected by Option B (Green) (see Figure 5-2).

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Figure 5-2: High Sensitivity Enterprises affected by Option B (Green)

5.3.5.3 Summary of Assessment

The potential impacts on agriculture are addressed in general in Section 7. This Section addresses the impacts of Option B (Green). This option is 37.9km in length and crosses through predominantly agricultural areas for approximately 95% of its entire length. There are good quality mineral soils along its entire length. Approximately 6.3km of the option will be offline through agricultural land. As illustrated, there are 13 high sensitivity enterprises along the option. The ranking score for Option B (Green) is considered to be 'Low-Moderate' (Green) given the moderate length across agricultural land and the low number of direct impacts on high sensitivity enterprises.

Low to Moderate

5.3.6 Utilities

5.3.6.1 Overview

There are numerous underground utilities in the regional road network between Woodland and Belcamp substation, including other electricity cables; telephone and broadband cables; sewers; and public and private water supplies. The public water supply is extensive in the area, with the network predominately using the road network for local residential supply while other larger mains being located off-road in agricultural land. There is no known group water supply with protected areas within the Study Area.

The assessment of Option B (Green), based on mapping provided by utility owners, has found that it crosses existing an 220kV overhead line (once), existing 400kV underground cable (once) (East West Interconnector), existing high pressure gas pipeline (twice), existing medium gas pipeline (3 times), existing water supply network (55 times) and existing wastewater network (9 times). The count of crossing locations includes points within the same roads. For example, Option B (Green) meets the existing water supply network in multiple locations along its length, namely along the R108 / Naul Road on the northern boundary of Dublin Airport where the existing water supply network is crossed five times.

5.3.6.2 Potential Impacts

It is expected that all utilities encountered during construction will either remain in-situ or, where absolutely necessary, appropriate diversions or modifications carried out (with the permission of the respective provider) so as to ensure disruption to surrounding communities is kept to an absolute minimum and that any required service disruption will only be permitted for an agreed set period of time per day (generally a set number of hours) and will not be permitted to be continuous for full days at a time. Any required disruptions would be carefully planned so as to ensure that the duration of disruption is minimised in so far as is possible.

5.3.6.3 Summary of Assessment

Given the number and type of utility interfaces along the length of Option B (Green), along with the potential for disruption to people and neighbouring communities, it is appropriate to assign a risk score of 'Moderate (Dark Green)'.

Moderate

5.4 Option C (Yellow)

5.4.1 Traffic and Transport

5.4.1.1 Overview of the Route Option

Option C (Yellow) initially takes the same route from Woodland substation as Option B (Green); after leaving the substation to the southwest, it travels in south easterly direction, off-road. It crosses the Red Road to the south of the substation and heads across agricultural land to the L2215. However, here it turns north to Batterstown. At Batterstown, it joins the R154 and heads east towards the M3. Of note in this location is the presence of a toll booth a short distance to the north of the motorway bridge. The exact location of the crossing is yet to be determined, however it is likely to be via HDD or tunnel and no impacts on the motorway or slip roads are anticipated. Once the M3 is crossed, the route would follow the R147 to MSD Pharmaceuticals and follow the same route as Option A (Red) to Kilbride. At Kilbride, the route would travel south in Kilbride Road, but whilst Option A (Red) takes an off-road approach to the R121, Option C (Yellow) stays on Kilbride Road and travels south to the R122 roundabout before heading east to cross the M2. Here again, the exact crossing location is to be determined, however it is likely to be via HDD or tunnel and so no impacts on the motorway are anticipated. After crossing the M2, the route option follows the same route as Option A until Kilreesk Road. At this point, whereas Option A (Red) joins the R108 Naul Road, Option C (Yellow) heads north along Kilreesk Road to Killbrook. Here it travels east along Killeek Lane then joins the R108. It travels south to join Cooks Lane, and then travels east to join Forest Road. Travelling north towards Swords along Forest Road, the option turns east on the L2300, skirting the southern suburbs of Swords, to join the R132 heading south again towards the airport. The option then joins Stockhole Lane at the roundabout with the R108 and travels east along it. From Stockhole Lane, this option takes a long route round to Belcamp, travelling east along Baskin Lane, south along Malahide Road and then west along the R139 before entering the substation from the south.

Table 5.12 presents the break-down of road classifications for the Option C (Yellow) route:

Table 5.12: Option C (Yellow) Road Classification

Option	Total Length (km)	Road Length Percentage Distribution						Number of Properties 0-50m
		Regional	Local Smaller	Roads	and	Off-road Types	and other Land	
Option C (Yellow)	43	47%		50%			3%	630

5.4.1.2 Potential Impacts

Similar impacts to those described for Option A (Red) would occur for Option C (Yellow), with some notable exceptions. The route would travel through Batterstown village and necessitate a lane closure and impact on local businesses and a school. After travelling through Kilbride, the route would also travel through Hollystown, an area of significant residential development, to the R122 roundabout, known to be a busy junction, a short distance north of access to the N2/M2. The alternative route, to using the R108 Naul Road, followed by this option requires the use of a very narrow local road, Killeek Lane. Works along this road would require a road closure. At the easternmost entrance to this lane, there is a haulage and distribution business; along its length are numerous greenhouses, part of the Keelings Foods holdings. It was observed during surveys that Keelings use large coaches to transport workers to and from the sites. A road closure on this route would have significant impacts on the ability of this business to continue to operate. This option also skirts the southern suburbs of Swords, a densely populated area. The roads here, whilst not all regional roads, are large, with wide pavements and cycle paths, however a very large number of people live in the vicinity that may be impacted by lane closures and traffic management requirements. The route to Belcamp has the potential to disrupt a number of road users, particularly along Malahide Road which is a busy route south into Dublin from Swords and Malahide. This area is also the focus for new strategic housing projects and so will

become more densely populated over the coming years and there is potential for cumulative impacts during construction with these projects.

5.4.1.3 Summary of Assessment

Option C (Yellow) affects a significant number of regional roads (over 43% of total route length). This option also has a significant amount of its length on-road (97%), and impacts on a significant number of key junctions and has a large number of residential properties within 50m (630). In addition to this, this route impacts significant lengths of narrow roads without a hard shoulder and will require a significant number of full road closures. It passes the access to Scoil Bhride Primary School in Priest Town, Kilbride and Dunboyn Nursing Home in Waynestown, Dunboyne. Therefore an overall risk score of High is applied.

High

5.4.2 Amenity

5.4.2.1 Overview

This section outlines the likely impact on the amenity of residential, commercial, community (and recreational), and tourism receptors, collectively, by way of consideration of contributing environmental effects. Issues of access and severance are outlined in Section 6.2.1. All residential, commercial, community (and recreational) receptors are shown in Appendix C.

The alignment of Option C (Yellow) passes through both rural and urban areas along its length, as outlined in Section 3.2.3. Table 5.13 list the known commercial and community receptors that are situated immediately adjacent to the route alignment (this list is not exhaustive but represents a high-level analysis for the purposes of informing the Step 4A selection process). No tourism receptors (i.e. receptors whose main function is aimed at visitors to its locality) were encountered along the alignment of Option C (Yellow), while one-off or ribboned residential receptors are located along all sections of the route (aside from off-line sections). Option C (Yellow) is also routed in close proximity or within a number of built-up areas, such as through the centre of the villages of Batterstown, Kilbride, Hollystown / Hollywood, The Baskins, Kinsealy, the southern fringes of Swords, as well as the northern edge of Northern Cross (i.e. area between Clarehall and Darndale).

Table 5.13: Known Commercial and Community Receptors Adjacent to the Alignment of Option C (Yellow)

Commercial receptors:	Community receptors:
Caffery's Pub and Restaurant	Kilcloon & Batterstown Parish Church
Centra Texaco Batterstown	Rathregan National School
F. Doolan Family Butchers	Scoil Bhride (Kilbride)
MSD Dunboyne	St Thomas Church Hollywood, Dublin
Kilsarin Head Office	The Ward Graveyard (R121)
Avoca Dunboyne	St. Kevins Boys FC / Killegland Soccer Pitches
Gordon Barron Crash Repairs	New Park Care Centre
Derryglen Stud Farm	Little Moo Moos Playschool (Creche)
Ballintry Study Farm	St Margaret's GAA Club
Top Oil Kilbride Service Station	Oakwood Lodge Nursing Home
Belgree Enterprise Park	Killeek Graveyard
Hollystown Golf Club	Dublin Airport
Hollystown Service Station and Spar	Ridgewood Medical Centre
Ecomod Business Park	Tigers Childcare Ridgewood
Pallas Dublin	Cloghran Graveyard
New Park Motor Services	Trinity Care AnovoCare Nursing Home
St Margaret's Golf and Country Club	Baskin Lane Playing Pitches

Commercial receptors:	Community receptors:
Armagh Auctions Ireland Keelings Ireland Monks Field Equestrian Forrest Equestrian Centre Forrest Little Golf Club Tesco (Ridgewood) Boroimhe Shopping Centre Airside Shopping Centre Premier Inn Dublin Airport Airside Centre and Texaco N1 Business Park Kilonan Equestrian Centre Metropoint Business Park National Show Centre The Coachmans Inn Kinsealy Garden Centre Applegreen Service Station Malahide Road The Balgriffin Inn Hilton Dublin Airport (and associated / adjacent commercial / community receptors) Clarehall Shopping Centre Bewley's Tea and Coffee Head Office	Malahide / Portmarnock Educate Together National School St Nicholas of Myra National School Kinsealy St Doulagh's Church Trinity Care St Doolagh's Park Care & Rehabilitation Centre Balgriffin Cemetery Fingal Cemetery Innisfails GAA Club Balgriffin Hall Darnsdale Park Craobh Chiarain GAA Club St Michael's House Leisure Centre & Swimming Pool Belcamp Park

5.4.2.2 Potential Impacts

Outlined below are details of potential impacts considered likely during the construction of Option C (Yellow) according to each environmental effect. Given that the Proposed Development would be underground, there are no operational impacts anticipated on amenity.

The table below outlines the assessment ratings and associated justifications for each of the contributing environmental effects that, when in-combination, may result in an impact on amenity.

Table 5.14: Ratings and Associated Justifications for Environmental Effects Contributing to Potential Impact on Amenity

Air Quality	Noise (and vibration)	Visual	Traffic and Transport
Option C (Yellow) has an average risk score of 1.9 along the length of the route option, and has the largest number of sensitive receptors within all of the distance bands. Although there are no ecological designations within 200m of Option C (Yellow), there are several sensitive human receptors including dwellings and two schools (Little Moo Moos Playschool and Rathregan National School) within 20m and 50m. Therefore, an overall risk score of Moderate (Dark Green) has been applied.	This option impacts a relatively large number of receptors as it passes close to the town of Swords. The majority of receptors are dwellings, but the option also passes within 100m of three schools, three nursing homes, an equestrian centre and a church. Therefore, an overall risk score of Moderate (Dark Green) has been applied.	A section of this Route Option adjoins an area designated as a Highly Sensitive Landscape (Kinsealy) and where there is the Specific Objective to Protect & Preserve Trees, Woodlands and Hedgerows within the St Doolaghs Church Nature Objective Area but the requirement for vegetation removal is unlikely as trench will be within the road pavement. However, potential for physical impacts will be limited in scale and localised. Significant impacts on landscape character or on visual receptors is unlikely; therefore, this Route Option is considered to be Low (Cream).	Option C (Yellow) is the longest of the options and affects the second most percentage of regional roads of the four options (over 43%). This route also has a significant amount of its length on-road (97%), impacts on a great number of key junctions and has by far the most amount of residential properties within 50m (630). In addition to this, this route impacts the most amount of narrow road without a hard shoulder and will require greater amounts of full road closures will be required with this option. It passes the access to Scoil Bhride Primary School in Priest Town, Kilbride and Dunboyn Nursing Home in Waynestown, Dunboyne. Therefore an overall risk score of High (Dark Blue) is applied.

5.4.2.3 Summary of Assessment

In relation to the assigned scoring for potential effects relating to Air Quality, Noise (and vibration), Visual and Traffic and Transport, it is considered likely that, in a worse-case scenario, there is the potential for significant impacts on amenity as a result of the construction of Option C (Yellow). Therefore, a risk scoring of 'High (Dark Blue)' has been assigned.

High

5.4.3 Health

5.4.3.1 Overview

The same baseline conditions as described for Option A (Red) apply to this option and are not repeated.

5.4.3.2 Potential Impacts

5.4.3.2.1 Amenity

Option C (Yellow) passes through the same EDs within the Study Area as Option A (Red). Using the outcome of the amenity assessment, it is considered unlikely that the construction of Option C (Yellow) would result in significant impacts on human health. This is primarily because processes and activities required during the construction of the Proposed Development are temporary in nature, while the nature and scale of the Proposed Development means that construction activity would occur at any one location for a limited time; thereby not significantly impacting human health.

5.4.3.2.2 EMF

The same potential impacts in relation to EMFs as are described for Option A (Red) apply to this option and are not repeated here.

5.4.3.3 Summary of Assessment

Construction and operation of Option C (Yellow) is unlikely to result in significant impacts on human health as, during construction, works are expected to be minor, temporary, and transient in nature, while in operation, the nature of the project and its location underground will limit any potential impacts, including any such potential impacts from electromagnetic fields. However, the potentially significant impacts on amenity may have indirect impacts on health and so this is ranked as being of moderate risk to health.

Moderate

5.4.4 Employment and Economy (and Tourism)

5.4.4.1 Employment

5.4.4.1.1 Overview

During construction and operation, potential impacts on employment and the national, regional and local economy are anticipated to be similar along each of the proposed route options given that they are all similar in nature, extent and scale, are located in close proximity to one another, and within the same Study Area.

5.4.4.1.2 Potential Impacts

There is currently no information on the expected size or composition of the construction workforce required to construct Option C (Yellow), however it is considered that the size and composition of any construction workforce would be relatively low numbers given the likely scale of works and envisaged construction methodology (i.e. a 'section-by-section' piecemeal construction method is expected to be employed). Furthermore, given the specialist nature of construction (to construct / lay underground electricity cables), skilled workers are likely to be required, further reducing general employment opportunities.

Given the nature of the project during its operation, there is expected to be no opportunity for gainful employment and as such no impacts are anticipated.

5.4.4.1.3 Summary of Assessment

In regard to Economy, the construction of Option C (Yellow) is expected to be positive, albeit limited, and not significant given the scale of construction, while during the operational phase, positive, potentially significant impacts, are anticipated on the local, regional and national economies, primarily because of its purpose to ensure the security of the electricity supply for consumers which will contribute to the regional economy support foreign direct investment.

Low

5.4.4.2 Land-use (and Land-take)

5.4.4.2.1 Overview

Option C is 43km in length, with the majority of the alignment routed along regional and local roads between Woodland substation and Belcamp substation. Some sections of the route alignment are not routed along roadways and are instead aligned across open agricultural land. Approximately 3% of Option C is routed through open greenfield land, largely classed as 'pastures or non-irrigated land' according to 2018 Corine Land Class data. The impacts on agricultural land (including land-take) are considered in Section 6.2.6.

5.4.4.2.2 Potential Impacts

It can be expected that there will be temporary land-take requirements to facilitate the construction of the Proposed Development along the route of Option C. However, it is envisaged that construction activities would proceed on a section-by-section basis, thereby limiting the extent of such land-take requirements to a relatively small area at any one time. Furthermore, given the nature and scale of the Proposed Development,

land-take requirements are expected to be minor and, as mentioned above, largely confined to regional and local roads. As such, there is anticipated to be no requirement for land-take from any residential, commercial or community receptors.

5.4.4.2.3 Summary of Assessment

Given the nature of the Proposed Development, there are no impacts on land-use and land take for residential, commercial or community receptors envisaged during the operational phase. Therefore, it is considered appropriate to assign a score of '**Low (Cream)**' for issues relating to land-use (and land-take), for non-agricultural land / receptors.

Low

5.4.5 Agriculture (including Equine)

5.4.5.1 Overview

The Option C (Yellow) is 41.5km in length. It adjoins agricultural land for approximately 36.1kms and it crosses agricultural land for approximately 2kms (5% of the entire length) – it crosses one dairy farm for approximately 0.7kms. There are good quality mineral soils along its entire length, approximately 45% is a Surface Water Gley, 50% is a Luvisol and 4% is a low lying wet alluvial soil.

5.4.5.2 Potential Impacts

From Woodland Substation to Belcamp Substation there are thirteen high sensitivity enterprises located along Option C (Yellow) – ten equine enterprises, two dairy enterprises and one horticultural enterprise.

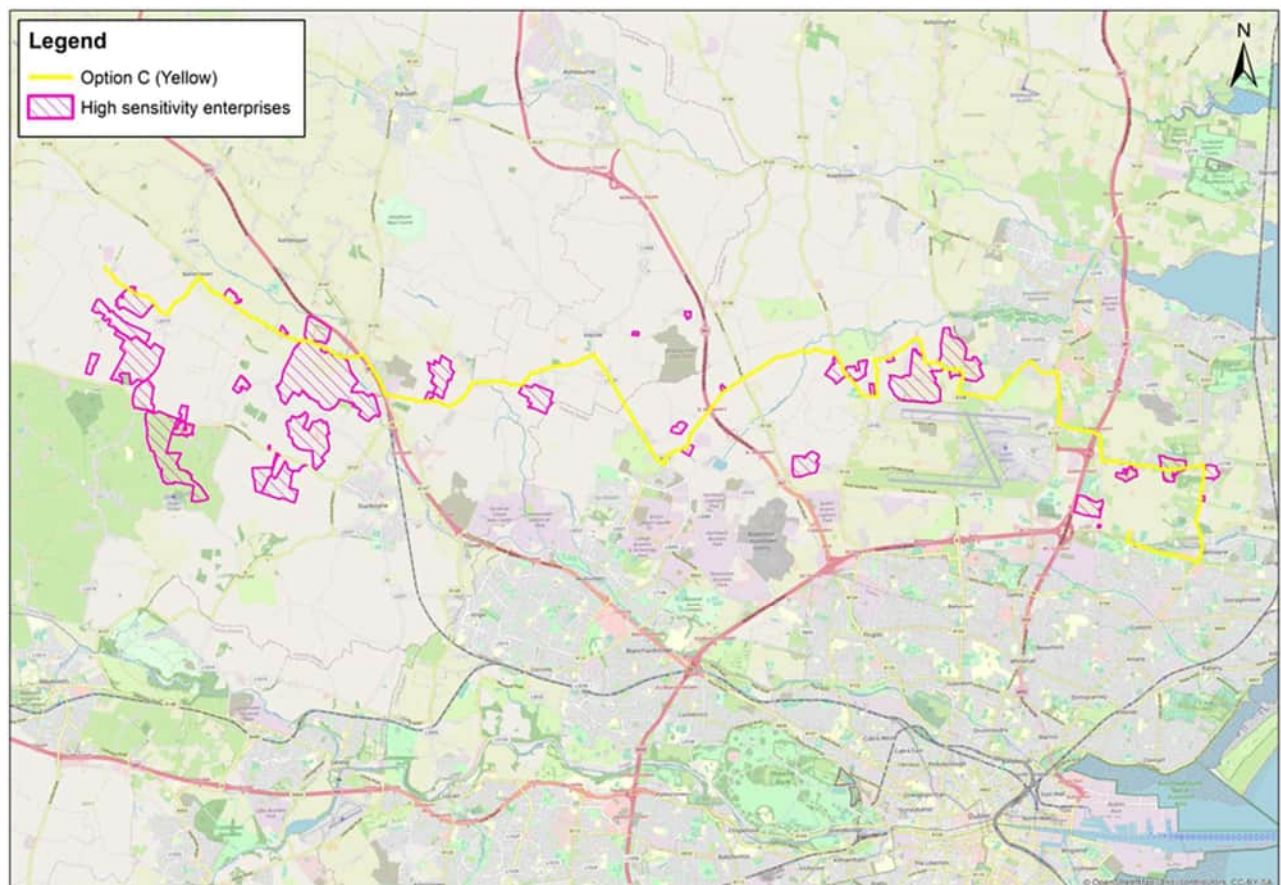


Figure 5-3 High Sensitivity Enterprises Option C (Yellow)

5.4.5.3 Summary of Assessment

The potential impacts on agriculture are addressed in general in Section 4.2.74.2.6. This Section addresses the impacts of Option C (Yellow). This option is 42.9km in length and crosses through predominantly agricultural areas for approximately 87% of its entire length. There are good quality mineral soils along its entire length. Approximately 1.8km of the option will be offline through agricultural land. As illustrated, there are 17 high sensitivity enterprises along the option. The ranking score for Option C (Yellow) is considered to be 'Low' (Cream)' given the low length across agricultural land and the low number of direct impacts on high sensitivity enterprises.

Low

5.4.6 Utilities

5.4.6.1 Overview

There are numerous underground utilities in the regional road network between Woodland and Belcamp, including other electricity cables; telephone and broadband cables; sewers; and public and private water supplies. The public water supply is extensive in the area, with the network predominately using the road network for local residential supply while other larger mains being located off-road in agricultural land. There is no known group water supply with protected areas within the Study Area.

The assessment of Option C (Yellow), based on mapping provided by utility owners, has found that it crosses existing 200kV overhead lines (twice), existing 400kV underground cable (once), existing 110kV underground cable (twice), existing 38kV underground (once), existing high pressure gas pipeline (twice), existing medium pressure gas pipeline (30 times), existing water supply network (139 times), and existing wastewater network (26 times). The count of crossing locations includes points within the same roads. For example, Option C (Yellow) meets the existing water supply network in multiple locations along its length, namely in the village of Hollystown / Hollywood the existing water supply network criss-crosses the Kilbride Road multiple times and hence the number of crossings is higher.

5.4.6.2 Potential Impacts

It is expected that all utilities encountered during construction will either remain in-situ or, where absolutely necessary, appropriate diversions or modifications carried out (with the permission of the respective provided) so as to ensure disruption to surrounding communities is kept to an absolute minimum and that any required service disruption will only be permitted for an agreed period of time per day (generally a set number of hours) and will not be permitted to be continuous for full days at a time. Any required disruptions would be carefully planned so as to ensure that the duration of disruption is minimised in so far as is possible.

5.4.6.3 Summary of Assessment

Given the number and type of utility interfaces along the length of Option C (Yellow), along with the potential for disruption to people and neighbouring communities, it is appropriate to assign a risk score of 'High (Dark Blue)'.

High

5.5 Option D (Blue)

5.5.1 Traffic and Transport

5.5.1.1 Overview of the Route Option

Option D (Blue) follows the same route out of Woodland substation as Option A (Red) does; crossing agricultural fields to reach the L2215. Here it travels south rather than via Batterstown and joins the R156. It continues along this regional road for a short distance before turning north onto the L6222 towards Vesington. It continues on this road until the junction with the R154 and then turns east onto that road. It follows the same route as Option C (Yellow) until it gets close to Kilbride. Here, it takes a small local road and avoids Kilbride village. From this point, it continues to follow the same route as Option C (Yellow) until it reaches Kilreesk Road, to the northwest of the airport. At this point it joins the same route as Options A and B and travels along the R108 and Naul Road. It remains on road for the rest of its length; whereas Options A and B go off-road after the crossing of the motorway, Option D (Blue) remains in the road. It crosses the M1, again the exact location of which is to be determined, and then follows Stockhole Lane to the R139 roundabout, where it turns east and then north into Belcamp substation.

Table 5.15 presents the break-down of road classifications for the Option D (Blue) route:

Table 5.15: Option D (blue) Road Classification

Option	Total Length (km)	Road Length Percentage Distribution			Number of Properties 0-50m
		Regional	Local Roads and Smaller	Off-road and other Land Types	
Option C	40.2	35%	57%	8%	350

5.5.1.2 Potential Impacts

This option has most of its length in common with one or more of the other options, particularly Option C (Yellow).

5.5.1.3 Summary of Assessment

Option D (Blue) has a relatively low percentage of the route on regional roads (35%). Additionally, this route has a high percentage of the route on-road (92%) and a significant number of residential properties within 50m (350). This route also impacts a significant number of junctions as well as a significant amount of narrow roads without hard shoulder, requiring a high number of full road closures. However, these roads have few residents and very few businesses that would be affected. Therefore, an overall risk score of Moderate to High is applied.

Moderate to High

5.5.2 Amenity

This section outlines the likely impact on the amenity of residential, commercial, community (and recreational), and tourism receptors, collectively, by way of consideration of contributing environmental effects. Issues of access and severance are outlined in Section 7.2.1. All residential, commercial, community (and recreational) receptors are shown in Appendix C.

The alignment of Option D (Blue) passes through both rural and urban along its length, as outlined in Section 3.2.4. Table 5.16 lists the known commercial and community receptors that are situated immediately adjacent to the route alignment (this is not exhaustive but represents a high-level analysis for the purposes of informing the Step 4A selection process). No tourism receptors (i.e. receptors whose main function is aimed at visitors to its locality) were encountered along the alignment of Option D (Blue), while one-off or ribboned residential receptors are located along all sections of the route (out with aside from off-line

sections). Option D (Blue) is also routed in close proximity or within a number of built-up areas, such as through the centre of Hollystown / Hollywood, Kilbride, the northern fringe of Collinstown (i.e. Dublin Airport) and the northern extent of Darndale.

Table 5.16: Known Commercial and Community Receptors Adjacent to the Alignment of Option D (Blue)

Commercial receptors:	Community receptors:
Barstown Commercial Park	Dunboyne Nursing Home
Karleswood High Performance Equestrian Centre	St Thomas's Church
MSD Dunboyne	Hollystown Golf Club
Kilsaran Head Office	The Ward Graveyard
Avoca Dunboyne	New Park Care Centre
Gordon Barron Crash Repairs	St. Kevins Boys FC / Killegland Soccer Pitches
Derryglen Stud Farm	St Margaret's Golf and Country Club
Belgree Enterprise Park	Little Moo Moos Playschool (Creche)
Hollystown Service Station and Spar	St Margaret's GAA Club
Ecomod Business Park	Oakwood Lodge Nursing Home
Pallas Dublin	Killeek Graveyard
Armagh Auctions Ireland	Dublin Airport
Keelings Ireland	Forrest Little Golf Club
Monks Field Equestrian	Cloghran Graveyard
Forrest Equestrian Centre	Trinity Care AnovoCare Nursing Home
The Coachmans Inn	Craobh Ciaran GAA Pitches
National Show Centre	
AUL Complex (Sports Facilities)	
Clayton Hotel Dublin Airport (and associated / adjacent commercial receptors)	

Outlined below are details of potential impacts considered likely during the construction of Option D according to each environmental effect, with a concluding paragraph summing up the overall impact on amenity. Given that the Proposed Development would be underground, there are no operational impacts anticipated on amenity.

Table 5.17 outlines the assessment ratings and associated justifications for each of the contributing environmental effects that, when in-combination, may result in an impact on amenity.

Table 5.17: Ratings and Associated Justifications for Environmental Effects Contributing to Potential Impact on Amenity

Air Quality	Noise	Visual	Traffic and Transport
Option D (Blue) has an average risk score of 1.8 along the length of the route option, and has the second largest number of sensitive receptors within all of the distance bands. Although there are no ecological designations within 200m of Option D (Blue), there are several sensitive human receptors including dwellings and a school (Little Moo Playschool) within 20m. Therefore, an overall risk score of Low-Moderate (Light Green) has been applied.	This option impacts a relatively small number of receptors, most of which are dwellings, but the option also passes within 100m of four nursing homes. Therefore, an overall risk score of Low-Moderate (Light Green) has been applied.	This route Option includes a 2.82 km off-road section through the High Sensitivity Tara Skryne Hills Landscape Character Area near Woodland, involving hedgerow removal. However, potential for physical impacts will be limited in scale and localised. Significant impacts on landscape character or on visual receptors is unlikely; therefore, this Route Option is considered to be at Low (Cream) risk of resulting in significant impacts.	Option D (Blue) is the second longest of the route options although with the lowest percentage of the route on regional roads (35%). Additionally, this route does have one of the highest percentage of the route on-road (92%) and the second greatest number of residential properties within 50m (350). This route also impacts the second highest number of significant junctions as well as the second most amount of narrow roads without hard shoulder, requiring a high

Air Quality	Noise	Visual	Traffic and Transport
			amount of full road closures. However these roads have few residents and very few businesses that would be affected. Therefore, an overall risk score of Moderate-High (Blue) is applied.

5.5.2.1 Summary of Assessment

In relation to the assigned scoring for potential impacts relating to Air Quality, Noise (and vibration), Visual and Traffic and Transport, it is considered likely that, in a worse-case scenario, there is the potential for considerable but not significant impacts on amenity. Therefore, a risk scoring of '**Moderate (Dark Green)**' has been assigned.

Moderate

5.5.3 Health

5.5.3.1 Overview

The same baseline conditions as described for Option A (Red) apply to this option and are not repeated.

5.5.3.2 Potential Impacts

5.5.3.2.1 Amenity

Option D (Blue) passes through the same EDs within the Study Area as Option A (Red). Using the outcome of the amenity assessment, it is considered unlikely that the construction of Option C (Yellow) would result in significant impacts on human health. This is primarily because processes and activities required during the construction of the Proposed Development are temporary in nature, while the nature and scale of the Proposed Development means that construction activity would occur at any one location for a limited time; thereby not significantly impacting human health.

5.5.3.2.2 EMF

The same potential impacts in relation to EMFs as are described for Option A (Red) apply to this option and are not repeated here.

5.5.3.3 Summary of Assessment

Construction and operation of Option D (Blue) is unlikely to result in significant impacts on human health as, during construction, works are expected to be minor, temporary, and transient in nature, while in operation, the nature of the project and its location underground will limit any potential impacts, including any such potential impacts from electromagnetic fields. However the moderate impact on amenity may result in indirect effects on health and so a low to moderate risk is assigned.

Low to Moderate

5.5.4 Employment and Economy (and Tourism)

5.5.4.1 Employment

5.5.4.1.1 Overview

During construction and operation, potential impacts on employment and the national, regional and local economy are anticipated to be similar among each of the proposed route options given that they are all similar in nature, extent and scale, are located in close proximity to one another, and within the same Study Area.

5.5.4.1.2 Potential Impacts

There is currently no information on the expected size or composition of the construction workforce required to construct Option D (Blue), however it is considered that the size and composition of any construction workforce would be relatively low numbers given the likely scale of works and envisaged construction methodology (i.e. a 'section-by-section' piecemeal construction method is expected to be employed). Furthermore, given the specialist nature of construction (to construct / lay underground electricity cables), skilled workers are likely to be required, further reducing general employment opportunities.

Given the nature of the project during its operation, there is expected to be no opportunity for gainful employment and as such no impacts are anticipated.

5.5.4.1.3 Summary of Assessment

In regard to Economy, the construction of Option D is expected to be positive, albeit limited, and not significant given the scale of construction, while during the operational phase, positive, potentially significant impacts, are anticipated on the local, regional and national economies, primarily because of its purpose to ensure the security of the electricity supply for consumers which will contribute to the regional economy support foreign direct investment.

Low

5.5.4.2 Land-use (and Land-take)

5.5.4.2.1 Overview

Option D is 40.2km in length, with the majority of the alignment routed along regional and local roads between Woodland substation and Belcamp substation. Some sections of the route alignment are not routed along roadways and are instead aligned across open agricultural land. Approximately 8% of Option D is routed through open greenfield land, largely classed as 'pastures or non-irrigated land' according to 2018 Corine Land Class data. The impacts on agricultural land (including land-take) are considered in Section 6.2.6.

5.5.4.2.2 Potential Impacts

It can be expected that there will be temporary land-take requirements to facilitate the construction of the Proposed Development along the route of Option D. However, it is envisaged that construction activities would proceed on a section-by-section basis, thereby limiting the extent of such land-take requirements to a relatively small area at any one time. Furthermore, given the nature and scale of the Proposed Development, land-take requirements are expected to be minor and, as mentioned above, largely confined to regional and local roads. As such, there is anticipated to be no requirement for land-take from any residential, commercial or community receptors.

5.5.4.2.3 Summary of Assessment

Given the nature of the Proposed Development, there are no impacts on land-use and land take for residential, commercial or community receptors envisaged during the operational phase. Therefore, it is

considered appropriate to assign a score of '**Low (Cream)**' for issues relating to land-use (and land-take), for non-agricultural land / receptors.

Low

5.5.5 Agriculture (including Equine)

5.5.5.1 Overview

The Option D (Blue) is 40.2km in length. It adjoins agricultural land for approximately 37kms and it crosses agricultural land for approximately 5.3kms (13% of the entire length) – it does not cross high sensitivity enterprises. There are good quality mineral soils along its entire length, approximately 65% is a Surface Water Gley, 33% is a Luvisol and 2% is a low lying wet alluvial soil.

5.5.5.2 Potential Impacts

The potential impacts on agriculture are addressed in general in Section 4.2.6. This Section addresses the impacts of Option D (Blue). From Woodland Substation to Belcamp Substation there are 17 high sensitivity enterprises located along Option C (Yellow) – nine equine enterprises, three dairy enterprises and three horticultural enterprise.

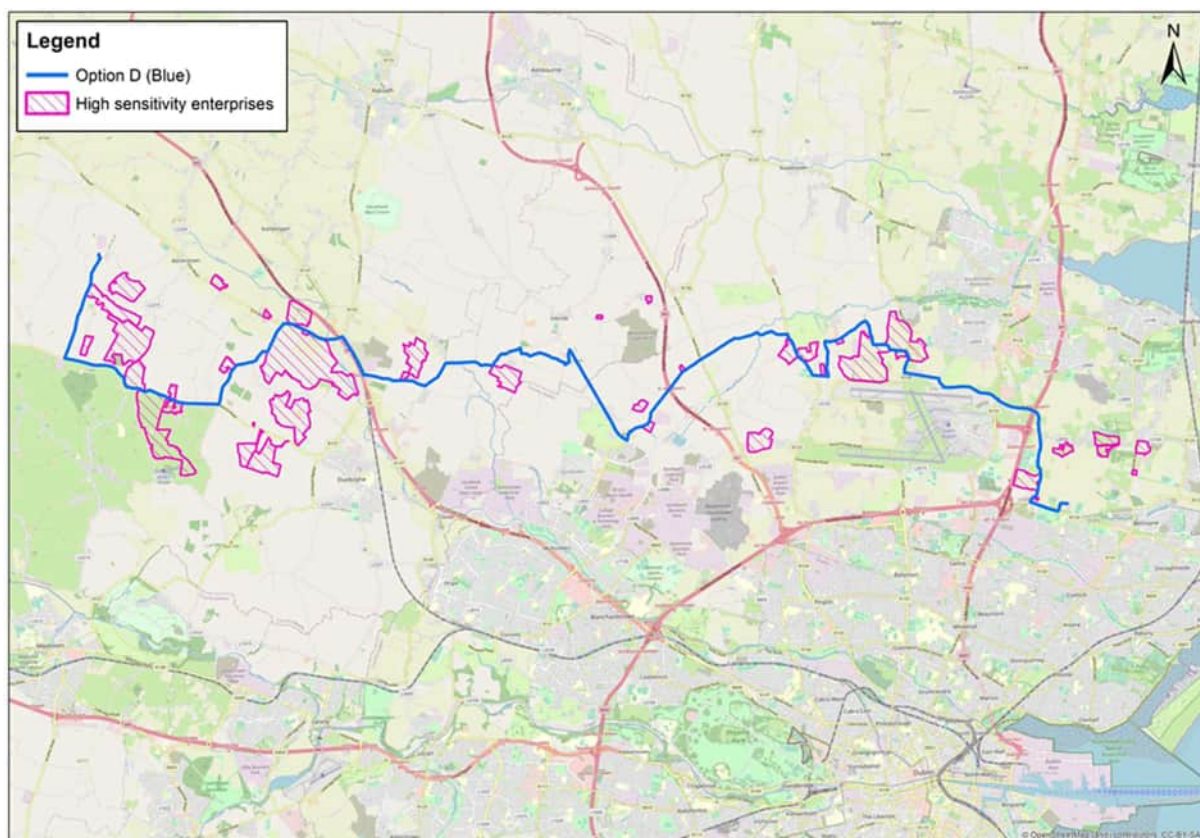


Figure 5-4: High Sensitivity Enterprises Option D (Blue)

5.5.5.3 Summary of Assessment

The ranking score for Option D (Blue) is considered to be 'Low - Moderate' (Green) given the low - moderate length across agricultural land and the absence of direct impacts on high sensitivity enterprises.

Low to Moderate

5.5.6 Utilities

There are numerous underground utilities in the regional road network between Woodland and Belcamp, including other electricity cables; telephone and broadband cables; sewers; and public and private water supplies. The public water supply is extensive in the area, with the network predominately using the road network for local residential supply while other larger mains being located off-road in agricultural land. There is no known group water supply with protected areas within the Study Area.

The assessment of Option D (Blue), based on mapping provided by utility owners, has found that it crosses existing 200kV overhead lines (once), existing 400kV underground cable (once), existing high pressure gas pipeline (twice), existing medium pressure gas pipeline (22 times), existing water supply network (99 times), and existing wastewater network (17 times). The count of crossing locations includes points within the same roads. For example, Option D (Blue) meets the existing water supply network in multiple locations along its length, namely in the village of Hollystown / Hollywood the existing water supply network criss-crosses the Kilbride Road multiple times and hence the number of crossings is higher.

It is expected that all utilities encountered during construction will either remain in-situ or, where absolutely necessary, appropriate diversions or modifications carried out (with the permission of the respective provided) so as to ensure disruption to surrounding communities is kept to an absolute minimum and that any required service disruption will only be permitted for an agreed period of time per day (generally a set number of hours) and will not be permitted to be continuous for full days at a time. Any required disruptions would be carefully planned so as to ensure that the duration of disruption is minimised in so far as is possible.

5.5.6.1.1 Summary of Assessment

Given the number and type of utility interfaces along the length of Option D (Blue), along with the potential for disruption to people and neighbouring communities, it is appropriate to assign a risk score of 'Moderate-High (Blue)'.

Moderate-High

6. Technical

This chapter outlines the assessment of route options considering feedback received from the public consultation and the technical assessment criteria and the following associated sub-topics:

- General Compliance with System Reliability, Security Standards;
- Headroom and Ratings Impact;
- Maintainability;
- Technology Operational Risk;
- Average Reliability Rates; and
- Repeatability.

Chapter 2 provides further information regarding these subtopics, including the approach to the assessment and methodology.

6.1 Feedback

No feedback was received from the public consultation regarding the technical assessment subtopics.

6.2 Option A (Red)

6.2.1 General Compliance with System Reliability, Security Standards

This is EirGrid's reliability and security standards are defined in the Transmission System Security and Planning Standards and their Operation Security Standards.

All technical input to the East Meath North Dublin project will comply to EirGrid's Standards for Security and Reliability. Therefore, there is no differentiation between the proposed route options and route Option A has been assigned a score of **Low (Cream)**.

Low

6.2.2 Headroom and Ratings Impact

Headroom is the amount of additional capacity each route option offers that would be available for the future without requiring further upgrade. All the proposed route options carry little additional headroom (spare current capacity) due to the nature of the corridor therefore giving no technical differentiation between the proposed routes in this aspect.

The current ratings bottleneck is the impact on the overall circuit ratings of the worst-case deepest obstacle crossing. As all the proposed route options will require some deep crossing solutions (below railways, motorways, rivers or a combination) of similar design, these will be the ratings bottleneck of that particular route. The connection spans west to east, whilst major natural and man-made obstacles are north south orientated, therefore all options cross the M3, M2 and M1.

On account for the potential total number of Horizontal Directional Drills, Option A (Red) has been assigned a score of **Low (Cream)**.

Low

6.2.3 Maintainability

This considers the ease with which the route option can be serviced and maintained, for example how easy it is to access joint bays and link boxes.

All the proposed route options will be developed with the same design principles. For example, maximum standing sheath voltages, typical trench cross-section, separation between joint bays, location of link boxes (underground in chambers or pillar mounted), same substation entry locations. Whilst some route options come with a greater proportion of off-road build as opposed to road, with the level of design detail available at this stage, is not possible to substantially differentiate between the proposed route options.

As there is no differentiation between the proposed route options and route Option A has been assigned a score of **Low (Cream)**.

Low

6.2.4 Technology Operational Risk

This criterion aims to capture the risk of operating different technologies on the network.

The same technology is applied to all solutions including cables, joint bays, and bonding. All technology will be the standard technology in the industry and also the dominant technology on EirGrid's existing network (i.e. XLPE insulated underground cables). Therefore, there is no differentiation between the proposed route options and route Option A has been assigned a score of **Low (Cream)**.

Low

6.2.5 Average Reliability Rates

This is the likelihood of the chosen cable technologies such as cables, joint bays, and bonding failing during operation is low. This is a technical issue, which would not cause any safety issues. All cable technology listed above are common to all route options.

Industry data on Cross-Linked Polyethylene (XLPE) insulation technology indicates that cable failures on a statistical basis are related to cable length in km.

The proposed route options lengths are as per Table 6.1 (all values are based on desktop surveys).

Table 6.1: Option Length Comparison

Route Option	Length (km)	% increase over the shortest
Option A (Red)	36.4km	0
Option B (Green)	37.8km	3.8
Option C (Yellow)	42.9km	17.8
Option D (Blue)	40.2km	10.4

The small variation in length (km) between the proposed route options does not trigger any substantial increase in the risk of failure. Furthermore, there is not currently sufficient technical detail, at this point, to determine the number increase of joint bays of each route against the shortest (Option C).

Therefore, there is no discernible differentiation between the differentiation between the proposed route options and route Option A; red has been assigned a score of **Low (Cream)**.

Low

6.2.6 Repeatability

Repeatability is whether the proposed technical solution can be readily repeated in the transmission network.

All the proposed route options will be developed with the same design principles; therefore, all route options are easily repeatable across the transmission network. Therefore, there is no differentiation between the proposed route options and route Option A: red has been assigned a score of **Low (Cream)**.

Low

6.3 Option B (Green)

6.3.1 General Compliance with System Reliability, Security Standards

This is EirGrid's reliability and security standards are defined in the Transmission System Security and Planning Standards and their Operation Security Standards.

All technical input to the East Meath North Dublin project will comply to EirGrid's Standards for Security and Reliability. Therefore, there is no differentiation between the proposed route options and route Option B (Green) has been assigned a score of '**Low (Cream)**'.

Low

6.3.2 Headroom and Ratings Impact

Headroom is the amount of additional capacity each route option offers that would be available for the future without requiring further upgrade. All the proposed route options carry little additional headroom (spare current capacity) due to the nature of the corridor therefore giving no technical differentiation between the proposed routes in this aspect.

The current ratings bottleneck is the impact on the overall circuit ratings of the worst-case deepest obstacle crossing. As all the proposed route options will require some deep crossing solutions (below railways, motorways, rivers or a combination) of similar design, these will be the ratings bottleneck of that particular route. The connection spans west to east, whilst major natural and man-made obstacles are north south orientated, therefore all options cross the M3, M2 and M1.

On account for the potential total number of Horizontal Directional Drills, Option B (Green) has been assigned a score of **Low (Cream)**.

Low

6.3.3 Maintainability

This considers the ease with which the route option can be serviced and maintained, for example how easy it is to access joint bays and link boxes.

All the proposed route options will be developed with the same design principles. For example, maximum standing sheath voltages, typical trench cross-section, separation between joint bays, location of link boxes (underground in chambers or pillar mounted), same substation entry locations. Whilst some route options come with a greater proportion of off-road build as opposed to road, with the level of design detail available at this stage, is not possible to substantially differentiate between the proposed route options.

As there is no differentiation between the proposed route options and route Option B (Green) has been assigned a score of '**Low (Cream)**'.

Low

6.3.4 Technology Operational Risk

This criterion aims to capture the risk of operating different technologies on the network.

The same technology is applied to all solutions including cables, joint bays, and bonding. All technology will be the standard technology in the industry and also the dominant technology on EirGrid's existing network (i.e. XLPE insulated underground cables). Therefore, there is no differentiation between the proposed route options and route Option B (Green) has been assigned a score of '**Low (Cream)**'.

Low

6.3.5 Average Reliability Rates

This is the likelihood of the chosen cable technologies such as cables, joint bays, and bonding failing during operation. All cable technology listed above are common to all route options.

Industry data on Cross-Linked Polyethylene (XLPE) insulation technology indicates that cable failures on a statistical basis are related to cable length.

The proposed route options lengths are as per Table 6.1 (all values are based on desktop surveys).

The small percentage difference between the lengths of the proposed route options does not trigger any substantial increase in the risk of failure. Furthermore, there is not currently sufficient technical detail, at this point, to determine the number increase of joint bays of each route against the shortest (Option C).

Therefore, there is no discernible differentiation between the solutions and route Option B (Green) has been assigned a score of **'Low (Cream)'**.

Low

6.3.6 Repeatability

Repeatability is whether the proposed technical solution can be readily repeated in the transmission network.

All the proposed route options will be developed with the same design principles; therefore, all route options are easily repeatable across the transmission network. Therefore, there is no differentiation between the proposed route options and route Option B has been assigned a score of **'Low (Cream)'**.

Low

6.4 Option C (Yellow)

6.4.1 General Compliance with System Reliability, Security Standards

This is EirGrid's reliability and security standards are defined in the Transmission System Security and Planning Standards and their Operation Security Standards.

All technical input to the East Meath North Dublin project will comply to EirGrid's Standards for Security and Reliability. Therefore, there is no differentiation between the proposed route options and route Option C (Yellow) has been assigned a score of **'Low (Cream)'**.

Low

6.4.2 Headroom and Ratings Impact

Headroom is the amount of additional capacity each route option offers that would be available for the future without requiring further upgrade. All the proposed route options carry little additional headroom (spare current capacity) due to the nature of the corridor therefore giving no technical differentiation between the proposed routes in this aspect.

The current ratings bottleneck is the impact on the overall circuit ratings of the worst-case deepest obstacle crossing. As all the proposed route options will require some deep crossing solutions (below railways, motorways, rivers or a combination) of similar design, these will be the ratings bottleneck of that particular route. The connection spans west to east, whilst major natural and man-made obstacles are north south orientated, therefore all options cross the M3, M2 and M1.

On account for the potential total number of Horizontal Directional Drills, Option C (Yellow) has been assigned a score of **Low (Cream)**.

Low

6.4.3 Maintainability

This considers the ease with which the route option can be serviced and maintained, for example how easy it is to access joint bays and link boxes.

All the proposed route options will be developed with the same design principles. For example, maximum standing sheath voltages, typical trench cross-section, separation between joint bays, location of link boxes (underground in chambers or pillar mounted), same substation entry locations. Whilst some route options come with a greater proportion of off-road build as opposed to road, with the level of design detail available at this stage, is not possible to substantially differentiate between the proposed route options.

As there is no differentiation between the proposed route options and route Option C (Yellow) has been assigned a score of '**Low (Cream)**'.

Low

6.4.4 Technology Operational Risk

This criterion aims to capture the risk of operating different technologies on the network.

The same technology is applied to all solutions including cables, joint bays, and bonding. All technology will be the standard technology in the industry and also the dominant technology on EirGrid's existing network (i.e. XLPE insulated underground cables). Therefore, there is no differentiation between the proposed route options and route Option C (Yellow) has been assigned a score of '**Low (Cream)**'.

Low

6.4.5 Average Reliability Rates

This is the likelihood of the chosen cable technologies such as cables, joint bays, and bonding failing during operation. All cable technology listed above are common to all route options.

Industry data on Cross-Linked Polyethylene (XLPE) insulation technology indicates that cable failures on a statistical basis are related to cable length.

The proposed route options lengths are as per Table 6.1 (all values are based on desktop surveys).

The small percentage difference between the lengths of the route option does not trigger any substantial increase in the risk of failure. Furthermore, there is not currently sufficient technical detail, at this point, to determine the number increase of joint bays of each route against the shortest (Option C (Yellow)).

Therefore, there is no discernible differentiation between the solutions and route Option C (Yellow) has been assigned a score of '**Low (Cream)**'.

Low

6.4.6 Repeatability

Repeatability is whether the proposed technical solution can be readily repeated in the transmission network.

All the proposed route options will be developed with the same design principles; therefore, all route options are easily repeatable across the transmission network. Therefore, there is no differentiation between the proposed route options and route Option C (yellow) has been assigned a score of '**Low (Cream)**'.

Low

6.5 Option D (Blue)

6.5.1 General Compliance with System Reliability, Security Standards

This is EirGrid's reliability and security standards are defined in the Transmission System Security and Planning Standards and their Operation Security Standards.

All technical input to the East Meath North Dublin project will comply to EirGrid's Standards for Security and Reliability. Therefore, there is no differentiation between the proposed route options and route Option D (Blue) has been assigned a score of **'Low (Cream)'**.

Low

6.5.2 Headroom and Ratings Impact

Headroom is the amount of additional capacity each route option offers that would be available for the future without requiring further upgrade. All the proposed route options carry little additional headroom (spare current capacity) due to the nature of the corridor therefore giving no technical differentiation between the proposed routes in this aspect.

The current ratings bottleneck is the impact on the overall circuit ratings of the worst-case deepest obstacle crossing. As all the proposed route options will require some deep crossing solutions (below railways, motorways, rivers or a combination) of similar design, these will be the ratings bottleneck of that particular route. The connection spans west to east, whilst major natural and man-made obstacles are north south orientated, therefore all options cross the M3, M2 and M1.

On account for the potential total number of Horizontal Directional Drills, Option D (Blue) has been assigned a score of **'Low (Cream)'**.

Low

6.5.3 Maintainability

This considers the ease with which the route option can be serviced and maintained, for example how easy it is to access joint bays and link boxes.

All the proposed route options will be developed with the same design principles. For example, maximum standing sheath voltages, typical trench cross-section, separation between joint bays, location of link boxes (underground in chambers or pillar mounted), same substation entry locations. Whilst some route options come with a greater proportion of off-road build as opposed to road, with the level of design detail available at this stage, is not possible to substantially differentiate between the proposed route options.

As there is no differentiation between the proposed route options and route Option D (Blue) has been assigned a score of **'Low (Cream)'**.

Low

6.5.4 Technology Operational Risk

This criterion aims to capture the risk of operating different technologies on the network.

The same technology is applied to all solutions including cables, joint bays, and bonding. All technology will be the standard technology in the industry and also the dominant technology on EirGrid's existing network (i.e. XLPE insulated underground cables). Therefore, there is no differentiation between the proposed route options and route Option D (Blue) has been assigned a score of **'Low (Cream)'**.

Low

6.5.5 Average Reliability Rates

This is the likelihood of the chosen cable technologies such as cables, joint bays, and bonding failing during operation. All cable technology listed above are common to all route options.

Industry data on Cross-Linked Polyethylene (XLPE) insulation technology indicates that cable failures on a statistical basis are related to cable length.

The proposed route options lengths are as per Table 6.1 (all values are based on desktop surveys).

The small percentage difference between the lengths of the proposed route options does not trigger any substantial increase in the risk of failure. Furthermore, there is not currently sufficient technical detail, at this point, to determine the number increase of joint bays of each route against the shortest (Option C).

Therefore, there is no discernible differentiation between the solutions and route Option D has been assigned a score of '**Low (Cream)**'.

Low

6.5.6 Repeatability

Repeatability is whether the proposed technical solution can be readily repeated in the transmission network.

All the proposed route options will be developed with the same design principles; therefore, all route options are easily repeatable across the transmission network. Therefore, there is no differentiation between the proposed route options and route Option D (Blue) has been assigned a score of '**Low (Cream)**'.

Low

7. Deliverability

This chapter outlines the assessment of route options considering feedback received from the public consultation and the deliverability assessment criteria and the following associated sub-topics:

- Design Complexity
- Traffic Disturbance
- Dependence on Infrastructure
- Permits & Wayleaves
- Timelines

Chapter 2 provides further information regarding these subtopics, including the approach to the assessment and methodology.

7.1 Feedback

Feedback from the public consultation was received for the subtopics 'traffic disturbance' and 'design complexity'. This feedback, accompanied by a response from the project team, is summarised below.

Table 7.1: Design Complexity

Feedback	Project Team response
It was suggested that the route chosen should use the old N3 near Pace.	<p>EirGrid's routing principles have been closely followed in the development of the route options and the use of local and regional roads has been maximised where possible.</p> <p>Specifically, the old N3 route has not been used since the proposed route generally runs in an eastward direction from East Meath to North Dublin.</p>

Table 7.2: Traffic Disturbance

Public Consultation Feedback	Project Team response
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.	During Step 4B of the project development process, traffic survey data will be acquired and a traffic study will assess delays and disruption due to traffic management during the construction phase.
Concerns raised about the impact on traffic on narrow roads, including the L5026 and roads in Kilbride, and on roads described as 'rat runs'. Other stakeholders did not specify roads but also expressed concern that narrow roads might necessitate road closures as well as expressing concerns about general traffic management.	We will also work with local communities and landowners to identify suitable site construction compounds and to identify appropriate haul routes and abnormal load routes.
Feedback received about the impact of the project on harvest time which requires the use of trailers.	Where possible we will seek to avoid routes through towns, villages and other residential areas while also seeking to minimise disruption to farms and other businesses in the area.
Concern that Option B is near many tillage fields and that farmers would therefore need access to the roads along this route during harvest time to transport their produce.	Where possible, we will seek to avoid road closures.

Concerns about potential impacts on traffic on roads on Route Options A (Red) and Route Option C (Yellow).	Route Option A (Red) incorporates a section of the R156 and is identified as the Emerging Best Performing Option, partly due to the greater number of communities (including Batterstown) and residential properties located on the R154 between Woodland substation and Pace.
Concerns over potential road closures at R153 and R121 which would directly affect the logistics of staff and deliveries of their business.	
Concerns that the narrower R156 used in Option A is less optimal for use than the wider R154.	
Support for Option C as it is the shortest route to Pace and maximises use of local roads including the recently widened and upgraded R154.	
Opposition to Option C on the grounds that Batterstown is regularly disrupted by work at Woodlands.	
Stakeholders requested details of road layouts and plans.	Plans showing the proposed route, layouts of traffic management and local diversion routes, if necessary, will be made available during subsequent stages of the project development process. The proposed routes can be viewed online via interactive mapping on the project website.
Stakeholders asked that EirGrid avoid using Malahide Road due to its existing congestion issues.	Route Option C (Yellow) is the only route using this road. The use of Malahide Road has been considered and discounted as part of the assessment as presented in this report.
Stakeholders requested that EirGrid avoid using any roads wherever possible.	EirGrid's routing principles seek to avoid motorways but maximise the use of national, regional and local roads.
Concerns about potential travel disruption, particularly with narrow roads. Added traffic associated with construction as well as the size of the construction vehicles could cause difficulties for the communities using these roads.	The extent of narrow roads has been considered as part of the assessment of traffic disturbance as presented in this chapter of the report.
It was suggested that the Option C from Woodland would maximise the use of local roads. It was also highlighted that the route is located near a busy agricultural businesses which has no alternative to but to travel on a narrow lanes.	
Concerns raised that Option C uses Killeek Lane which they comment is very narrow. They feel that closure of this road could impact residents living along this route.	
Concerns that Option B includes Broughan Lane which is very small and narrow lane as they believe closure of this road could impact residents along this route. Furthermore, it was commented that there is a large agricultural business on this lane which requires 24/7 access which may be limited if there is construction traffic or road closures.	
Participants felt clear and timely information about future disruption to their community would help to mitigate some of the inconvenience and frustration. Some said it would also help them plan their journeys in advance, avoiding stress.	
	EirGrid will work with ESB Networks to ensure that contractors prepare a stakeholder engagement and communications plan. This will include measures to engage with local communities and provide advance notifications via media channels of local road diversions and traffic management.

Respondents express support for Option A because they view it as the least disruptive and most direct route and because it avoids Hollystown which is regularly congested.	Option A (Red) is identified as the Emerging Best Performing Option and this feedback has been taken into account as part of the assessment process.
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Table 7.3: Timelines

Feedback	Project Team response
An interest was expressed in finding out more information about the nature of the project, particularly the construction process and the timeline.	<p>Project timelines, including Step 5 (apply for planning permission) and Step 6 (construction) will be confirmed following the completion of Step 4. Information will be available on the project website.</p> <p>Further information regarding the construction process, including the proposed construction sequence and methodology, is provided in Chapter 3 of this report.</p>

Table 7.4: Dependence on Infrastructure

Feedback	Project Team response
Stakeholders requested information about the status of other EirGrid projects such as the North South Interconnector, including the Louth-Woodland 220 kV upgrade.	Information regarding the status of other EirGrid projects is available via the EirGrid website: https://www.eirgridgroup.com/the-grid/projects/
Stakeholders also commented on the presence of a sewage route from the prison to the M2 southwards.	We have engaged with utility providers, including Uisce Éireann, considering interfaces with other major projects and developments.
Concerns were raised that route options used the M2 motorway and that there is a proposed solar farm close to the M2 flyover.	All route options have been developed to avoid Motorways and any motorway crossings will be undertaken by non-disruptive techniques such as horizontal directional drilling.

Table 7.5: Permits and Wayleaves

Feedback	Project Team response
Stakeholders requested the choice of a route which does not impact their land and noted that Irish Water mains were being built on their land.	Engagement with local communities, including landowners, is ongoing as we develop the design of the proposed route.

7.2 Option A (Red)

7.2.1 Design Complexity

Option A is the shortest route which reduces cable length and the number of joint bays required. This option has the longest stretch of off-road sections which means the interface with private assets is increased. There are 16 crossings which will require open cut methodology which are mainly surface waterbodies. Option A (Red) will require nine major crossings (such as HDD) to cross M3, M2 and M1 motorways as well as M3 parkway railway, high pressure gas main, Greater Dublin Drainage project (sewer) and other high voltage underground cables

The M3 and M3 at the point of crossing are wide and very deep, potentially requiring more complex methods of tunnelling than would be standard.

Option A (Red) has been assigned a score of **Moderate to High**.

Moderate to High

7.2.2 Traffic Disturbance

7.2.2.1 Potential Impacts

As outlined in the Socio-Economic section, it is anticipated that the road closures will be required where the road does not have sufficient width to accommodate live traffic and the works associated with the construction. Any works along this route will be undertaken during normal daytime working hours with no night-time or weekend working, unless in the case of emergencies.

For Option A (Red), it is anticipated that full road closures may be required in parts of the following roads:

- R156
- L5026 Pace
- Unnamed Road (Kinoristown to Nuttstown)
- Kilbride Road
- R121
- R122
- Kilreesk Lane

In other areas of Option A (Red), the road width will be reduced to a minimum of 3.0 meters by the proposed construction works. In these areas it is anticipated that a lane closure may be required, with diversions for HGV vehicles:

- R157
- R147

For all the remaining road sections along Option A (Red), the roads may require lane closures with localized traffic management measures to allow the construction works to be carried out, specifically:

- R108
- Naul Road
- R157
- R147

Table 7.6 provides a high-level summary of the proposed traffic management measures during construction period for Option A (Red). The lengths shown are the lengths of road which will require traffic management including the entire length of any diversions that may be required. As such, the total length impacted is significantly higher than the length of the route option itself. It is recommended that, following selection of the proposed option, a detailed analysis be undertaken with regards to the phasing of road closures.

Table 7.6: Summary of Option A (Red) Traffic Management

Option A (Red)	Total Length (in km)	Lane Closures (in km)	HGV Diversions (in km)	Road Closures (in km)	Field Crossings (in km)
	104.5	7.3	68.1	20.5	8.5

As outlined in the Socio-Economic section, in terms of traffic disturbance, it has been acknowledged that the construction works will impact the private vehicle. A moderate to high-ranking score has been assigned to Option A (Red) based on the level of temporary Traffic Management which is anticipated to be required during the phased construction works. For Option A (Red), full lane or a road closure during the phased

construction works 'with' or 'without' Heavy Goods Vehicles (HGVs), diversions are mostly available while at all times maintaining access for local residents. On this basis, the significance of the traffic disturbance impact is assessed to be low. Where suitable diversions for through traffic are available along the length of the route option, the average installation rate is anticipated to be 80 metres per day, resulting in a minimum timeline of approximately two years to install this option. The exact location of the cable trench will be defined later in the project and this will depend on further design, surveys, consultation, and assessment. Consultations with the local authorities will help to define where the cable trench will go in the road to minimise disruption. For example, if a safe alternative could be provided for access with significant disruption for pedestrians, a footpath could be used to minimise disruption to the road network.

7.2.2.2 Summary of Assessment

This route has the second least length of total road closures required (26.5km) and thus has the second least length of works and second lowest traffic disruption. This would likely also lead to the second lowest length of diversions at c. 68 km.

It will potentially involve three full closures of parts of regional roads, four of local roads.

Moderate-High

7.2.3 Dependence on Other Infrastructure Projects

All route options will have the same dependence on works required at the associated substations in terms of connections. Both Woodland and Belcamp substation are being developed to accommodate a number of connections proposed for several other projects.

In terms of other infrastructure projects in the area, similar crossings of existing motorways are required. All four of the proposed route options will cross the same infrastructure but, in some cases, in different locations. All four route options will cross or run parallel with utilities, including water mains and the low to high pressure gas network. All four routes will have to cross the East West Interconnector HV AC cable to exit Woodland substation. Option A (Red) will utilise the same corridor as the Kildare Meath project from Woodland but it is not envisaged that these cable will cross each other. All four of the proposed route options will cross the proposed Greater Dublin Project and therefore it is not considered a differentiator. Option A (red) runs parallel to the Ballystruan to Forrest Little Metrolink cable route and passes the proposed Forrest Little substation and the Metrolink station by the airport.

Moderate-High

7.2.4 Permits and Wayleaves

Option A includes four key locations where off-road sections may require easements and a wayleave to be agreed with private landowners:

- Approx. 2.7km offroad that could be co-located with Kildare-Meath project,
- Approx. 0.4km at the M3 Parkway Railway station which would require a license from Irish Rail,
- Approx. 2.2km around Hollystown, and;
- Approx. 3.2km east of Dublin Airport.

Whilst this total length of 8.5km is significant (including the potentially joint easement with Kildare-Meath, 5.8km without), recent engagement with landowners has helped to understand the risk of delivering these sections of the overall route.

A 'Road Opening License' is required before construction is allowed to take place in any public highway, footpath or grass verge. Applications must be made to the local authority Road Management Office up to 8 weeks ahead of works being carried out. Impacts related to this are directly correlated with the traffic disturbance impact assessment.

Considering recent engagement with landowners for the sections of the route described above and the requirement for Road Opening Licenses along the full length of the option means that this option is Low-Moderate risk in terms of deliverability of the necessary Permits and wayleaves required.

Low-Moderate

7.2.5 Implementation Timelines

Outside of the categories that have been discussed above, there's no significant difference in the implementation timelines at a high level when comparing all four route options. At a high level the various routes face the same general challenges.

Option A however is the shortest route overall, with the longest off-road sections. It is recognised that the off-road sections will achieve greater output per day in comparison to on-road construction. Accounting for a weighted average of output rates between the off-road and on-road sections shows that the Option A may have the shortest duration of implementation timeline.

It is noted that an increased number of watercourse crossings and increased lengths off road would bring in seasonal constraints with regards to field access, hedge trimmings, watercourse crossings etc., as well as environmental controls which would otherwise be avoided. As such, option A and B would have increased complexity for implementation but this would be balanced by the shorter overall route length and the higher production rate for section off-road.

Option A has therefore been assigned a score of **Moderate (Dark Green)** for this criterion.

Moderate

7.2.6 Combined Deliverability Performance

Considering the design complexity, traffic disturbance, dependence on infrastructure, permits and wayleaves and implementation timelines, a rating of Moderate has been assigned.

Design Complexity	Traffic Disturbance	Dependence on Infrastructure	Permits & Wayleaves	Timelines

The combined performance is Moderate.

Moderate

7.3 Option B (Green)

7.3.1 Design Complexity

Option B is one of the shorter route options, which reduces cable length and the number of joint bays required. There are 14 crossings which will require open cut methodology which are mainly surface waterbodies. Option B (Green) will require nine major crossings (such as HDD) to cross M3, M2 and M1 motorways as well as M3 parkway railway, high pressure gas main, Greater Drainage project and other high voltage underground cables.

Moderate to High

7.3.2 Traffic Disturbance

7.3.2.1 Potential Impacts

As outlined in the Socio-Economic section, it is anticipated that the road closures will be required where the road does not have sufficient width to accommodate live traffic and the works associated with the construction. Any works along this route will be undertaken during normal daytime working hours with no night-time or weekend working, unless in the case of emergencies. For Option B (Green), it is anticipated that the full road closures might be required at the following locations:

- R156
- Unnamed Road (Paddingstown to Kilbride)
- Kilbride Road
- Broughan Lane and Dunsoghly Lane
- R122
- L3132

In other areas of Option B (Green), the road width will be reduced to a minimum of 3.0 meters by the proposed construction works. In these areas it is anticipated that a lane closure may be required, with diversions for HGV vehicles:

- R135

For all the remaining road sections along Option B (Green), the roads may require lane closures with localized traffic management measures to allow the construction works to be carried out, specifically:

- R135
- Naul Road
- R108

Table 7.7 provides a high-level summary of the proposed traffic management measure during construction period for Option B (Green). The lengths shown are the lengths of road which will require traffic management including the entire length of any diversions that may be required. As such, the total length impacted is significantly higher than the length of the route option itself. It is recommended that, following selection of the proposed option, a detailed analysis be undertaken with regards to the phasing of road closures.

Table 7.7: Summary of Option B (Green) Traffic Management

Option B (Green)	Total Length (in km)	Lane Closures (in km)	HGV Diversions (in km)	Road Closures (in km)	Field Crossings (in km)
	102.7	10.4	64.9	21.1	6.3

7.3.2.2 Summary of Assessment

Option B (Green) will potentially involve two full closures of parts of regional roads, four of local roads.

This route has the least length of total road closures required (26 km) and thus has the lowest traffic disruption. This option is likely to have the shortest length of diversions at c. 65 km.

Moderate to High

7.3.3 Dependence on Other Infrastructure Projects

All route options will have the same dependence on works required at the associated substations in terms of connections. Both Woodland and Belcamp substation are being developed to accommodate a number of connections required for several other projects.

In terms of other infrastructure projects in the area, similar crossings of existing motorways are required. All four of the proposed route options will cross the same infrastructure but, in some cases, in different locations. All four route options will cross or run parallel with utilities, including water mains and the low to high pressure gas network. All four routes will have to cross the East West Interconnector HV AC cable to exit Woodland substation. All four of the proposed route options will cross the proposed Greater Dublin Project and therefore it is not considered a differentiator. It is proposed that Options B (Green) will cross the existing M3 parkway railway line with a major crossing (such as HDD). This will require a long crossing and additional studies and shielding to ensure that there are no electro-magnetic forces issues between the East Meath North Dublin project and the electrified railway line. There is a planned solar farm at Ballymacarney but it is assumed that Option B (green) will not cross any underground cable works for this project. Option B (green) runs parallel to the Ballystruan to Forrest Little Metrolink cable route, Forrest Little - Belcamp Metrolink cable and passes the proposed Forrest Little substation and the Metrolink station by the airport.

High

7.3.4 Permits and Wayleaves

Option B includes three key locations where off-road sections may require easements and a wayleave to be agreed with private landowners:

- Approx. 1.9km from Woodland substation,
- Approx. 0.65km around the M3 Parkway Railway Station which would require a license agreement with Irish rail, and;
- Approx. 4.4km east of Dublin Airport.

Whilst this total length of 6.95km is significant, recent engagement with landowners has helped to understand the risk of delivering these sections of the overall route.

A 'Road Opening License' is required before construction is allowed to take place in any public highway, footpath or grass verge. Applications must be made to the local authority Road Management Office up to 8 weeks ahead of works being carried out. Impacts related to this are directly correlated with the traffic disturbance impact assessment.

Considering recent engagement with landowners for the sections of the route described above and the requirement for Road Opening Licenses along the full length of the option means that this option is Moderate-High risk in terms of deliverability of the necessary Permits and wayleaves required.

Moderate-High

7.3.5 Implementation Timelines

Outside of the categories that have been discussed above, there's no significant difference in the implementation timelines at a high level when comparing all four route options. At a high level the various routes face the same general challenges.

Option B however has a shorter route length than Options C and D, albeit with longer off-road sections. It is recognised that the off-road sections will achieve greater output per day in comparison to on-road construction. Accounting for a weighted average of output rates between the off-road and on-road sections shows that the Option B may have a shorter duration of implementation timeline compared to Options C and D.

It is noted that an increased number of watercourse crossings and increased lengths off road would bring in seasonal constraints with regards to field access, hedge trimmings, watercourse crossings etc., as well as environmental controls which would otherwise be avoided. As such, option A and B would have increased complexity for implementation but this would be balanced by the shorter overall route length and the higher production rate for section off-road.

Option B has therefore been assigned a score of **Moderate (Dark Green)** for this criterion.

Moderate

7.3.6 Combined Deliverability Performance

Considering the design complexity, traffic disturbance, dependence on infrastructure, and permits and way leaves, a rating of Moderate to High has been assigned.

Design Complexity	Traffic Disturbance	Dependence on Other Infrastructure	Permits and Wayleaves	Implementation Timelines

The combined performance is Moderate to High.

Moderate to High

7.4 Option C (Yellow)

7.4.1 Design Complexity

Option C (Yellow) is the longest route, which is approximately 18% longer than the shortest route, this will add complexity since more equipment such as joint bays will be required. There are 19 crossings which will require open cut methodology which are mainly surface waterbodies. The crossings through the settlements of Batterstown, Hollystown and Swords will also increase the complexity due to the number of services, access, and dwellings. Option C (Yellow) will require 13 major crossings (such as HDD) to cross M3, M2 and M1 motorways and other high voltage underground cables. This option also crosses a high pressure gas main twice at R121 and R122. Option C (Yellow) also runs in parallel to the planned Forest Little-Belcamp Metrolink HV cable connection from Node VV to Node CCC (Belcamp substation) for 8.6km which will affect constructability and cable ratings.

High

7.4.2 Traffic Disturbance

7.4.2.1 Potential Impacts

As outlined in the Socio-Economic section, it is anticipated that the road closures will be required where the road does not have sufficient width to accommodate live traffic and the works associated with the construction. Any works along this route will be undertaken during normal daytime working hours with no night-time or weekend working, unless in the case of emergencies. For Option C (Yellow), it is anticipated that the full road closures might be required at the following locations:

- L2215
- R154

- L5026 Pace
- Unnamed Road (Kinoristown to Nuttstown)
- Kilbride Road
- R121
- R122
- Kilreesk Lane
- Kilreesk Road
- Killeek Lane
- Cook's Road
- Forest Road
- Stockhole Lane
- Baskin Lane

In other areas of Option C (Yellow), the road width will be reduced to a minimum of 3.0 meters by the proposed construction works. In these areas it is anticipated that a lane closure may be required, with diversions for HGV vehicles:

- Unnamed Road (Nuttstown to Kilbride)

For all the remaining road sections along Option C (Yellow), the roads may require lane closures with localized traffic management measures to allow the construction works to be carried out, specifically:

- R147
- Unnamed Road (Nuttstown to Kilbride)
- R139
- Naul Road
- L2300
- R132
- R107
- R139

Table 7.8 provides a high-level summary of the proposed traffic management measure during construction period for Option C (Yellow). The lengths shown are the lengths of road which will require traffic management including the entire length of any diversions that may be required. As such, the total length impacted is significantly higher than the length of the route option itself. It is recommended that, following selection of the proposed option, a detailed analysis be undertaken with regards to the phasing of road closures.

Table 7.8: Summary of Option C (Yellow) Traffic Management

Option C (Yellow)	Total Length (in km)	Lane Closures (in km)	HGV Diversions (in km)	Road Closures (in km)	Field Crossings (in km)
	144.3	3.8	101.1	37.6	1.8

7.4.2.2 Summary of Assessment

This route has the greatest length of total road closures required (approximately 38km) and thus has the greatest traffic disruption. This route is also likely to require the second longest length of diversions at c.100km. Road closures may include parts of three regional roads and eleven local roads.

High

7.4.3 Dependence on Other Infrastructure Projects

All route options will have the same dependence on works required at the associated substations in terms of connections. Both Woodland and Belcamp substation are being developed to accommodate a number of connections being proposed including for the Kildare Meath Grid Upgrade Project, the North South Interconnector (Woodland only) and new transmission connections into Belcamp from Finglas and Shellybank substations.

In terms of other infrastructure projects in the area, similar crossings of existing motorways are required. All four of the proposed route options will cross the same infrastructure but, in some cases, in different locations. All four route options will cross or run parallel with utilities, including water mains and the low to high pressure gas network. All four routes will have to cross the East West Interconnector HV AC cable to exit Woodland substation. All four of the proposed route options will cross the proposed Greater Dublin Project and therefore it is not considered a differentiator. Option C (Yellow) also runs in parallel to the planned Forest Little-Belcamp Metrolink HV cable connection from Node VV to Node CCC (Belcamp substation), and in parallel with the proposed NISA underground high voltage cable in R107/Malahide Road.

High

7.4.4 Permits and Wayleaves

Option C includes two key locations where off-road sections may require easements and a wayleave to be agreed with private landowners:

- Approx. 1.9km out of Woodlands, and;
- Approx. 0.2km around Belcamp.

Whilst this total length of 2.1km is not as significant as the other route options, recent engagement with landowners has helped to understand the risk of delivering these sections of the overall route.

A 'Road Opening License' is required before construction is allowed to take place in any public highway, footpath or grass verge. Applications must be made to the local authority Road Management Office up to 8 weeks ahead of works being carried out. Impacts related to this are directly correlated with the traffic disturbance impact assessment.

Considering recent engagement with landowners for the sections of the route described above and the requirement for Road Opening Licenses along the full length of the option means that this option is Moderate-High risk in terms of deliverability of the necessary Permits and wayleaves required.

Moderate to High

7.4.5 Implementation Timelines

Outside of the categories that have been discussed above, there's no significant difference in the implementation timelines at a high level when comparing all four route options. At a high level the various routes face the same general challenges.

Option C however has a longer route length than Options A and B but has the shortest overall length of off-road sections. It is recognised that the off-road sections will achieve greater output per day in comparison to on-road construction. Accounting for a weighted average of output rates between the off-road and on-road sections shows that the Option C may have a longer duration of implementation timeline compared to Options A and B.

It is noted that an increased number of watercourse crossings and increased lengths off road would bring in seasonal constraints with regards to field access, hedge trimmings, watercourse crossings etc., as well as environmental controls which would otherwise be avoided. As such, Option C would have reduced complexity

for implementation but this would be balanced by the longer overall route length and the lower production rate for sections on-road.

Option C has therefore been assigned a score of **Moderate (Dark Green)** for this criterion.

Moderate

7.4.6 Combined Deliverability Performance

Considering the design complexity, traffic disturbance, dependence on infrastructure, and permits and wayleaves, a rating of Moderate to High has been assigned.

Design Complexity	Traffic Disturbance	Dependence on Infrastructure	Permits & Wayleaves	Implementation Timelines

The combined performance is Moderate to High.

Moderate to High

7.5 Option D (Blue)

7.5.1 Design Complexity

Option D (Blue) is the second longest route, which increases the cable lengths and amount of equipment required. There are 21 crossings which will require open cut methodology which are mainly surface water bodies. Option D (Blue) will require six major crossings (such as HDD) to cross M3, M2 and M1 motorways as well as the Greater Drainage project and other high voltage underground cables. This option also crosses a high pressure gas main twice at R121 and R122. The route through the settlement of Hollystown will also increase the complexity due to the number of services, access, and dwellings. Option D (Blue) has an off-road section round Kilbride which will reduce the number of watercourse and utility crossings required. The section near Roslin Food Park is a narrow road with multiple water mains crossings; this will require a road closure which increases complexity. Option D (Blue) runs in parallel to the planned Forest Little-Belcamp Metrolink HV cable connection from Node UU to Node WW for 2km which will affect constructability and cable ratings. There is also a planned aviation fuel pipe in Stockhole lane which may affect feasibility of going in the road in this section.

High

7.5.2 Traffic Disturbance

7.5.2.1 Potential Impacts

As outlined in the Socio-Economic section, it is anticipated that the road closures will be required where the road does not have sufficient width to accommodate live traffic and the works associated with the construction. Any works along this route will be undertaken during normal daytime working hours with no night-time or weekend working, unless in the case of emergencies. For Option D (Blue), it is anticipated that the full road closures might be required at the following locations:

- R156
- R154
- L5026 Pace

- Unnamed Road (Kinoristown to Nuttstown)
- Kilbride Road
- R121
- R122
- Kilreesk Lane
- Kilreesk Road
- Killeek Lane
- Cook's Road
- Stockhole Lane and Clonshaugh Road

In other areas of Option D (Blue), the road width will be reduced to a minimum of 3.0 meters by the proposed construction works. In these areas it is anticipated that a lane closure may be required, with diversions for HGV vehicles:

- Unnamed Road (Nuttstown to Kilbride)
- Kilreesk Lane

For all the remaining road sections along Option D (Blue), the roads may require lane closures with localized traffic management measures to allow the construction works to be carried out, specifically:

- R147
- Unnamed Road (Nuttstown to Kilbride)
- R139
- Naul Road

Table 7.9 provides a high-level summary of the proposed traffic management measure during construction period for Option D (Blue). It is recommended that, following selection of the proposed option, a detailed analysis be undertaken with regards to the phasing of road closures.

Table 7.9: Summary of Option D (Blue) Traffic Management

Option D (Blue)	Total Length (in km)	Lane Closures (in km)	HGV Diversions (in km)	Road Closures (in km)	Field Crossings (in km)
	146	4.3	105.8	31.6	4.2

7.5.2.2 Summary of Assessment

Option D (Blue) is the second longest of the route options although with the lowest percentage of the route on regional roads (35%). Additionally, this route does have the second highest percentage of the route on-road (89%) and the second greatest number of residential properties within 50m (350). This route also impacts the second most number of significant junctions as well as the second largest amount of narrow roads without hard shoulder, requiring a high amount of full road closures.

It will potentially involve the closure of parts of four regional roads and seven local roads. It is a Moderate to High risk of potential impacts.

High

7.5.3 Dependence on Other Infrastructure Projects

All route options will have the same dependence on works required at the associated substations in terms of connections. In terms of other infrastructure projects in the area, similar crossings of existing motorways are required. All four of the proposed route options will cross the same infrastructure but, in some cases, in

different locations. All four route options will cross or run parallel with utilities, including water mains and the low to high pressure gas network. All four routes will have to cross the East West Interconnector HV AC cable to exit Woodland substation. Option D (Blue) will utilise the same corridor as the Kildare Meath project from Woodland but it is not envisaged that these cables will cross each other. All four of the proposed route options will cross the proposed Greater Dublin Project and therefore it is not considered a differentiator. Option D (Blue) runs in parallel to the planned Forest Little-Belcamp Metrolink HV cable connection from Node UU to Node WW for 2km and in parallel with a planned aviation fuel pipe in Stockhole Lane. There is a planned solar farm at Vesington but it is assumed that Option D (Blue) will not cross any underground cable works for this project.

Moderate to High

7.5.4 Permits and Wayleaves

Option D includes two key locations where off-road sections may require easements and a wayleave to be agreed with private landowners:

- Approx. 2.7km offroad that could be co-located with Kildare-Meath project, and;
- Approx. 0.2km at Belcamp substation.

Whilst this total length of 2.9km is significant (including the potentially joint easement with Kildare-Meath, 0.2km without), recent engagement with landowners has helped to understand the risk of delivering these sections of the overall route.

A 'Road Opening License' is required before construction is allowed to take place in any public highway, footpath or grass verge. Applications must be made to the local authority Road Management Office up to 8 weeks ahead of works being carried out. Impacts related to this are directly correlated with the traffic disturbance impact assessment.

Considering recent engagement with landowners for the sections of the route described above and the requirement for Road Opening Licenses along the full length of the option means that this option is Low-Moderate risk in terms of deliverability of the necessary Permits and wayleaves required.

Low-Moderate

7.5.5 Implementation Timelines

Outside of the categories that have been discussed above, there's no significant difference in the implementation timelines at a high level when comparing all four route options. At a high level the various routes face the same general challenges.

Option D however has a longer route length than Options A and B, but has a shorter length of off-road sections. It is recognised that the off-road sections will achieve greater output per day in comparison to on-road construction. Accounting for a weighted average of output rates between the off-road and on-road sections shows that the Option D may have a longer duration of implementation timeline compared to Options A and B.

It is noted that an increased number of watercourse crossings and increased lengths off road would bring in seasonal constraints with regards to field access, hedge trimmings, watercourse crossings etc., as well as environmental controls which would otherwise be avoided. As such, Option D would have reduced complexity for implementation but this would be balanced by the longer overall route length and the lower production rate for sections on-road.

Option D has therefore been assigned a score of **Moderate (Dark Green)** for this criterion.

Moderate

7.5.6 Combined Deliverability Performance

Considering the design complexity, traffic disturbance and dependence on infrastructure a rating of Moderate to High has been assigned.

Design Complexity	Traffic Disturbance	Dependence on Infrastructure	Permits & Wayleaves	Timelines

The combined performance is Moderate to High.

Moderate to High

8. Economic

For all route options, given the routes will be crossing developed areas, at this stage it is not possible to consider a number of factors influencing costs (i.e. complexity of the crossings, land purchase for the crossings). The assessment remains a high-level indication based on 2 parameters as there is insufficient information or developed work to make a more detailed assessment at this stage.

As set out in Section 2.4.5, the topic areas under consideration to assist with determining the best route option are as follows:

- Length of installed cable;
- Quantity of Minor and Major service crossings; and
- Number of Major Crossings (such as Horizontal Directional Drills).

8.1 Feedback

Feedback from the public consultation was received for the subtopic 'length of installed cable'. This feedback, accompanied by a response from the project team, is summarised below.

Table 8.1: Feedback regarding Length of installed cable

Public Consultation Feedback	Project Team response
Concerns expressed about the potential impact of Option C on local communities and the cost of Option C due to its length.	The length of installed cable has been considered as part of the evaluation of the economic impact of Route Options as presented in this chapter of the report.
Concern about the length of Option D compared to the other routes.	
Support for Option B because it is shorter than Options C and D and is near the airport. Praise for Option B as the second best option after Option A.	
Concern about the length of Option D compared to the other routes.	

8.2 Option A (Red)

For Option A (Red), which is the shortest route with amongst the lowest number of crossings, the economic assessment concludes that there is a low to moderate risk in relation to the quantity of cable required and a low risk in terms of number of nature of the crossings required. Overall this leads to a combined economic performance that is low risk.

Cable Quantity	Crossings Quantity	Combined Economic
Low-Moderate	Low	Low

8.3 Option B (Green)

For Option B (Green), which is one of the shortest routes with amongst the lowest number of crossings, the economic assessment concludes that there is a low to moderate risk in relation to the quantity of cable required and a low risk in terms of number of nature of the crossings required. Overall this leads to a combined economic performance that is Low risk.

Cable Quantity	Crossings Quantity	Combined Economic
Low-Moderate	Low	Low

8.4 Option C (Yellow)

For Option C (Yellow), which is the longest route with the greatest number of crossings, the economic assessment concludes that there is a moderate risk in relation to the quantity of cable required and a Moderate to High risk in terms of number of nature of the crossings required. Overall this leads to a combined economic performance that is Moderate-High risk.

Cable Quantity	Crossings Quantity	Combined Economic
Moderate	Moderate-High	Moderate-High

8.5 Option D (Blue)

For Option D (Blue), which is the second longest route with the second greatest number of crossings, the economic assessment concludes that there is a moderate risk in relation to the quantity of cable required and a Moderate risk in terms of number and nature of the crossings required. Overall this leads to a combined economic performance that is Moderate risk.

Cable Quantity	Crossings Quantity	Combined Economic
Moderate	Moderate	Moderate

9. Summary and Recommendation

9.1 Environment Assessment

Table 9.1 below summarises the findings of the environmental assessment for each of the options. For more detail on how each individual option was appraised, please see Sections 5.2 to 5.5 respectively.

The option with the highest potential environment impacts is Option C (Yellow) which has been scored as Moderate risk due to Land Use Planning and Cultural Heritage impacts. Between Options A (Red), B (Green) and D (Blue), Option A has three environmental topics with a score of Moderate, Option B has one Moderate and one Moderate-High score, and Option D (Blue) has only two Moderate scores due to its shorter lengths of off-road sections. Overall, Option D is the emerging best performing option from an environmental perspective.

Table 9.1: Summary of Environmental Assessment for Options

Option	Biodiversity	Soils & Geology	Surface Water & Flood Risk	Planning Policy and Land Use	Landscape	Archaeology, Architectural Heritage, & Cultural Heritage	Noise & Vibration	Air Quality	Combined Environment Score
A	Moderate	Low-Moderate	Moderate	Low-Moderate	Low	Moderate	Low-Moderate	Low-Moderate	Low-Moderate
B	Low-Moderate	Low-Moderate	Moderate	Low-Moderate	Low	Moderate-High	Low-Moderate	Low-Moderate	Low-Moderate
C	Moderate	Low-Moderate	Moderate	Moderate-High	Low	Moderate-High	Moderate	Moderate	Moderate
D	Low-Moderate	Low-Moderate	Moderate	Moderate	Low	Low-Moderate	Low-Moderate	Low-Moderate	Low-Moderate

9.2 Socio-economic Assessment

From a socio-economic perspective, Options C (Yellow) and D (Blue) have the highest level of potential social impacts as they are longer routes with the greatest proportion of on-road sections.

Option A (Red) and Option B (Green) have the same overall level of potential social impacts; however Option A (Red) has a lower potential impact on Utilities so has the lowest level of potential social impacts overall. Option A is the emerging best performing option considering socio-economic factors.

Table 9.2: Summary of Socio-economic Assessment of Options

Option	Traffic and Transport	Amenity	Health	Employment and Economy (and Tourism)	Land Use (and Land-take)	Agriculture (including Equine)	Utilities	Combined Socio-economic Score
A	Moderate-High	Moderate	Low-Moderate	Low	Low	Low-Moderate	Low-Moderate	Low-Moderate
B	Moderate-High	Moderate	Low-Moderate	Low	Low	Low-Moderate	Moderate	Low-Moderate
C	High	High	Moderate	Low	Low	Low	High	Moderate
D	Moderate-High	Moderate	Low-Moderate	Low	Low	Low-Moderate	Moderate-High	Moderate

9.3 Technical Assessment

At this stage in the Proposed Development there are no technical differentiations. Other technical factors identified at later stages will have no impact on the selection of the Best Performing Option. Outlined below are the findings of the technical appraisal of each of the options.

Table 9.3: Summary of Technical Assessment of Options

Option	General Compliance	Headroom	Maintainability	Technology Operational Risk	Average Reliability Rates	Repeatability	Combined Technical Score
A	Low	Low	Low	Low	Low	Low	Low
B	Low	Low	Low	Low	Low	Low	Low
C	Low	Low	Low	Low	Low	Low	Low
D	Low	Low	Low	Low	Low	Low	Low

9.4 Deliverability Assessment

Options B (Green), C (Yellow) and D (Blue) all have an overall combined deliverability score of Moderate to High impact. However, Option C (Yellow) has three incidences of high risk, Option D (Blue) has two and Option B (Green) has one. Option C (Yellow) is the worst performing option.

Option A (Red) has no High impact criteria and a Moderate deliverability impact rating overall as compared to the Moderate to High overall rating assigned to the other route options. Option A (Red) has the largest amount of off-road sections which results in less traffic disturbance than some other options. In addition, while this also means that it will affect the largest number of landowners, landowner support is positive around the relevant sections.

Option A (Red) is therefore the emerging best performing option considering deliverability factors.

Table 9.4: Summary of Deliverability Assessment of Options

Option	Design complexity	Traffic disturbance	Dependence on other infrastructure projects	Permits and wayleaves	Implementation Timelines	Combined Deliverability Score
A	Moderate-High	Moderate-High	Moderate-High	Low-Moderate	Moderate	Moderate
B	Moderate-High	Moderate-High	High	Moderate-High	Moderate	Moderate-High
C	High	High	High	Moderate-High	Moderate	Moderate-High
D	High	High	Moderate-High	Low-Moderate	Moderate	Moderate-High

9.5 Economic Assessment

The economic assessment at this stage of the evolution of the Proposed Development is based only on the length of a route option and the number and complexity of any crossings. Option C (Yellow) is the longest route and has a larger number of crossings, and therefore has the highest potential impact. Options A (Red) and B (Green) have a relatively low number of crossings and both have a combined economic score of Low. Option A (Red) is also the shortest route and is therefore the emerging best performing option considering economic factors.

Table 9.5: Summary of Economic Assessment of Options

Option	Cable Quantity	Crossings Quantity	Combined Economic
A	Low-Moderate	Low	Low
B	Low-Moderate	Low	Low
C	Moderate	Moderate-High	Moderate-High
D	Moderate	Moderate	Moderate

9.6 Overall Summary of End-to-End Assessment

It is determined that Option A (Red) is selected as the Emerging Best Performing Option. This is due to several factors including its lowest combined impact across all topic areas compared to the other options (Table 9.6 below).

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 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, consultation, design, and assessment work will be undertaken to reduce or avoid these impacts.

Table 9.6: Summary of Options Assessment

Option	Environment Score	Socio-economic Score	Technical Score	Deliverability Score	Economic Score
Option A (Red)	Low-Moderate	Low-Moderate	Low	Moderate	Low
Option B (Green)	Low-Moderate	Low-Moderate	Low	Moderate-High	Low
Option C (Yellow)	Moderate	Moderate	Low	Moderate-High	Moderate-High
Option D (Blue)	Low-Moderate	Moderate	Low	Moderate-High	Moderate

9.7 Next Steps

The following actions will be completed on the Proposed Development:

- This Step 4A report will be published and any further feedback on the Emerging Best Performing Option (Option A (Red)) will be considered by the project team and amendments will be made where it is considered appropriate (feeding into Step 4B report referenced below);
- EirGrid will continue to engage with key stakeholders to discuss the Proposed Development. Further meetings will be held with affected landowners in addition to bodies such as Meath and Fingal County Councils, TII, Irish Rail, Waterways Ireland, and the utility providers such as Uisce Éireann and Gas Networks Ireland;
- The project team will undertake a wide range of surveys for the Emerging Best Performing Option to help to refine the design and location of the proposed cable. This will also include designing how the cable will be constructed and how traffic disturbance will be minimised through traffic management. The surveys include archaeology, ecology, agriculture, ground investigations, utilities surveys, hydrology, technical assessments, etc.
- Development of the route design will be progressed at 'refinement areas' including the off-road sections, motorway crossings and the sections of the route on approach to the substations. The surveys will inform the process and may also result in other minor changes to the route shown in this report. This is a normal part of the design process – as further information is gathered, new issues can be identified resulting in changes to the route. If large scale changes are required, then the assessment will be remade, and further consultation will be undertaken;
- Further design work will be progressed at the substations to determine the works required to connect the proposed cable into the grid;
- When the proposed cable route and design have been progressed further, a subsequent report called the Step 4B report will be published on the project website. This is anticipated to be during Autumn 2023.
- Following that, the project team will prepare the planning submission for the Proposed Development. Further updates will be published by EirGrid on the project website: <https://www.eirgridgroup.com/the-grid/projects/cp1021/the-project/>

Appendix A – Biodiversity (Flora and Fauna) Figures

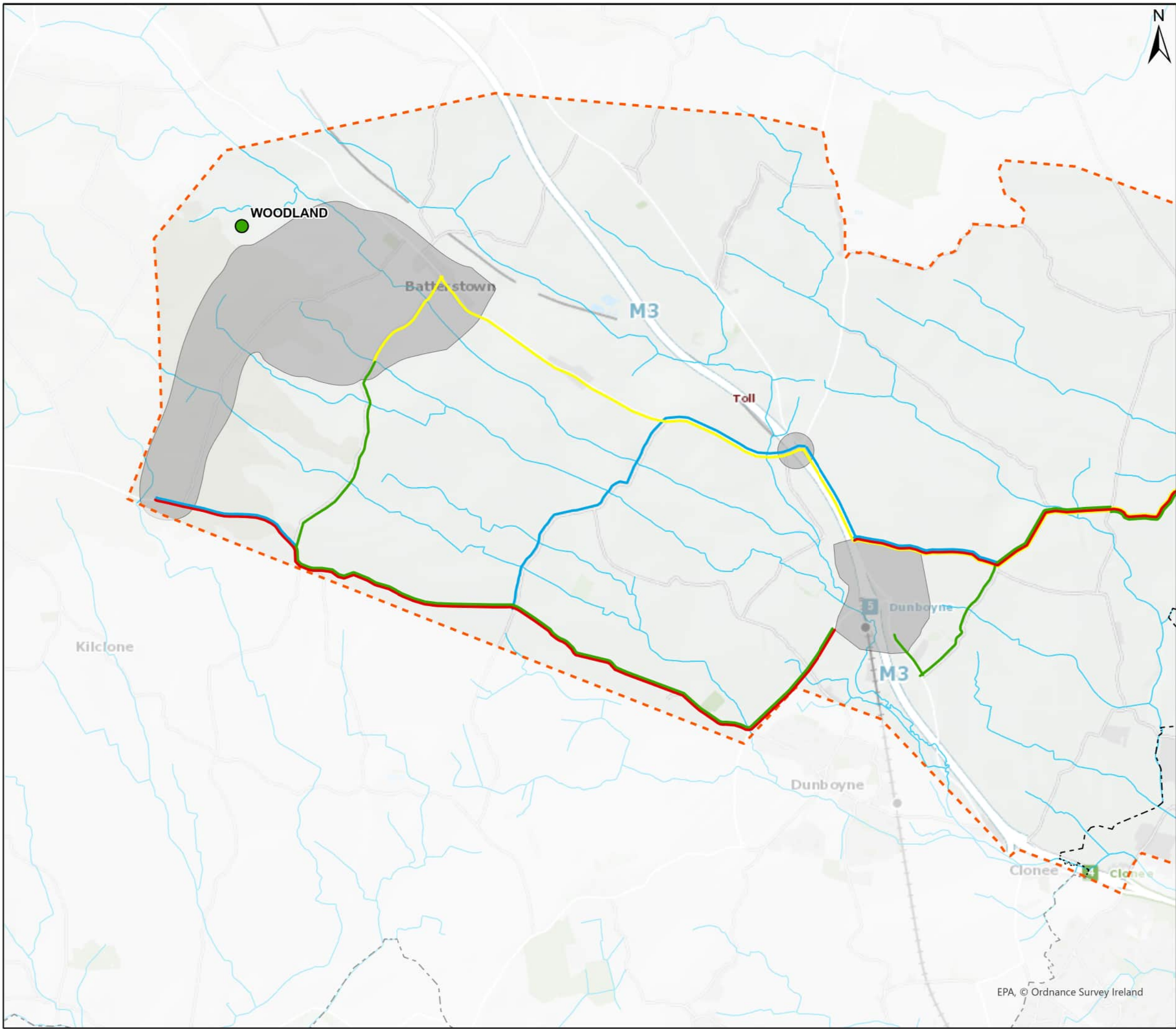


FIGURE A.1

- Legend
- Step 4A Study Area
 - County Boundary
 - 400kV Substation
 - Proposed Cable Route - Option A (Red)*
 - Proposed Cable Route - Option B (Green)*
 - Proposed Cable Route - Option C (Yellow)*
 - Proposed Cable Route - Option D (Blue)*
 - Off-Road Options Being Explored*
 - Watercourse (EPA)



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

Jacobs

Client

EIRGRID

Project

CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title

Biodiversity
Sheet 1 of 3

Drawing Status

FINAL

Scale @ A3

1:40,000

DO NOT SCALE

OSI Sheet No.

Jacobs No.

8321084AJ

Drawing No.

321084AJ-MAP-S4A-A.1

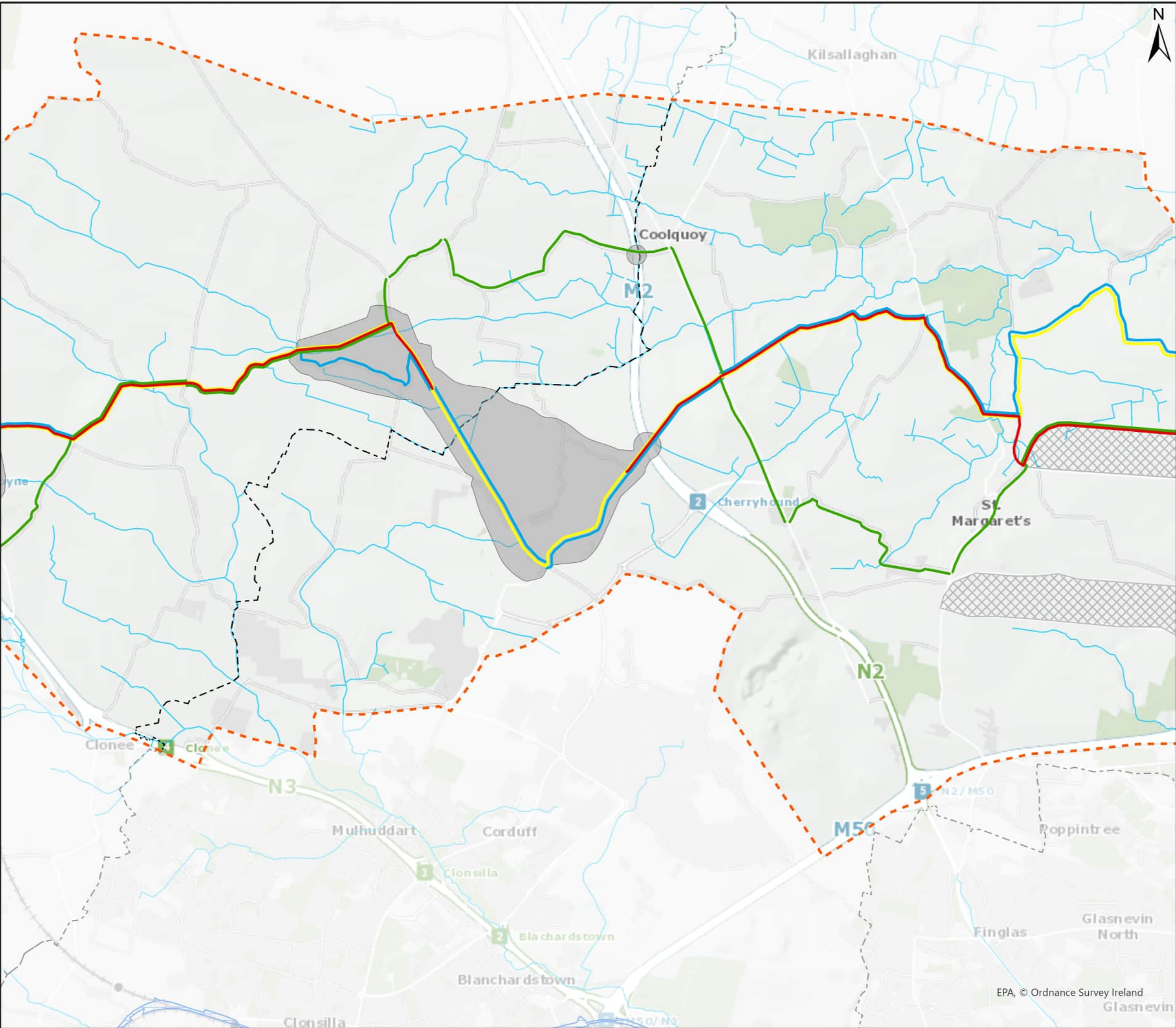


FIGURE A.1

- Legend
- Step 4A Study Area
 - Exclusion Zone
 - County Boundary
 - Proposed Cable Route - Option A (Red)*
 - Proposed Cable Route - Option B (Green)*
 - Proposed Cable Route - Option C (Yellow)*
 - Proposed Cable Route - Option D (Blue)*
 - Off-Road Options Being Explored*
 - Proposed Natural Heritage Areas
 - Watercourse (EPA)



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Sheet 2 of 3

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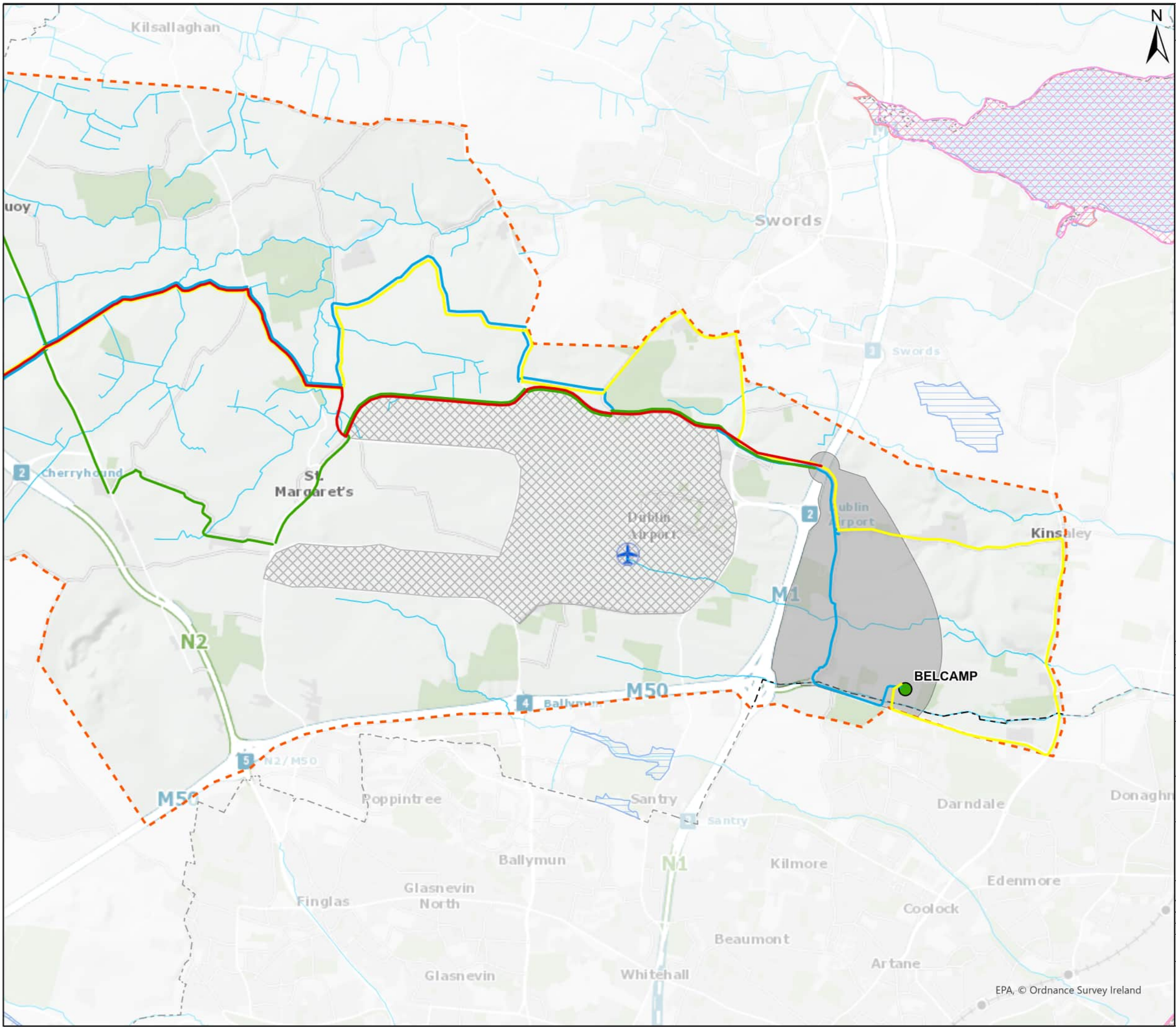


FIGURE A.1

- Legend
- Step 4A Study Area
 - Exclusion Zone
 - County Boundary
 - 220kV Substation
 - Proposed Cable Route - Option A (Red)*
 - Proposed Cable Route - Option B (Green)*
 - Proposed Cable Route - Option C (Yellow)*
 - Proposed Cable Route - Option D (Blue)*
 - Off-Road Options Being Explored*
 - Special Protection Areas
 - Special Area of Conservation
 - Proposed Natural Heritage Areas
 - Watercourse (EPA)



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Jacobs

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CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title

Biodiversity
Sheet 3 of 3

Drawing Status

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Scale @ A3

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Appendix B – Archaeology, Architectural Heritage and Cultural Heritage



CP1021: East Meath to North Dublin Grid Upgrade

Step 4A Archaeology, Architectural Heritage, and Cultural Heritage Baseline Information

321084AJ-REP-017 | R01

February 2023

EirGrid



CP1021 East Meath - North Dublin Grid Upgrade

Project No: 321084AJ
Document Title: Step 4A Archaeology, Architectural Heritage, and Cultural Heritage Baseline Information
Document No.: 321084AJ-REP-017
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Project Manager: Gregor Simpson
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Revision	Date	Description	Author	Checked	Reviewed	Approved
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Annex A. Inventory of Archaeology, Architectural Heritage and Cultural Heritage Constraints

Annex B. Archaeology, Architectural Heritage and Cultural Heritage Figures

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- B.1.2: Architectural Constraints
- B.1.3: Gardens and Designated Landscapes
- B.1.4: Non-Designated Cultural Heritage Sites

1. Introduction

This report presents the baseline information gathered for the archaeology, architectural heritage and cultural heritage constraints identified within the study areas for each of the four route options (Option A (Red), Option B (Green), Option C (Yellow), and Option D (Blue); see Section 2.2) identified for the CP1021: East Meath to North Dublin Grid Upgrade project (the 'Proposed Project'). The purpose of the report is to support the archaeology, architectural heritage and cultural heritage input into the Step 4A Report - Analysis of the Route Options for the Proposed Project (321084AJ-REP-017).

In line with the guidance provided by *Cultural Heritage Guidelines for Electricity Transmission Projects* (EirGrid, 2015), cultural heritage has been assessed under the following topics:

- Archaeology - defined as *'the study of past societies through the material remains left by those societies and the evidence of their environment. The 'archaeological heritage' consists of such material remains (whether in the form of sites and monuments or artefacts in the sense of moveable objects) and environmental evidence'* (EirGrid, 2015, page 5).
- Architectural Heritage - comprising *'all structures and buildings (together with their settings and attendant grounds, fixtures and fittings, groups of such structures and buildings and sites), which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Architectural heritage is generally visible and has a presence in the landscape which requires assessment'* (EirGrid, 2015, page 6).
- Cultural Heritage - defined as *'a general term used to describe aspects of the environment and intangible heritage which are valued for their age, beauty, history or tradition. It encompasses aspects of archaeology, architecture, history, landscape and garden design, folklore and tradition and topography. Cultural heritage is expressed in the physical landscape in numerous often interrelated ways'* (EirGrid, 2015, page 6).

Section 2 of this report provides the methodology, including the legislative background and sources of information, used to identify archaeology, architectural heritage and cultural heritage constraints within the study areas for each of the four route options identified for the Proposed Project. Section 3 describes the archaeology, architectural heritage and cultural heritage within the study areas for the four route options. An Inventory of Archaeology, Architectural Heritage and Cultural Heritage Constraints is provided in Annex A. Figures showing the locations of the archaeology, architectural heritage and cultural heritage constraints are presented in Annex B.

2. Methodology

2.1 Legislation and Guidance

This report was informed by the following legislation and best practice guidance:

- National Monuments Act 1930 to 2014;
- European Cultural Convention 1954;
- International Council on Monuments and Sites (ICOMOS) International Charter for the Conservation and Restoration of Monuments and Sites 1964;
- United Nations Educational, Scientific and Cultural Organisation (UNESCO) Convention Concerning the Protection of the World Cultural and Natural Heritage 1972;
- Convention for the Protection of the Architectural Heritage of Europe (Granada, 1985);
- Convention for the Protection of the Archaeological Heritage of Europe (revised) (Valletta, 1992);
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999;
- Framework and Principles for the Protection of the Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and Islands (now Department of Culture, Heritage and Gaeltacht), 1999);
- Planning and Development Act 2000 to 2020;
- Convention on the Value of Cultural Heritage for Society (Faro Convention, 2005);
- Code of Practice between the Department of the Environment, Heritage and Local Government and EirGrid (Department of the Environment, Heritage and Local Government and EirGrid, 2009);
- Architectural Heritage Protection Guidelines for Planning Authorities (Department of Arts Heritage and the Gaeltacht, 2011); and
- Cultural Heritage Guidelines for Electricity Transmission Projects (EirGrid, 2015).

Archaeological sites and monuments are protected under the National Monument Act 1930 – 2014 primarily through inclusion in the Record of Monument and Places (RMP), the Register of Historic Monuments (RHM) and/or by being declared a National Monument. Section 2 of the National Monument Act 1930 - 2014 defines a National Monument as '*a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic, or archaeological interest attaching thereto*'. In addition, Section 8 of the Act states that the Minister may also place a Preservation Order on a monument '*which in his [the minister's] opinion is a national monument is in danger of being or is actually being destroyed, injured, or removed, or is falling into decay through neglect*'. It is illegal to demolish, or remove wholly or in part, a National Monument or disturb the ground within, around or in proximity to a National Monument, without written consent from the Minister (and/or the local authority if they are the owners or guardians).

Under Section 5 of the National Monuments (Amendment) Act 1987, an RHM is required to be established and maintained. Monuments included on the RHM are afforded statutory protection under this Act, of a similar level to Recorded Monuments (see below).

Section 12 (1) of the National Monuments (Amendment) Act 1994 requires the establishment and maintenance of an RMP. Sites included in the RMP are legally protected and are referred to as Recorded Monuments. The RMP is maintained by the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage who have defined Zones of Notification around each Recorded Monument. Zones of Notification do not

define the extent of a site but are defined for the purposes of notification to the Minister under Section 12 of the National Monuments Act (1930-2004).

The Sites and Monuments Record (SMR) is the national database of the Archaeological Survey of Ireland (ASI) compiled and maintained by the NMS. The SMR details all sites where a monument is known to the ASI pre-dating AD 1700 and includes a selection of monuments from the post-AD 1700 period. The addition of a monument to the SMR does not, in itself, confer legal protection.

The Planning and Development Act 2000 sets out the conditions relating to the protection of architectural heritage. Structures of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest are protected under this Act, through their inclusion on the Record of Protected Structures (RPS) and are known as Protected Structures.

The Planning and Development Act 2000 as amended defines an Architectural Conservation Area (ACA) as '*a place, area, group of structures or townscape, taking account of building lines and heights, that:*

- a) *is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or*
- b) *contributes to the appreciation of protected structures'* (Planning and Development Act, 2000, Part IV, Chapter II).

Development plans are required to include an objective to preserve the character of an ACA. In considering applications for permission for development within an ACA, the effect of a Proposed Project on the character of an ACA is a consideration for the planning authority. Both the Meath County Development Plan 2021 – 2027 (Meath County Council, 2021) and Fingal Development Plan 2017 – 2023 (Fingal County Council, 2017) include a list of ACAs protected under the Act.

Undertaken under the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 the National Inventory of Architectural Heritage (NIAH) is a nationwide survey of architectural heritage including buildings, structures, and historic gardens and design landscapes. Inclusion on the NIAH alone does not in itself confer legal protection. The NIAH includes an assessment of the significance of structures based on an appraisal of their contribution to architectural heritage. Significance ratings are: International, National, Regional, Local and Record Only. Structures which are considered of International, National, and Regional significance are recommended by the Minister to the relevant Local Authority for inclusion in their RPS (Department of Culture, Heritage and the Gaeltacht, 2021).

The Survey of Historic Gardens and Designed Landscapes, undertaken by the NIAH, includes the sites of demesne lands from First Edition Ordnance Survey maps and assesses the level of survival and change. These gardens and designed landscapes (GDLs) largely date from the post-medieval period when the lands surrounding large houses assumed an increasingly ornamental role providing a landscape setting for the house.

2.2 Study Areas

A description of each of the route options is provided in Section 4.2 of the Step 4A Report.

In order to identify and quantify the archaeology, architectural heritage and cultural heritage constraints that may be impacted by the route options, including indirect impacts, individual study areas for each route option were used. The study area for each route option comprised the alignment of the online sections of each route option plus a 100m buffer and the off-road focus areas for consideration for that route (see Section 2.3.1.6 of the Step 4A Report and Figures in Annex B).

These study areas were considered sufficient to identify impacts on archaeology, architectural heritage and cultural heritage constraints given any direct impacts would largely result from the excavation for the cable trench and would be focussed on the alignment of the route option within the online sections and off-road focus areas. Any indirect impacts are anticipated to be temporary (lasting the duration of construction in each location) as the Proposed Project would be largely located beneath road surfaces and offline sections would be reinstated after construction, localised along the wayleave corridor, and are not anticipated beyond these study areas.

2.3 Sources of Information

Baseline conditions for archaeology, architectural heritage and cultural heritage were established through desk-based research using the following sources of information:

- The archaeological and architectural features reviewed as part of the CP1021 Environmental Constraints Report (Jacobs, 2022);
- The list of National Monuments in State Care Ownership and Guardianship for County Meath¹ and Dublin² published in 2009 for information on National Monuments;
- List of Preservation Orders held by the National Monuments Service³, published in 2019 for information on monuments that have a Preservation Order placed on them;
- The RHM for County Meath⁴;
- The maps and manuals of the RMP for County Meath (1996) and Dublin (1998) to identify Recorded Monuments⁵;
- Data downloaded from the SMR⁶ to identify sites and monuments, and zones, recorded by the Archaeological Survey of Ireland;
- Data from the Record of Protected Structures from Meath County Council and Fingal County Council^{7,8};
- Data downloaded from the NIAH survey⁹;
- Meath County Council and Fingal County Council websites for information on ACAs^{10,11};
- Data from the Survey of Historic Gardens and Designed Landscapes on the NIAH website to identify gardens and designed landscapes recorded by the NIAH;
- Topographical files of the National Museum of Ireland through the online National Museum of Ireland: Finds Database (up to 2010) available online¹²;
- The results of previous excavations recorded by the Database of Irish Excavations Reports¹³ and TII's Digital Heritage Collection available online in the Digital Repository of Ireland¹⁴;

¹ <https://www.archaeology.ie/sites/default/files/media/pdf/monuments-in-state-care-meath.pdf>.

² <https://www.archaeology.ie/sites/default/files/media/pdf/monuments-in-state-care-dublin.pdf>.

³ <https://www.archaeology.ie/sites/default/files/media/publications/po19v1-all-counties.pdf>.

⁴ <https://consult.meath.ie/en/consultation/meath-draft-county-development-plan/chapter/a09-national-monuments-state-care-register-historic-monuments>.

⁵ <https://www.archaeology.ie/publications-forms-legislation/record-of-monuments-and-places>.

⁶ <https://maps.archaeology.ie/HistoricEnvironment/>.

⁷ <https://consult.meath.ie/en/system/files/materials/7447/Appendix%20%20-%20Record%20of%20Protected%20Structures.pdf>.

⁸ https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf.

⁹ <https://www.buildingsofireland.ie/>.

¹⁰ <https://www.meath.ie/council/council-services/planning-and-building/architectural-conservation-and-heritage/architectural-conservation-areas>.

¹¹ <https://www.fingal.ie/fingal-architectural-conservation-areas-aca>.

¹² <http://heritagemaps.ie/>.

¹³ <https://excavations.ie/>.

¹⁴ <https://repository.dri.ie/catalog/v9807h80j>.

- Placename information available online¹⁵;
- The National Folklore Collection, including information from the Schools' Collection (1937–38), via the UCD digital library available online¹⁶;
- Historic mapping available online, including Historic Ordnance Survey mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) to identify cultural heritage constraints within the study areas for each of the four route options; and
- Aerial imagery, including Google, and OSi Digital Globe.

Some archaeology, architectural heritage and cultural heritage constraints are entered separately on one or more datasets. Where constraints appear on more than one dataset these have been deconflicted to avoid double counting of constraints with its designation (or more significant designation) taking precedence as it affords the constraint legal protection. Where a constraint does appear on more than one dataset, this has been identified in Section 3 and Annex A (Inventory of Archaeology, Architectural Heritage and Cultural Heritage Constraints).

In addition to a review of sources of recorded archaeological and architectural features identified as part of the Environmental Constraints Report (321084AJ-REP-009), cultural heritage constraints within the study areas for each of the four route options were recorded, mapped and assessed through desk-based research using the sources identified above. Information from these sources has been incorporated into Section 3 and in the Inventory of Archaeology, Architectural Heritage and Cultural Heritage Constraints (Annex A). Additional cultural heritage sites identified from these sources are also described in Sections 3.1.3, 3.2.3, 3.3.3, and 3.4.3. Cultural heritage will be looked into in more detail, including verifying the results of the desk study through field survey, at a later stage of the Proposed Project.

A unique reference number was assigned to each constraint identified from the sources listed above. Archaeological constraints are prefixed with 'AY' and architectural heritage constraints are prefixed with 'AH'. Demesne lands are prefixed with 'DL' and undesignated cultural heritage sites are prefixed with 'CH'. Archaeological, architectural heritage and cultural heritage constraints are identified in the sections below and are also shown on the Figures in Annex B. Full details for the archaeology, architectural heritage and cultural heritage constraints identified are provided in Annex A (Inventory of Archaeology, Architectural Heritage and Cultural Heritage Constraints).

¹⁵ <https://www.logainm.ie/en/>.

¹⁶ <https://digital.ucd.ie/>.

3. Receiving Environment

This section presents baseline information for the archaeology, architectural heritage and cultural heritage constraints within the study areas for each of the four route options. Further details for the archaeology, architectural heritage and cultural heritage constraints identified within the study areas for each of the four route options are provided in Annex A (Inventory of Archaeology, Architectural Heritage and Cultural Heritage Constraints).

Evidence of prehistoric activity within the study areas for each of the four route options has been identified from the Neolithic period (c. 4000 – 2500 BC) onwards. A group of late Neolithic pits was excavated in Barberstown forming part of a multi-phase occupation site that also included a fulacht fiah (a horseshoe, or kidney, shaped mound of fire-cracked stone and charcoal-enriched soil around a sunken trough near a water supply, or in marshy areas) (Licence Number: 17E0282)¹⁷. Fulacht fiadh are amongst the most common site types in Ireland and primarily were used to heat water, likely for a variety of purposes including cooking, bathing, dyeing and metal working. While these typically date to the Bronze Age (c. 2500 – 600 BC) the example from Barberstown was dated to the Neolithic period of occupation of this site.¹⁸ Further prehistoric activity includes sites in Dunboyne (AY_08), Pace (AY_13) and Bennetstown (AY_12) from which evidence for land reclamation, a possible seasonal dwelling and food storage structures, fulacht fiadh, and a rectangular house containing Late Bronze Age pottery was recovered^{19,20}. A late Bronze Age habitation site, including a possible token cremation, was also identified in Ward Upper (AY_21). In addition, the Bronze Age is also evidenced by funerary monuments. While no dateable evidence was recovered, a mound barrow was excavated in Quarryland in proximity to the Tolka River (AY_06). Dating to the Bronze and Iron Ages (c. 2400 BC - AD 400), barrows comprise circular, or oval, earth mounds which may contain and/or cover burials. A ring ditch, the possible remains of a barrow, was also identified in Kingstown (AY_33) with a further example excavated off Malahide Road in Drinan (Licence Number: 04E1066).²¹

The early medieval period (AD 500 – 1169) is characterised by domestic and religious sites. Ringforts, circular enclosures defined by one or more ditches and banks, were a common feature of early medieval rural settlement and contained a farmstead of one or more houses located within the enclosure. Examples of ringforts have been identified in Common, Shanganhill, Forrest Great and Cloghan (AY_29; a Recorded Monument, AY_32, AY_41 and AY_43; both Recorded Monuments). Medieval field systems have also been identified including in Dunboyne (AY_07)²². The early medieval period also saw the introduction of Christianity in Ireland. Ecclesiastical enclosures have been identified in Killeek and Saint Doolaghs (AY_35 and AY_50; both Recorded Monuments) and comprise large oval or circular areas defined by a bank and external fosse, or drystone wall, enclosing an early medieval church, or monastery, and its associated areas of domestic and industrial activities. The earliest upstanding structures within the study areas for each of the four route options comprise the remains of medieval church buildings including in Ward Lower, Cloghran and Saint Doolaghs.

The land within the study areas for the four route options appears to have been largely agricultural into the post-medieval period (1550 – present). Historic mapping shows the hinterland north of Dublin as largely agrarian with dispersed settlements, scattered farms, and country houses (Down Survey of Ireland, 1656 – 1658; Rocque, 1760) and the barony of Coolock, covering the area to the north of Dublin, was described as having '*soyle of said Barony is Generall good either for Corne or Cattle*' in the Civil Survey of 1654 – 1656 (Simington, 1945, p.167). The current field pattern largely reflects that depicted on historic Ordnance Survey mapping (1837-1842), such as near Woodland and Batterstown. Where the amalgamation of fields has occurred, the historic field pattern remains perceptible as cropmarks in some areas.

¹⁷ <https://excavations.ie/report/2017/Dublin/0029454/>.

¹⁸ <https://excavations.ie/report/2017/Dublin/0029454/>.

¹⁹ <https://excavations.ie/report/2005/Meath/0014235/>.

²⁰ <https://excavations.ie/report/2006/Meath/0016306/>.

²¹ <https://excavations.ie/report/2004/Dublin/0011630/>.

²² <https://excavations.ie/report/2005/Meath/0014279/>.

The settlements within the study areas for the four route options are largely linear villages and towns originally established along roads, such as Batterstown, Baskin and Kinsaley. While these linear settlements have been subject to more recent development, some of the historic character of the streetscape is still perceptible through extant public and domestic buildings including public houses, churches, and houses. Large country houses, including the principal buildings, as well as their associated ancillary buildings, gardens and grounds, and decorative structures were established from the 17th to the 19th centuries. These 'big houses' and demesnes punctuated the landscape up until the 20th century and, while some such as Belcamp (AH_12 and AH_13; assessed by the NIAH to be of Regional importance) have been demolished, other examples within the study areas for the four route options, including the late 18th century Wellfield House (AH_17; a Protected Structure), remain extant.

Later development largely comprises linear communications and urban expansion. For example, a branch of the Dublin and Meath Railway (CH_48), extending from Dublin to Navan, was opened in 1862 by the Midland Great Western Railway company and remained operational until 1954²³. With the increase in vehicular travel in the 20th century a network of motorways was developed across Ireland including most recently the M3 motorway north of Dublin (1992 – 2010). Dublin Airport was built in the 1930s to replace the former military aerodrome in Collinstown; however, it was not until the latter half of the century the airport was expanded to accommodate the growth in domestic air travel.

3.1 Option A (Red)

3.1.1 Archaeology

A total of 24 archaeological constraints were identified within the study area for Option A (Red) (see Annex A and Figure B.1.1 in Annex B). These comprise:

- 15 Recorded Monuments; and
- Nine sites recorded on the SMR.

No National Monuments, sites with Preservation Orders placed on them, or sites on the RHM were identified within the study area for Option A (Red).

Recorded Monuments

A total of 15 Recorded Monuments are located within the study area for Option A (Red) (see Figure B.1.1 in Annex B). These comprise:

- The site of a castle (AY_25) of unknown date located approximately 37m to the north of Option A (Red). Located within Ward House GDL (DL_07), this constraint is described as '*the walls of an olde castle*'²⁴, forming part of a holding with other buildings including the ruins of an old church (AY_23). A ruined church is noted on historic mapping dating to 1760 and 1853^{25, 26}; however, no castle is depicted, and no remains are visible on aerial imagery. The church (AY_23, also a Protected Structure; AH_06) and associated graveyard (AY_24) are located adjacent to the road (R121) immediately to the north-west of Option A (Red) and comprise a raised, oval walled graveyard enclosing the footings of a rectangular medieval parish church dedicated to St Brigid. The church remains perceptible as a low stone wall. The form of the graveyard reflects the oval depicted on historic mapping dating to 1760 with memorials dating to the 19th and 20th centuries located within the graveyard. In addition, a holy well (AY_22) is located to

²³ https://www.railscot.co.uk/companies/D/Dublin_and_Meath_Railway/

²⁴ <https://www.irishmanuscripts.ie/digital/The%20Civil%20Survey%20AD%201654-56%20Vol%20VII%20County%20of%20Dublin/The%20Civil%20Survey%20AD%201654-56%20Vol%20VII%20County%20of%20Dublin.pdf>.

²⁵ <http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html>.

²⁶ <https://iiif.lib.harvard.edu/manifests/view/ids:10653105>.

the south-west of the site of the church and comprises a formerly open water feature depicted on historic mapping as the 'Church Well' in the center of a field with a track leading from the road (Ordnance Survey 25", 1888-1913). The well is not visible on aerial imagery.

- Another church (AY_44) and graveyard (AY_45), also Protected Structures (AH_09), located approximately 80m to the south of Option A (Red) and comprise a sub-rectangular walled graveyard built on an outcrop of rock enclosing the foundations of an early medieval building and the remains of a later (18th century) church. The graveyard contains 18th to 20th century memorials and vaults. 'Cloghran Church' is depicted in proximity to a quarry and lead mine on First Edition Ordnance Survey mapping (1837 – 1842) which formed the steep slopes on the eastern and northern boundaries. The graveyard and church are located on an elevated position, immediately to the north of Old Stockhole Lane and south-east of a commercial premises.
- A further graveyard (AY_30), located to the north of Option A (Red). This graveyard comprises 'Kits Green supposed site of old fort or Burying place' depicted on First Edition Ordnance Survey mapping (1837 – 1842). Historic mapping dating to 1760 depicts this area as agricultural and the area currently comprises a large open pasture field. An enclosure (AY_29) shown as an oval enclosure adjacent to the R122 on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842), is located nearby. The earthwork, interpreted as a ringfort, is not depicted on later mapping (Ordnance Survey 25", 1888-1913), and this location has subsequently been developed for a house. Archaeological testing in advance of the development did not identify any features of archaeological significance or relating to these constraints.²⁷ While the location of AY_29 has been developed, it is recorded on the RMP and has therefore been included as a constraint.
- Two additional ringforts were also identified within the study area for Option A (Red) (AY_41 and AY_43). The former comprises a large circular earthwork depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within an arable field to the north of the R108. The site has been interpreted as a platform-type ringfort with a waterlogged external fosse (ditch). The latter comprises a 'fort' depicted on First Edition Ordnance Survey mapping (1837 – 1842) and has since been redeveloped as part of Dublin Airport. As with AY_29, while the location of AY_43 has been developed, it is recorded on the RMP and has therefore been included as a constraint.
- An ephemeral cropmark of a possible circular enclosure (AY_18) is located approximately 35m to the south of Option A (Red) in Ballintry. While not depicted on historic mapping, aerial imagery shows a faint circular feature in a field adjacent to the road²⁸. A further enclosure (AY_61) depicted on First Edition Ordnance Survey mapping (1837 – 1842), measures approximately 35m in diameter. This constraint is located within the Belcamp off-road focus area in a relatively flat pasture field north of Middletown House; however, no features are visible on aerial imagery in this location.
- An earthen mound (AY_47) is located within the Belcamp off-road focus area. This constraint is not depicted on historic mapping or visible on aerial imagery.
- Two houses comprising:
 - a 16th/17th century dwelling (AY_42) owned by Lord Ranelagh and described as '*one faire stone house slated, with several offices houses, a stable, a Barne & Six tenants houses Thatcht with a Pigeon house, slated... belonging to said house one orchanrd & garden plot; & a Grove of Ashtrees set for ornament*'. Historic mapping (1760) depicts a large house fronting the road, with ornamental grounds laid out to the north; however, later mapping (First Edition Ordnance Survey mapping; 1837 – 1842) shows this area to be agricultural fields with '*Forrest Ho. (in Ruins)*' noted near the road. The area has since been developed as a commercial premises; and
 - an 18th/19th century house (AY_27) included in the Down Survey (1655-6) as 'Fayre House' may correspond with Newpark House shown on historic mapping (1760) south of Newpark Road (R121) with associated grounds and ancillary buildings. 'Newpark House' is depicted on later

²⁷ <https://excavations.ie/report/1999/Dublin/0004056/>.

²⁸ <https://www.cambridgeairphotos.com/location/bdk006/>.

mapping (First Edition Ordnance Survey mapping; 1837 – 1842); however, the buildings appear in a different layout. This location has been redeveloped into a commercial premises.

Sites on the Sites and Monuments Record

A total of nine sites recorded on the SMR have been identified within the study area for Option A (Red). These are the locations of domestic and agricultural activity, including a medieval field system. The sites recorded on the SMR within the study area for Option A (Red) are included in Table 3.1 and are shown on Figure B.1.1 in Annex B.

Eleven further sites recorded on the SMR have not been included in Table 3.1. These comprise the sites excavations in advance of development including the Dunboyne Bypass (AY_08, AY_09, AY_11, AY_12 and AY_60), the M3 Motorway (AY_13, AY_14, AY_15, AY_16 and AY_17), and the N2 Motorway (AY_21). While these sites provide an indication of possible activity in these locations, given these sites have been removed and developed, they are no longer constraints.

Table 3.1: Sites recorded on the SMR within the study area for Option A (Red)

Reference Number	SMR Reference	Description	Townland	Location (Easting / Northing)
AY_07	ME050-030	A probable medieval field system, bisected by Option A (Red), identified from aerial imagery with a ditch that corresponds with a boundary on the Down Survey (1656-8). The fields comprise large regular parcels, with boundaries that run parallel to the current boundaries. This area was subject to geophysical survey which confirmed the presence of the ditches. Subsequent archaeological investigations in advance of the Dunoyne Bypass identified ditches, drainage containing post-medieval and modern ceramics, and a prehistoric structure (ME050-062001) with a possible associated kiln (ME050-062002). Linear cropmarks are visible in fields adjacent to the R157, including a possible trackway and field boundaries.	Dunboyne	700971 / 743204
AY_19	ME051-017	A circular cropmark, measuring approximately 30m in diameter in Nuttstown, approximately 75m to the north of Option A (Red), interpreted as an enclosure. The enclosure is located within an arable field to the north of Kilbride Road.	Nuttstown	705085 / 745365
AY_28	DU011-156	A circular cropmark, measuring approximately 30m in diameter in Common, approximately 45m to the north of Option A (Red), interpreted as an enclosure. While not depicted on historic mapping, this enclosure may correspond with the 'fort' identified on First Edition Ordnance Survey mapping (1837 – 1842). A circular feature is vaguely perceptible on aerial imagery in a pasture field to the north of the R121.	Common	712145 / 745847
AY_31	DU011-124	A large circular cropmark in Ballystrahan approximately 33m to the south-west of Option A (Red), interpreted as an enclosure, as well as a possible associated field system (DU011-125). The circular enclosure is visible on aerial imagery in an arable field, south-west of the R122, along with a number of linear features in the surrounding fields.	Ballystrahan	712641 / 745143

Reference Number	SMR Reference	Description	Townland	Location (Easting / Northing)
AY_46	DU014-111	An irregular shaped enclosure identified from aerial imagery with a possible associated field system. No corresponding features on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842 and Ordnance Survey 25", 1888-1913). Located in a relatively flat, arable field to the east of the M1 motorway within the Belcamp off-road focus area.	Stockhole	718714 / 743074
AY_48	DU015-120	A circular cropmark in Baskin in the Belcamp off-road focus area, interpreted as an enclosure. This site is located at the southern extent of a large gently sloping arable field, south of Baskin Lane. The enclosure is bisected by an extant field boundary (ditch).	Baskin	718994 / 742902
AY_57	DU014-112	A possible field system identified from aerial imagery within a relatively flat, arable field to the east of the M1 motorway within the Belcamp off-road focus area. One of the cropmarks may correspond with a field boundary depicted on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842). A possible associated enclosure (AY_46) is located in the same field.	Stockhole	718668 / 743064
AY_58	DU015-146	A sub-circular enclosure identified from aerial imagery within the Belcamp off-road focus area comprising a ditch, measuring approximately 27m – 35m across, with possible palisade trenches to the south. No evidence of an entrance was identified, and the enclosure is not depicted on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842 and Ordnance Survey 25", 1888-1913). A second enclosure is located in a field to the east (AY_59).	Middletown	719233 / 742338
AY_59	DU015-145	A circular enclosure located in a large arable field within the Belcamp off-road focus area, measuring approximately 42m in diameter. The enclosure is not depicted on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842 and Ordnance Survey 25", 1888-1913).	Middletown	719570 / 742282

Archaeological Potential

Previous archaeological excavations within the study area for Option A (Red) have identified evidence of human activity dating from the prehistoric period onward (see Section 3.1.3). While modern development, such as the M3 motorway, M3 Junction 5, and M3 Parkway Railway Station, may have removed or truncated any archaeological remains that may have been present in these areas, there is the potential for previously unknown archaeological remains to be present, particularly in greenfield areas, including within the Batterstown South off-road focus area, Dunboyne / Avoca / Bracetown off-road focus area, Belgree East off-road focus area and Belcamp off-road focus area. In addition, there is the potential for previously unknown archaeological remains associated with known archaeological constraints to be present, for example within the Zones of Notification of Recorded Monuments.

While the online sections of Option A (Red) follow the existing local and regional roads, the construction of which may have removed or truncated any previously unknown archaeological remains that may have been present, there is the potential for previously unknown archaeological remains to survive, albeit lower than in less developed areas. In addition, some sections of Option A (Red) are located within pre-1840 roadways, including the R156 and the

road from the M3 to Kilbride, the R121, and the road from Common to Kingstown, and there is the potential for the presence of historic road surfaces in these locations.

Option A (Red) crosses the Pinkeen River and Ward River as well as a number of minor watercourses. There is the potential for votive offerings, objects apparently deposited for religious reasons, in rivers. The underlying geology is largely limestone with calcareous shale with superficial deposits of gravel, alluvium, till and pockets of outcropping bedrock²⁹. In areas of alluvium there is the potential for previously unknown archaeological remains, including paleoenvironmental and organic materials, to be preserved.

3.1.2 Architectural Heritage

A total of 23 architectural heritage constraints were identified within the study area for Option A (Red). These comprise:

- Four Protected Structures (see Figure B.1.2 in Annex B);
- Three structure included on the NIAH (see Figure B.1.2 in Annex B), assessed by the NIAH to be of Regional importance; and
- 16 GDLs (see Figure B.1.3 in Annex B).

No ACAs have been identified within the study area for Option A (Red).

Record of Protected Structures

A total of four Protected Structures comprising churches and their associated graveyards (AH_06 and AH_09), a stone well (AH_10), and a county house (AH_22) have been identified within the study area for Option A (Red) (see Figure B.1.2 in Annex B).

The two churches comprising AH_06, the remains of a medieval parish church within a walled graveyard and AH_09, the site of 'Cloghran Church,' an early medieval church within enclosed graveyard are also Recorded Monuments (AY_22, AY_23, AY_44 and AY_45; see descriptions above) and have been described under Recorded Monuments (Section 3.1.1).

AH_10 is located on the alignment of Option A (Red), on the edge of Lime Park GDL (DL_13), and comprises an enclosed stone well, located north of Stockhole Lane. The well is described as being at the base of a set of steps beneath a tree³⁰ in Cloghran. The well is not depicted on First Edition Ordnance Survey mapping (1837 – 1842); however, is shown on later mapping (Ordnance Survey 25", 1888-1913) to the north-east of 'Lime Park' at the end of a trackway at the corner of a pair of field boundaries. The location of the well is obscured from the road by vegetation.

AH_22 is a late 18th or early 19th century house, with a 19th century gate lodge (AH_05) and other associated outbuildings within its demesne (DL_05). The house is depicted on First Edition Ordnance Survey mapping (1837 – 1842) as 'Hollywoodrath' and comprises a two-storey, L-shaped plan central block with single-storey portico, flanked by gabled projecting end bays. The house is located in the Belgree East off-road focus area within established grounds.

²⁹ <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aac3c228>.

³⁰ https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf.

National Inventory of Architectural Heritage

Located 40m to the south of Option A (Red), a 19th century house included on the NIAH is located within the Belcamp off-road focus area and comprises a country house (AH_12 and AH_13) assessed by the NIAH to be of Regional importance. Belcamp House was located within Belcamp GDL (DL_17) and comprised a detached three-bay, two-storey country house, built in c.1840; however, the house has been demolished. While the house is no longer extant, there is the potential for archaeological remains associated with the house, including the building's foundations and basements, to remain.

Hollywoodrath (AH_05) in Hollywood, is located within the Belgree East off-road focus area. This building comprises a single-storey, early 19th century gate lodge with a projecting central entrance porch and a 20th century extension to the east. The gate lodge is depicted on historic mapping (Ordnance Survey 25", 1888-1913) at the southern entrance to 'Hollywoodrath' (DL_05) on the tree-lined driveway leading to the main house (AH_22). The gate lodge is positioned within an established tree-lined plot, behind a low stone boundary wall with cast-iron railings with a pair of ashlar gate piers and iron gates to the west.

Gardens and Designed Landscapes

A total of 16 GDLs have been identified within the study area for Option A (Red). Of these nine were recorded by the Survey of Historic Gardens and Designed Landscapes and seven have been identified from historic mapping (Ordnance Survey 6", 1837 – 1842). Information on these GDLs is summarised in Table 3.2 and are shown on Figure B.1.3 in Annex B).

Table 3.2: GDLs identified within the study area for Option A (Red)

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_04	Priest Town House	The GDL to Priest Town House, including principal house and ancillary buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Retains elements of parkland and woodland, as well as original driveways and entrances. Boundary along Belgree Lane formed of hedgerows and 'Crockanee' woodland.	Priest Town	NIAH 5156	Survey of Historic Gardens and Designed Landscapes
DL_05	Hollywoodrath	The GDL to Hollywoodrath, including principal building as well as garden and ancillary buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842; Ordnance Survey 25", 1888-1913). While there has been development within the footprint of the site, including the golf course to the west, a section of roadside rubblestone boundary wall remains extant to the south of the site along the road that bisects the demesne.	Hollystown; Hollywood; Hollywoodrath; Sprickletown	NIAH 2267	Survey of Historic Gardens and Designed Landscapes
DL_06	Irishtown House	The GDL to Irishtown House. The principal building appears to have been demolished and the boundary and associated buildings and features depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) are no longer present. A plot of modern houses has been built at the southern extent.	Irishtown	NIAH 2270	Survey of Historic Gardens and Designed Landscapes
DL_07	Ward House	Demesne identified from historic mapping as 'Ward House' (Ordnance Survey 6", 1837 – 1842) located on the crossroads between the R135 and R121. The principal house appears to have been demolished and the area redeveloped, including a new high roadside boundary wall.	Ward Lower	N/A	Ordnance Survey 6", 1837 – 1842
DL_08	Newpark House	Demesne identified from historic mapping as 'Newpark House' (Ordnance Survey 6", 1837 – 1842) located to the south of the R121. The area appears to have been redeveloped as a commercial complex, including a concrete block boundary wall.	Newpark	N/A	Ordnance Survey 6", 1837 – 1842
DL_09	Kingstown House	Demesne identified from historic mapping as 'Kingstown House' (Ordnance Survey 6", 1837 – 1842). The boundaries of the demesne reflect those depicted on historic mapping (Ordnance Survey 6", 1837 – 1842); however, the buildings appear to have been removed and, while the driveway is still perceptible, the entrance has been replaced by a modern field gate. Boundary features along Kilreesk Road include a ditch and established boundary (trees and hedgerow), as well as a modern post and rail fence.	Kingstown	N/A	Ordnance Survey 6", 1837 – 1842
DL_11	Castle Mount	The GDL to Castle Mount. The principal building remains extant (RPS 611); however, the area has been developed. The boundary depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) is vaguely perceptible in places as hedgerows. The boundary on the R132 appears to have been replaced with a new wall.	Cloghran	NIAH 5726	Survey of Historic Gardens and Designed Landscapes

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_13	Limepark	Demesne identified from historic mapping as 'Limepark' (Ordnance Survey 6", 1837 – 1842). The principal building appears to have been demolished and the majority of the boundaries depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) are no longer present apart from sections of hedgerow. The demesne is bisected by Stockhole Lane.	Cloghran	N/A	Ordnance Survey 6", 1837 – 1842
DL_14	Woodlands	The GDL to Woodlands. While there has been some development to the north (R139 and roundabout), the footprint of this site and features within it, including the drive, trees and parkland remain perceptible. The principal building remains extant and appears to be on the site of an earlier dwelling. A belt of trees form the northern boundary along the R139.	Clonshagh	NIAH 2435	Survey of Historic Gardens and Designed Landscapes
DL_15	Upper Middletown	Demesne identified from historic mapping as 'Upper Middletown' (Ordnance Survey 6", 1837 – 1842). The principal building is no longer extant, along with the driveway and 'Turret' depicted on historic mapping, and the location of the gate lodge to the east of Stockhole Lane has been redeveloped as modern dwellings. The boundary of the demesne remains extant as established hedgerows with sub-divisions visible as cropmarks on aerial imagery and extant as a hedgerow / ditch.	Middletown	N/A	Ordnance Survey 6", 1837 – 1842
DL_16	Glebe House	Demesne identified from historic mapping as 'Glebe House' (Ordnance Survey 6", 1837 – 1842), located to the east of Stockhole Lane. While the principal building appears to have been replaced with modern dwellings, the boundary and sub-divisions of the demesne reflect those depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Boundaries comprise established hedgerows, including trees, some of which have modern fence running parallel.	Glebe	N/A	Ordnance Survey 6", 1837 – 1842
DL_17	Belcamp	The GDL to Belcamp. The principal building (NIAH 11349005) and ancillary buildings appears to have been demolished. The footprint is vaguely perceptible on aerial imagery and features depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), such as the bridge, weir and gardens are perceptible.	Belcamp	NIAH 2455	Survey of Historic Gardens and Designed Landscapes
DL_18	Baskin Hill	The GDL to Baskin Hill. The boundary along Baskin Lane appears to have been replaced with a modern post and rail fence. The entrance comprises a set of modern rubblestone and brick entrance walls with iron gates with a drive to Baskin Hall that corresponds with the drive on historic mapping (Ordnance Survey 6", 1837 – 1842).	Baskin	NIAH 2456	Survey of Historic Gardens and Designed Landscapes
DL_19	Woodpark	The GDL to Woodpark. While the Woodpark Stud Farm has been built on the site of the principal building, features including the boundary, entrances and drives remain perceptible. The eastern boundary of this GDL along Pace comprises a low rubble stone wall with irregular copes and a mature trees.	Woodpark	NIAH 5219	Survey of Historic Gardens and Designed Landscapes

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_26	Lower Middleton	Demesne identified from historic mapping as 'Lower Middletown' (Ordnance Survey 6", 1837 – 1842). The principal building along with associated agricultural ranges remain extant in the northern corner of the demesne. The access from the west remains the same. From aerial imagery the boundary of the demesne appears to have been removed.	Middletown	N/A	Ordnance Survey 6", 1837 – 1842
DL_27	Spring Hill	The GDL to Spring Hill. The footprint remains legible and the principal and associated buildings remain extant. Boundaries comprise established trees and hedgerows, surrounding parkland (now arable farmland).	Burgage	NIAH 2477	Survey of Historic Gardens and Designed Landscapes

3.1.3 Cultural Heritage

A total of 26 cultural heritage sites have been identified within the study area for Option A (Red) from the sources identified in Section 2. These comprise post-medieval built heritage including stone road bridges, houses and farm buildings. Summary information on these cultural heritage sites is presented in Table 3.3 and are shown on Figure B.1.4 in Annex B).

Table 3.3: Cultural heritage sites identified within the study area for Option A (Red)

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_01	694857 / 745004	Blackhall Big	Roadside house	An 'L'-shaped, single storey roadside cottage depicted on historic mapping (Ordnance Survey 25", 1888-1913). Located within a walled (low coursed, squared stone) plot, set at an angle with the road (R156). Views are over the R156 towards the fields to the north.
CH_04	696348 / 744292	Staffordstown Little	Roadside house	A single storey house depicted on historic mapping (Ordnance Survey 25", 1888-1913) positioned perpendicular to the road (R156), approximately 12m to the south of Option A (Red). Comprises a rendered structure with tile roof and central stack, with a high walled garden / yard to the south. Appears abandoned and plot is overgrown (Google StreetView, June 2021).
CH_12	702502 / 744660	Ballymagillin	Courtyard farm	Rendered stone farm buildings in courtyard plan depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913). Single and two-storey ranges with some modern additions. Views are internal across the farmyard with views out limited by a high stone wall. The farm is positioned immediately to the north of the L5026.
CH_13	702660 / 744657	Whitesland	House	A (much altered) roughly coursed rubble stone house depicted on historic mapping (Ordnance Survey 25", 1888-1913). Located within a low stone walled garden, perpendicular to the road (L5026) with views outward filtered by the surrounding grounds.
CH_14	703920 / 745061	Nuttstown	Road Bridge	A stone road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), with low coursed rubblestone parapets and squared ends. The parapets appear to have been repaired / extended (Google StreetView, June 2021). Carries the road through Nuttstown across an unnamed watercourse.
CH_15	705608 / 745439	Belgree	Road Bridge	A refurbished stone road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), with low coursed rubblestone parapets with squared ends and horizontal copes. Carries the road across the Ward River.
CH_16	706594 / 745764	Belgree	Road Bridge	A partially refurbished rubble stone bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) comprising parallel low coursed parapets with vertical copes. Carries the Kilbride Road over a minor watercourse.
CH_19	708295 / 743234	Hollywood	Police Barracks	A 'police barracks' depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Comprises a two-storey rectangular plan building, now ruinous (Google StreetView, July 2021) within a walled plot with an entrance to the north. Positioned immediately adjacent to the R121, within the Belgree East off-road focus area, views outwards are obscured by established vegetation.
CH_24	710160 / 745108	Ward Upper	House	'Six Mile House' depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), comprising a single storey, brick and rendered roadside house with slate roof and gable stack, located approximately 35m to the south of Option A (Red). The house is located on the junction between the R121 and the R135. Views out are limited by hedges, a wall, and outbuildings; however, to the north and east views are across the roundabout and roads.
CH_25	710338 / 745269	Newpark	Agricultural ranges	A group of one and two-storey stone and brick agricultural buildings, forming a courtyard, depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913). Positioned north of the R121, views are largely internal, across the farmyard, with views out limited by a wall.

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_29	712626 / 745191	Ballystrahan	House	A single storey house depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913). Farm buildings, some of which are depicted on later mapping (Ordnance Survey 25", 1888-1913) are located to the south and west. The house is located adjacent to R122 behind a low rendered boundary wall.
CH_30	718730 / 741985	Clonshaugh	Farm	A two-storey, roadside farmhouse with agricultural ranges depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Modern single-storey porch to east, and a single storey extension to the south (Google StreetView, January 2022). Located within the Belcamp off-road focus area the house is set back from Clonshaugh Road in a low walled garden, with views across the road, towards the fields beyond.
CH_31	718755 / 742792	Stockhole	Ford	The location of a ford depicted on First Edition Ordnance Survey mapping (1837 – 1842) on the road through Stockhole within the Belcamp off-road focus area. Later mapping (Ordnance Survey 25", 1888-1913) shows the location of the ford with the road also crossing an unnamed watercourse.
CH_32	718916 / 741898	Clonshaugh	Field system	Network of linear cropmarks visible on aerial imagery that correspond with field boundaries on historic mapping (Ordnance Survey 6", 1837 – 1842) within the Belcamp off-road focus area.
CH_33	718928 / 743480	Cloghran	Farm	A courtyard farm depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) comprising 'L'-shaped range and farmhouse, with modern agricultural buildings forming part of the complex. The farm is set back from Stockhole Lane, within the Belcamp off-road focus area, at the end of a drive within large rectangular fields, with views largely internal across the farmyard.
CH_34	718996 / 742340	Middletown	Farm (Site of)	The site of a farm depicted on historic mapping as 'Upper Middletown' (Ordnance Survey 6", 1837 – 1842) within the Belcamp off-road focus area. While the farm buildings have been demolished, earthwork remains are visible on aerial imagery.
CH_35	719145 / 743156	Baskin	Farm	A cluster of agricultural ranges depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) on Baskin Lane within the Belcamp off-road focus area. One rendered stone range with corrugated roof remains extant with a modern house and agricultural buildings nearby.
CH_41	694713 / 746280	Culcommon	Road Bridge	The western coursed, rubble stone parapet of a road bridge or culvert carrying a single lane carriageway over a small watercourse, within the Batterstown South off-road focus area, depicted on historic mapping (Ordnance Survey 6", 1837 – 1842).
CH_42	694977 / 746856	Ribstown	House	A single storey, brick and rendered roadside cottage depicted on historic mapping (Ordnance Survey 25", 1888-1913), located within the Batterstown South off-road focus area. Set within a rectangular plot bounded by established hedges. Views are south-east, across the road, towards modern properties.
CH_51	707212 / 744554	Court	Enclosure	A square enclosure with associated linear features identified from aerial imagery (GoogleEarth, Sept 2003), within the Belgree East off-road focus area. A field system recorded on the SMR (ME051-005) is located in this field.
CH_52	708438 / 744235	Irishtown	House	A rectangular roadside building depicted on First Edition Ordnance Survey mapping (1837 – 1842), later mapping shows the building an extension to the north and a projecting porch. Depicted as roofless on modern mapping, the building is adjacent to a local road in an overgrown area within the Belgree East off-road focus area.

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_53	708417 / 743907	Gallanstown	Quarry	A quarry depicted on First Edition Ordnance Survey mapping (1837 – 1842), also shown on later mapping (Ordnance Survey 25", 1888-1913). Located in an arable field to the west of a local road within the Belgree East off-road focus area.
CH_54	718534 / 742284	Stockhole	House	'Edendale' depicted on First Edition Ordnance Survey mapping (1837 – 1842) within its demesne (DL_15), comprising the principal building as well as a long range to the west and gate lodge to the east, adjacent to Stockhole Lane within the Belcamp off-road focus area. The house and lodge are no longer extant.
CH_55	719445 / 742897	Baskin	House	'Baskin Hall' depicted on First Edition Ordnance Survey mapping (1837 – 1842) with a farm to the south-west and gate lodge to the north at the junction between the drive and Baskin Lane within the Belcamp off-road focus area. Positioned within its demesne DL_18. Views from the house are limited to the north by an established boundary and to the west by modern agricultural buildings.
CH_56	719498 / 742412	Middleton	Farm	'Lower Middletown' depicted on First Edition Ordnance Survey mapping (1837 – 1842) as a cluster of buildings, later mapping (Ordnance Survey 25", 1888-1913) also identifies a lodge to the south of the group. Located within pasture fields, within the Belcamp off-road focus area, with views obscured by established hedgerows and buildings.
CH_57	719293 / 742270	Middleton	Enclosures	A series of cropmarks identified from aerial imagery (GoogleEarth, June 2018), located within the Belcamp off-road focus area, including two circular enclosures and a network of linear features interpreted as field boundaries (some of which correspond with field boundaries on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842), and Ordnance Survey 25", 1888-1913).

Previous Excavations

A review of Excavations Bulletin and TII's Archaeological Excavation Reports identified the following archaeological excavations in the Option A (Red) study area:

- Archaeological testing for the M3 Clonee to North of Kells motorway (Licence Numbers: A017/003, E3025, 04E0488, A017/004., E3026, A017/005, E3027, and A017/012) identified three sites in Bennetstown including a spread of heat-fractures stone and charcoal, another burnt spread, and a group of pits and postholes, some of which formed a possible semicircular structure. Further archaeological excavation for the M3 Clonee to North of Kells motorway in Dunboyne (Licence number: A017/009) identified evidence of late Bronze Age activity, including an oval enclosure, a possible kiln, and further pits, postholes and stakeholes. Archaeological excavation for the M3 Clonee to North of Kells motorway (Licence Numbers: E3027, E3024 and E3026) also identified postholes, some of which were interpreted as the remains of possible structures, a clay-lined, keyhole-shaped kiln and several pits, and burnt mound. Sherds of Middle or Late Bronze Age pottery were recovered from one of the postholes. Archaeological excavations also identified a prehistoric settlement comprising a circular structure, with associated pits and hearths, truncated by a medieval field system (Licence Number: A017/012).
- Archaeological excavation in Pace (Licence Number: A017/010) identified the remains of a group of early modern farm buildings including a cobbled courtyard and brick-lined hearth.
- Archaeological excavation in advance of the North Runway development at Dublin airport (Licence Number: 17E0090) in Barberstown identified the remains of an earth-cut early medieval kiln and a ditch which contained fragments of iron knives and sherds of 12th – 13th century pottery. In addition, and an oval bivallate enclosure previously identified through geophysical survey undertaken for the North Runway development at Dublin airport was confirmed through archaeological testing, along with a number of other features including pits and structural slot trenches (Licence Number: 19E0006). Archaeological testing (Licence Number: 17E0282) also identified multi-phase occupation evidence including fulacht fia, late Neolithic pits, and a medieval field system.
- Monitoring for the Airport-Balbriggan Bypass (Licence Number: 00E0950) identified an isolated area of charcoal-rich soil, interpreted as a possible ploughed out pit of unknown date.
- Archaeological excavations in advance of the N2 Finglas- Ashbourne realignment (Licence Number: 03E1358) in Ward Upper identified a small pit or token cremation, as well as a pit containing a large amount of prehistoric pottery.
- Archaeological testing in advance of development in Clonshagh (Licence Number: 13E0355) identified a ditch associated with a potential enclosure and two oval features interpreted as a possible kiln.

A further 14 archaeological excavations were also identified (under Licence numbers: 02E1388, 08E0988, 99E0693, 15E0572, 18E0722, 98E0479, 00E0951, A017/011, 16E0335, 17E0091, 04E0381, 08E0333, 13E0464, and 04E0557); however, these did not identify any archaeological remains or deposits of archaeological significance.

A review of the National Museum Topographical Finds available online identified no casual finds within the study area for Option A (Red).

3.2 Option B (Green)

3.2.1 Archaeology

A total of 25 archaeological constraints were identified within the study area for Option B (Green) (see Annex A and see Figure B.1.1 in Annex B). These comprise:

- 15 Recorded Monuments; and
- Ten sites recorded on the SMR.

No National Monuments, sites with Preservation Orders placed on them, or sites on the RHM were identified within the study area for Option B (Green).

Recorded Monuments

A total of 15 Recorded Monuments are located within the study area for Option B (Green) (see Figure B.1.1 in Annex B) comprising:

- The site of a medieval church (AY_02) in Ballymaglassan, approximately 100m to the west of Option B (Green). The church is noted in early 14th century ecclesiastical documentation and is later described in the early 17th century as being in '*reasonable repair*'. Later 17th century mapping depicts the church in ruins (Down, 1656-1658), and First Edition Ordnance Survey mapping (1837 – 1842) identifies the '*Site of Old Church*' to the south of a new church - Saint Keiran's Church of Ireland Church (AH_01; see below). The site of the medieval church is within an enclosed graveyard (AY_01; see below); however, the contemporary graveyard may not have been enclosed. The site of the church is located within Ballymaglassan House GDL (DL_01) on a rise in the landscape; however, views beyond the immediate surroundings are limited by established belts of trees in all directions.
- A mound (AY_03), located within the Batterstown North off-road focus area, comprising a small circular grass-covered earthwork measuring approximately 16m by 9m in diameter at its base. The mound is depicted on First Edition Ordnance Survey mapping (1837 – 1842) as '*Lismahon Moat*'; however, is not visible from the L2215 to the west. A further earthwork (AY_20) is located approximately 74m to the north-west of Option B (Green) in Priest Town. Depicted as '*Kilbride Moat*' on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842 and Ordnance Survey 25", 1888-1913), no earthworks are visible on aerial imagery and the location appears to have been developed. The 'Moate field' in Priest Town is reportedly where Cromwell set up his guns to destroy the local church that was located in the current graveyard.³¹
- The site of a holy tree or bush (AY_04) located within the Batterstown North off-road focus area on the L2215 in Lismahon. A '*Monument Bush*' is depicted on First Edition Ordnance Survey mapping (1837 – 1842), with later mapping showing '*Monument Bush (Site of)*' (Ordnance Survey 25", 1888-1913). Tradition notes funerals were carried in procession around the big tree in Rathregan and the Monument Bush, and that mass was celebrated at the bush during Penal Times³². An account from the Schools' Collection (1937-38) records road workers recovering two human skulls from this location in the 1930s, these were believed to be the remains of Irish soldiers who were hanged in this location while retreating from the Battle of Tara (AD 980)³³. No evidence remains of the holy bush; however, the road in this location appears slightly wider.
- An inn (AY_26), possibly dating to the 18th century, located within 20m of Option B (Green) fronting the R135. Depicted on First Edition Ordnance Survey mapping (1837 – 1842) as '*Carman's stage*', the

³¹ <https://www.duchas.ie/en/cbes/5008922/4966794/5107868?ChapterID=5008922>.

³² <https://www.duchas.ie/en/cbes/5008916/4966444/5106937?ChapterID=5008916>.

³³ <https://www.duchas.ie/en/cbes/5008921/4966731/5107671>.

roadside inn is also shown on later mapping (Ordnance Survey 25", 1888-1913) as the 'White House (P.H.)'. The inn, a two-storey, white rendered structure, appears to have been extended a number of times, including a circular addition to the northern gable, and a number of modern ancillary buildings and a large carpark to the north-east have also been added. Views are across the R135 towards the agricultural fields to the west.

- A moated site (AY_62) is located within the Batterstown North off-road focus area in Portan. This site comprises a rectangular grass-covered area measuring approximately 24m by 19m and is defined by an earthen bank. An outer fosse or moat is noted on three sides. The moated site is depicted on historic Ordnance Survey mapping (Ordnance Survey 25", 1888-1913) as three sides of a rectangular earthwork and a square cropmark is visible in this location, in a pasture field, in this location.
- A field system (AY_63) of unknown date, comprising a small circular enclosure, platforms, drainage channels and two small ponds were identified, is located within the Batterstown North off-road focus area in Portan. Depicted on First Edition Ordnance Survey mapping (1837 – 1842) as a 'Fort', later mapping (Ordnance Survey 25", 1888-1913) shows a semi-circular earthwork. Archaeological testing in the area identified drainage features and the remains of lazy bed or cultivation furrow³⁴.
- A possible circular enclosure (AY_18) in Ballintry, is located approximately 35m to the south of Option B (Green), and a further enclosure (AY_61) is located within the Belcamp off-road focus area (see Section 3.1.1).
- Two ringforts (AY_41 and AY_43), approximately 40m to the north-west of Option B (Green) in Forrest Great and approximately 28m to the south of Option B (Green) in Cloghran respectively (see Section 3.1.1).
- The site of a 16th/17th century house (AY_42) approximately 65m to the north of Option B (Green) in Forrest Great (see Section 3.1.1).
- A church and its associated graveyard (AY_44 and AY_45) in Cloghran, approximately 14m to the south of Option B (Green) (see Section 3.1.1).
- A mound (AY_47) in Cloghran, is located within the Belcamp off-road focus area (see Section 3.1.1).

Sites on the Sites and Monuments Record

A total of ten sites recorded on the SMR have been identified within the study area for Option B (Green). These are the locations of domestic and religious activity. Information on these constraints is presented in Table 3.4 and they are shown on Figure B.1.1 in Annex B.

Ten further sites on the SMR have not been included in Table 3.4. These comprise the sites excavations in advance of development including the Dunboyne Bypass (AY_08, AY_09, AY_11, AY_12 and AY_60) and the M3 motorway (AY_13, AY_14, AY_15, AY_16 and AY_17). While these sites provide an indication of possible activity in these locations, given these sites have been removed and developed, they are no longer constraints.

Table 3.4: Sites recorded on the SMR within the study area for Option B (Green)

Reference Number	SMR Reference	Description	Townland	Location (Easting / Northing)
AY_01	ME050-002001	A 'D'-shaped graveyard defined by stone walls, approximately 67m to the west of Option B (Green). The graveyard encloses the site of a medieval church (AY_02; a Recorded Monument; see Section 3.2.1) and	Ballymaglassan	696087 / 745606

³⁴ <https://excavations.ie/report/2021/Meath/0030717/>.

Reference Number	SMR Reference	Description	Townland	Location (Easting / Northing)
		an 18th century church of Ireland church (AH_01). Memorials date from the late 18th to early 20th centuries. While located on a slight rise in the landscape, views are limited in all directions by established trees.		
AY_05	ME044-038	A medieval rectangular granite font, located in the grounds of the Roman Catholic church in Batterstown (AH_02) in the Batterstown North off-road focus area. The original location of the font is unknown.	Rathregan	697159 / 747637
AY_07	ME050-030	A probable medieval field system bisected by Option B (Green) (see Table 3.1 in Section 3.1.1).	Dunboyne	700971 / 743204
AY_19	ME051-017	A cropmark interpreted as a sub-circular enclosure, measuring approximately 30m in diameter, located approximately 75m to the north of Option B (Green). The enclosure comprises a single fosse (ditch) identified from aerial imagery. No corresponding features are depicted on historic mapping.	Nuttstown	705085 / 745365
AY_32	DU014-099	A cropmark comprising a single fosse (ditch) forming a curvilinear enclosure, located approximately 95m to the east of Option B (Green). Interpreted as a possible ploughed out ring fort. No corresponding features are depicted on historic mapping; however, cropmarks visible on aerial imagery correspond with the field pattern on First Edition Ordnance Survey mapping (1837 – 1842) mapping.	Shanganhill	712747 / 743085
AY_46	DU014-111	An enclosure identified from aerial imagery located in the Belcamp off-road focus area (see Table 3.1 in Section 3.1.1).	Stockhole	718714 / 743074
AY_48	DU015-120	An enclosure in the Belcamp off-road focus area (see Table 3.1 in Section 3.1.1).	Baskin	718994 / 742902
AY_57	DU014-112	A possible field system in the Belcamp off-road focus area (see Table 3.1 in Section 3.1.1).	Stockhole	718668 / 743064
AY_58	DU015-146	A sub-circular enclosure in the Belcamp off-road focus area (see Table 3.1 in Section 3.1.1).	Middletown	719233 / 742338
AY_59	DU015-145	A circular enclosure in the Belcamp off-road focus area (see Table 3.1 in Section 3.1.1).	Middletown	719570 / 742282

Archaeological Potential

Similar to Option A (Red), previous archaeological excavations in advance of development within the study area for Option B (Green) have identified evidence of human activity dating from the prehistoric period onward (see Section 3.2.3) and there is the potential for previously unknown archaeological remains to be present, particularly in greenfield areas, including within the Batterstown North off-road focus area, Dunboyne / Avoca / Bracetown off-road focus area and Belcamp off-road focus area. There is also the potential for previously unknown archaeological remains associated with known archaeological constraints to be present, for example within the Zones of Notification of Recorded Monuments.

Where Option B (Green) follows the existing local and regional roads, the potential for previously unknown archaeological remains is lower than in less developed areas. In addition, some sections of Option B (Green) are located within pre-1840 roadways, including the road from Lismahon to Blackhall Big, the road from the R147 to

Kilbride, the road through Kilbride to the M2 Motorway, the R135, and the road from the R135 to Dunsoghly and there is the potential for the presence of historic road surfaces in these locations.

Option B (Green) also crosses the Pinkeen River and Ward River as well as a number of minor watercourses. There is the potential for votive offerings, objects apparently deposited for religious reasons, in rivers. The underlying geology is largely limestone with conglomerate and calcareous shale with superficial deposits of tills and shales, limestone gravels, alluvium, and pockets of outcropping bedrock in Priest Town, Ward Lower, Coolatrath East, Broghan, Dunsoghly, Saint Margaret's, Barberstown, and Forrest Great³⁵. In areas of alluvium there is the potential for previously unknown archaeological remains, including paleoenvironmental and organic materials, to be preserved.

3.2.2 Architectural Heritage

A total of 23 architectural heritage constraints were identified within the study area for Option B (Green). These comprise:

- Five Protected Structures (see Figure B.1.2 in Annex B);
- Three structures included on the NIAH (see Figure B.1.2 in Annex B), assessed by the NIAH to be of Regional importance; and
- 15 GDLs (see Figure B.1.3 in Annex B).

No ACAs have been identified within the study area for Option B (Green).

Record of Protected Structures

Five Protected Structures have been identified within the study area for Option B (Green). Protected Structures identified within the study area for Option B (Green) are shown on Figure B.1.2 in Annex B).

Batterstown Roman Catholic Church (AH_02), within the Batterstown North off-road focus area, comprises an early 19th century single cell church characteristic of its type in Ireland. While the church has been subject to later renovations, it retains original features including internal hood mouldings and rendered cherubs. The church is located within a walled graveyard adjacent to the R154, with established trees lining the northern and eastern boundaries.

Kilbride Catholic Church (AH_03), comprising a 20th century gabled granite hall with an octagonal bell turret and entrance gate and railings on the L1007. The church is located approximately 30m to the north of Option B (Green) within an enclosed churchyard. A 'R.C. Chapel' is depicted in this location just north of the 'Kilbride Cross Roads' on First Edition Ordnance Survey mapping (1837 – 1842) and 'St. Brigid's R.C. Church' is shown on later mapping (Ordnance Survey 25", 1888-1913); however, the present church replaced this building, opening in 1930. The church is situated in an elevated position within its surrounding grounds adjacent to the road through Priest Town, with a modern schoolhouse located to the north-east.

Located approximately 100m to the south of Option B (Green), the Former Cloghran Stud Farm (AH_11) comprises an early 19th century former Glebe House and entrance gates. The house is depicted on First Edition Ordnance Survey mapping (1837 – 1842) with associated buildings to the north-east; and later mapping (Ordnance Survey 25", 1888-1913), shows additional long stable ranges to the north-east. The house is enclosed by a rendered stone wall, with the entrance located to the south. Views out are limited by boundaries of established trees.

³⁵ <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>.

The site of 'Cloghran Church' and graveyard (AH_09) and an enclosed stone well (AH_10) are also Protected Structures which are located within the study area for Option B (Green). AH_09 is also a Recorded Monument (see description above) and has been described under Recorded Monuments (see Section 3.2.1). AH_10 is described in Section 3.1.2.

National Inventory of Architectural Heritage

Three structures included on the NIAH have been identified within the study area for Option B (Green). These comprise a church (AH_01) and 19th century house (AH_12 and AH_13), assessed by the NIAH to be of Regional importance.

Saint Keiran's Church of Ireland Church (AH_01) in Ballymaglassan, assessed by the NIAH to be of Regional importance, is located approximately 100m to the west of Option B (Green). The church comprises an ashlar limestone structure with a three-stage castellated ad pinnacle tower set within a graveyard, bounded by a rendered stone wall, with grave markers and memorials.³⁶ Built in c.1800 with Board of First Fruits funds, the church is depicted on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842) near the '*Site of Old Church*' (AY_02; see above) and appears enclosed on later mapping (Ordnance Survey 25", 1888-1913). The church is located within Ballymaglassan House GDL (DL_01) within an area of well-established trees, with views in all directions limited.

In addition, Belcamp House (AH_12 and AH_13) in Belcamp, within the Belcamp off-road focus area, is also located within the study area for Option A (Red) (see Section 3.2.2).

Gardens and Designed Landscapes

A total of 15 GDLs have identified within the study area for Option B (Green). Of these nine were recorded by the Survey of Historic Gardens and Designed Landscapes and six have been identified from historic mapping (Ordnance Survey 6", 1837 – 1842). Information on these GDLs is summarised in Table 3.5 and are shown on Figure B.1.3 in Annex B).

³⁶ <https://www.buildingsofireland.ie/buildings-search/building/14405002/saint-keirans-church-of-ireland-church-ballymaglassan-co-meath>.

Table 3.5: GDLs identified within the study area for Option B (Green)

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_01	Ballymaglassan House	The GDL to Ballymaglassan House including the house and garden structures depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Some landscape elements have moved within the GDL, such as the driveway; however, areas of woodland and parkland remain extant. The stone entrance piers and gates are set back from the L2215. While the boundary, comprising a ditch and established line of trees and hedges remains, a modern post and rail fence and hedge runs along the road.	Ballymaglassan	NIAH 5699	Survey of Historic Gardens and Designed Landscapes
DL_02	Glebe	Demesne identified from historic mapping in Glebe (Ordnance Survey 6", 1837 – 1842) and on later mapping identified as 'Rathregan Rectory' (Ordnance Survey 25", 1888-1913). Located on the R154 in Batterstown. While the principal buildings remain extant, the driveway appears to have been realigned. Retains boundary features, including belts of woodland, as well as sections of the roughly coursed rubble stone boundary wall and a pair of squared gate piers on the R154.	Glebe	N/A	Ordnance Survey 6", 1837 – 1842
DL_03	Normans Grove House	The GDL to Normans Grove House. The principal building and associated buildings remain extant, and the layout of the grounds depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) remains perceptible. A belt of established woodland lines the road to the east of the house, and a low rubble stone boundary wall with vertical copes forms the boundary adjacent to the road.	Normansgrove	NIAH 5143	Survey of Historic Gardens and Designed Landscapes
DL_04	Priest Town House	The GDL to Priest Town House, including principal DL_05	Priest Town	NIAH 5156	Survey of Historic Gardens and Designed Landscapes
DL_07	Ward House	Demesne identified from historic mapping as 'Ward House' (Ordnance Survey 6", 1837 – 1842) located on the crossroads between the R135 and R121. The principal house appears to have been demolished and the area redeveloped, including a new high roadside boundary wall.	Ward Lower	N/A	Ordnance Survey 6", 1837 – 1842
DL_11	Castle Mount	The GDL to Castle Mount. The principal building remains extant (RPS 611); however, the area has been developed. The boundary depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) is vaguely perceptible in places as hedgerows. The boundary on the R132 appears to have been replaced with a new wall.	Cloghran	NIAH 5726	Survey of Historic Gardens and Designed Landscapes
DL_13	Limepark	Demesne identified from historic mapping as 'Limepark' (Ordnance Survey 6", 1837 – 1842). The principal building appears to have been demolished and the majority of the boundaries depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) are no longer present apart from sections of hedgerow. The demesne is bisected by Stockhole Lane.	Cloghran	N/A	Ordnance Survey 6", 1837 – 1842

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_14	Woodlands	The GDL to Woodlands. While there has been some development to the north (R139 and roundabout), the footprint of this site and features within it, including the drive, trees and parkland remain perceptible. The principal building remains extant and appears to be on the site of an earlier dwelling. A belt of trees form the northern boundary along the R139.	Clonshagh	NIAH 2435	Survey of Historic Gardens and Designed Landscapes
DL_15	Upper Middletown	Demesne identified from historic mapping as 'Upper Middletown' (Ordnance Survey 6", 1837 – 1842). The principal building is no longer extant, along with the driveway and 'Turret' depicted on historic mapping, and the location of the gate lodge to the east of Stockhole Lane has been redeveloped as modern dwellings. The boundary of the demesne remains extant as established hedgerows with sub-divisions visible as cropmarks on aerial imagery and extant as a hedgerow / ditch.	Middletown	N/A	Ordnance Survey 6", 1837 – 1842
DL_16	Glebe House	Demesne identified from historic mapping as 'Glebe House' (Ordnance Survey 6", 1837 – 1842), located to the east of Stockhole Lane. While the principal building appears to have been replaced with modern dwellings, the boundary and sub-divisions of the demesne reflect those depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Boundaries comprise established hedgerows, including trees, some of which have modern fence running parallel.	Glebe	N/A	Ordnance Survey 6", 1837 – 1842
DL_17	Belcamp	The GDL to Belcamp. The principal building (NIAH 11349005) and ancillary buildings appears to have been demolished. The footprint is vaguely perceptible on aerial imagery and features depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), such as the bridge, weir and gardens are perceptible.	Belcamp	NIAH 2455	Survey of Historic Gardens and Designed Landscapes
DL_18	Baskin Hill	The GDL to Baskin Hill. The boundary along Baskin Lane appears to have been replaced with a modern post and rail fence. The entrance comprises a set of modern rubblestone and brick entrance walls with iron gates with a drive to Baskin Hall that corresponds with the drive on historic mapping (Ordnance Survey 6", 1837 – 1842).	Baskin	NIAH 2456	Survey of Historic Gardens and Designed Landscapes
DL_19	Woodpark	The GDL to Woodpark. While the Woodpark Stud Farm has been built on the site of the principal building, features including the boundary, entrances and drives remain perceptible. The eastern boundary of this GDL along Pace comprises a low rubble stone wall with irregular copes and a mature trees.	Woodpark	NIAH 5219	Survey of Historic Gardens and Designed Landscapes
DL_26	Lower Middleton	Demesne identified from historic mapping as 'Lower Middletown' (Ordnance Survey 6", 1837 – 1842). The principal building along with associated agricultural ranges remain extant in the northern corner of the demesne. The access from the west remains the same. From aerial imagery the boundary of the demesne appears to have been removed.	Middletown	N/A	Ordnance Survey 6", 1837 – 1842

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_27	Spring Hill	The GDL to Spring Hill. The footprint remains legible and the principal and associated buildings remain extant. Boundaries comprise established trees and hedgerows, surrounding parkland (now arable farmland).	Burgage	NIAH 2477	Survey of Historic Gardens and Designed Landscapes

3.2.3 Cultural Heritage

A total of 34 cultural heritage sites have been identified within the study area for Option B (Green) from the sources identified in Section 2. These largely comprise post-medieval built heritage including houses, farm buildings and road bridges. Summary information on these cultural heritage sites is presented in Table 3.6 and are shown on Figure B.1.4 in Annex B).

Table 3.6: Cultural heritage sites identified within the study area for Option B (Green)

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_02	696285 / 746457	Lismahon	Farm	A 'U'-shaped layout farm depicted on First Edition Ordnance Survey mapping (1837 – 1842) with later mapping (Ordnance Survey 25", 1888-1913) showing a slightly different layout. One single storey range remains extant with more recent buildings largely forming the complex. The farm is located immediately to the east of the L2215.
CH_03	696319 / 746263	Lismahon	Road Bridge	A stone road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) as 'Ballymaglassan Bridge' comprising a low pair of parapets. Carries the L2215 across an unnamed watercourse.
CH_04	696348 / 744292	Staffordstown Little	Roadside house	A single storey house depicted on historic mapping (Ordnance Survey 25", 1888-1913) approximately 12m to the south of Option B (Green) (see Table 3.3 in Section 3.1.3).
CH_05	696892 / 747290	Portan	Farmhouse	A single storey rubblestone farmhouse with slate roof and two rendered stacks depicted on historic mapping (Ordnance Survey 25", 1888-1913). Set back from road (L2215) in an established garden bounded by a hedge within the Batterstown North off-road focus area. Views east are across the road to the fields beyond.
CH_06	696967 / 747353	Lismahon	Road Bridge	A road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). One rubblestone parapet with irregular vertical copes remains on a wide grass verge to the west of the road. Carries the L2215 across the Tolka River within the Batterstown North off-road focus area.
CH_07	697221 / 747488	Glebe	Buildings	Extant buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) along the road through Batterstown (R154), within the Batterstown North off-road focus area, including post office, houses, a public house and former smithy. While modern development has taken place in Batterstown, these buildings form a group with historic character along the main thoroughfare.
CH_14	703920 / 745061	Nuttstown	Road Bridge	A stone road bridge that carries the road through Nuttstown across an unnamed watercourse depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).
CH_15	705608 / 745439	Belgree	Road Bridge	A stone road bridge that carries the road across the Ward River in Belgree depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_16	706594 / 745764	Belgree	Road Bridge	A rubble stone bridge that carries the Kilbride Road over a minor watercourse depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).
CH_17	707201 / 746366	Baytown	Farm	An L'-shaped farm and orchard depicted on First Edition Ordnance Survey mapping (1837 – 1842) and with later additions shown on later mapping (Ordnance Survey 25", 1888-1913). Two-storey farmhouse with slate roof appears to have been modernised and the agricultural ranges have been replaced. Views are west across the private drive / garden towards the road and fields beyond. The building is located approximately 40m to the west of Option B (Green).
CH_18	708016 / 746178	Baytown	House	Located approximately 10m to the south of Option B (Green), a single storey rendered house depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) perpendicular to the road through Baytown. Appears to be in poor condition (Google StreetView, April 2019) with mounds of waste material immediately adjacent to the building, modern agricultural buildings to the east and a high concrete roadside boundary wall to the north.
CH_20	709100 / 746479	Irishtown	Field boundary	A sinuous linear feature visible on aerial imagery that corresponds with a field boundary depicted on First Edition Ordnance Survey mapping (1837 – 1842) located in an arable field to the south of the road through Irishtown.
CH_21	709721 / 746401	Coolquoy	Farm	A group of rendered stone farm buildings in a courtyard plan depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913). The buildings are set back from the road (R135), approximately 30m to the east of Option B (Green). The group includes modern agricultural buildings and is bounded by a modern metal railing fence. Views are predominantly across the yard with views out across the surrounding fields.
CH_22	709787 / 746077	Coolatrath East	Agricultural range	A rendered single-storey roadside agricultural range with corrugated roof depicted on historic mapping (Ordnance Survey 25", 1888-1913). Formed part of a courtyard farm; however, the other buildings in the group appear more recent constructions. This building is located approximately 5m to the west of Option B (Green), adjacent to the R135.
CH_23	709833 / 746182	Coolatrath East	Field system	A network of linear cropmarks visible on aerial imagery that correspond with a field system depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913). Located in an arable field to the east of the R135.

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_24	710160 / 745108	Ward Upper	House	'Six Mile House' depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) approximately 20m to the west of Option B (Green) (see Table 3.3 in Section 3.1.3).
CH_26	710606 / 744247	Broghan	Road Bridge	A stone road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) as 'Broghan New Bridge', comprising a pair of parallel squared stone parapets with possibly later copes. Carries the R135 over a minor watercourse.
CH_27	710681 / 744121	Broghan	Farm	An 'L'-shaped layout roadside farm depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) with later mapping showing additional buildings (Ordnance Survey 25", 1888-1913). Single and two-storey ranges, as well as more recent additions. The group is enclosed by a rubblestone boundary wall adjacent to the R135, approximately 7m to the east of Option B (Green).
CH_28	711958 / 743365	Dunsoghly	Farm	A rendered single-storey roadside range depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913). Located approximately 4m to the north of Option B (Green), this building forms part of an operational farmyard.
CH_30	718730 / 741985	Clonshaugh	House	A roadside farmhouse with agricultural ranges depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).
CH_31	718755 / 742792	Stockhole	Ford	'Shane's Ford' depicted on First Edition Ordnance Survey mapping (1837 – 1842) on the road through Stockhole within the Belcamp off-road focus area. Later mapping (Ordnance Survey 25", 1888-1913) shows the location of the ford with the road crossing an unnamed watercourse. The road in this location still crosses the watercourse as depicted.
CH_32	718916 / 741898	Clonshaugh	Field system	A field system visible as cropmarks on aerial imagery located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).
CH_33	718928 / 743480	Cloghran	Farm	A courtyard farm depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).
CH_34	718996 / 742340	Middletown	Farm	The site of 'Upper Middletown' farm depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_35	719145 / 743156	Baskin	Farm	A cluster of agricultural ranges depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).
CH_43	695461 / 747780	Woodland	Agricultural Buildings	Group of three agricultural buildings depicted on First Edition Ordnance Survey mapping (1837 – 1842) and later editions (Ordnance Survey 25", 1888-1913), forming part of a larger group (other buildings no longer extant) within the Batterstown North off-road focus area. Views in all direction limited by established hedgerows.
CH_44	695803 / 748317	Portan	Thatched Building	A thatched building depicted as 'Portan' on First Edition Ordnance Survey mapping (1837 – 1842). Located in a private plot, within the Batterstown North off-road focus area, with views largely across open fields, with a belt of trees obscuring views westward.
CH_45	695477 / 747147	Ribstown	Agricultural Buildings	Two buildings depicted as 'Ribstown' on First Edition Ordnance Survey mapping (1837 – 1842) and later editions (Ordnance Survey 25", 1888-1913) forming part of a larger operational farmyard within the Batterstown North off-road focus area. Views are limited by modern buildings and established hedgerows.
CH_46	696925 / 747831	Rathregan	Tree	'The Big Tree' depicted on First Edition Ordnance Survey mapping (1837 – 1842), and later editions (Ordnance Survey 25", 1888-1913), at the junction between the R154 and Rathregan Court within the Batterstown North off-road focus area. The tree is thought to be where people were hanged. ³⁷ No longer extant.
CH_47	697158 / 747323	Glebe	House	A house depicted on First Edition Ordnance Survey mapping (1837 – 1842) and identified as 'Rathregan Rectory' on later mapping (Ordnance Survey 25", 1888-1913). Set back from the R154 within its demesne (DL_02), within the Batterstown North off-road focus area, with views in all directions limited by established gardens and grounds.
CH_54	718534 / 742284	Stockhole	House	A house depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).
CH_55	719445 / 742897	Baskin	House	'Baskin Hall' depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).

³⁷ <https://www.duchas.ie/en/cbes/5008916/4966446/5106944?ChapterID=5008916>.

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_56	719498 / 742412	Middleton	Farm	A farm depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).
CH_57	719293 / 742270	Middleton	Enclosures	Enclosures and a field system identified from aerial imagery located within the Belcamp off-road focus area (see Table 3.3 in Section 3.1.3).

Previous Excavations

A review of Excavations Bulletin and TII's Archaeological Excavation Reports identified the following archaeological excavations in the Option B (Green) study area:

- Excavation in advance of the M3 Clonee to North of Kells motorway (Licence Number: A017/003, E3025, A017/005, E3027, A017/004., E3026, and A017/012) identified multiple phases of activity in Bennetstown comprising a fulacht fiadh and related activity, two large industrial pits (possibly a forge and slaking pit), and post-medieval and later activity, including drainage features combined with episodes of inundation of the site from the nearby River Tolka. Further archaeological excavation for the M3 Clonee to North of Kells motorway in Dunboyne (Licence number: A017/009) identified evidence of late Bronze Age activity, including an oval enclosure, a possible kiln, and further pits, postholes and stakeholes. Archaeological excavation for the M3 Clonee to North of Kells motorway (Licence Numbers: E3027, E3024 and E3026) also identified postholes, some of which were interpreted as the remains of possible structures, a clay-lined, keyhole-shaped kiln and several pits, and burnt mound. Sherds of Middle or Late Bronze Age pottery were recovered from one of the postholes.
- Archaeological excavation in Pace (Licence Number: A017/010) identified the remains of a group of early modern farm buildings including a cobbled courtyard and brick-lined hearth.
- Archaeological excavations in advance of the N2 Finglas- Ashbourne realignment (Licence Number: 03E1358) in Ward Upper identified a small pit or token cremation, as well as a pit containing a large amount of prehistoric pottery.
- Monitoring for the Airport-Balbriggan Bypass (Licence Number: 00E0950) identified an isolated area of charcoal-rich soil, interpreted as a possible ploughed out pit of unknown date.
- Archaeological excavation in advance of the North Runway development at Dublin airport (Licence Number: 17E0090) in Barberstown identified the remains of an earth-cut early medieval kiln and a ditch which contained fragments of iron knives and sherds of 12th – 13th century pottery. In addition, and an oval bivalent enclosure previously identified through geophysical survey undertaken for the North Runway development at Dublin airport was confirmed through archaeological testing, along with a number of other features including pits and structural slot trenches (Licence Number: 19E0006). Archaeological testing (Licence Number: 17E0282) also identified multi-phase occupation evidence including fulacht fiah, late Neolithic pits, and a medieval field system.
- Archaeological testing in advance of development in Clonshagh (Licence Number: 13E0355) identified a ditch associated with a potential enclosure and two oval features interpreted as a possible kiln.

A further nine archaeological excavations were also identified (under Licence numbers: 08E0988, A017/011, 17E0091, 16E0335, 00E0951, 08E0333, 13E0464, 04E0557, and 04E0381); however, these did not identify any archaeological remains or deposits of archaeological significance.

A review of the National Museum Topographical Finds available online identified a casual find of a bronze axehead (1962:259) within the study area for Option B (Green) in Saint Margaret's.

3.3 Option C (Yellow)

3.3.1 Archaeology

A total of 35 archaeological constraints were identified within the study area for Option C (Yellow) (see Annex A and Figure B.1.1 in Annex B). These comprise:

- 28 Recorded Monuments; and
- Seven sites recorded on the SMR.

There are no National Monuments, sites with Preservation Orders placed on them, or sites on the RHM located within the study area for Option C (Yellow).

Recorded Monuments

A total of 28 Recorded Monuments are located within the study area for Option C (Yellow) (see Figure B.1.1 in Annex B). The comprise:

- The site of an enclosure (AY_34), located by the RMP approximately 55m to the north of Option C (Yellow); however, an ephemeral circular cropmark is visible on aerial imagery (Google Earth, May 2017), behind a cottage to the north of Killeek Lane. While the enclosure is marked on Duncan's map (1821), First Edition Ordnance Survey mapping (1837 – 1842) does not depict an enclosure in this field and later mapping (Ordnance Survey 25", 1888-1913) shows a gravel pit in this location. A second enclosure (AY_38) is located within Killeek in disturbed fields, previously used for polytunnels, to the south of Option C (Yellow). While there is a tradition of a 'fort' at this site, no feature is depicted at this location on historic mapping dating to 1760³⁸, or First Edition Ordnance Survey mapping (1837 – 1842). Aerial imagery shows this location to be disturbed and archaeological testing in advance of development (Licence Number 00E0688) did not identify any remains of archaeological significance³⁹.
- An ecclesiastical enclosure (AY_35) in Killeek comprising a broad earthen bank with an entrance to the south, approximately 38m to the north of Option C (Yellow). Ecclesiastical enclosures are commonly circular or oval in plan, with a church, burial ground and often dwellings contained within an enclosing bank, ditch or wall, dating to the early medieval period (Department of the Environment, Heritage and Local Government, 2004). The site of the enclosure is demarcated partially by the coursed, rubblestone wall of an oval graveyard (AY_36) to the east adjacent to a local road. The graveyard (AY_36) is elevated and contains monuments dating to the 18th century as well as a ruinous church (AY_37). A small rectangular building identified as a 'church' within 'Killeek Grave Yd' is depicted in this location on First Edition Ordnance Survey mapping (1837 – 1842) as a roofless structure, and later mapping identified the church 'in ruins' (Ordnance Survey 25", 1888-1913). The roofless building comprises a plain, roughly coursed, limestone structure situated in a prominent position, north of a crossroads with Killeek Lane. Views across the road and junction are filtered by mature trees along the boundaries of the site.
- Another ecclesiastical enclosure (AY_50) is in Saint Doolaghs, approximately 100m to the west of Option C (Yellow) set back from the R107. Identified by geophysical survey undertaken as part of a community project (Licence Number 09R165) the sub-circular enclosure is located to the west of a sub-rectangular walled graveyard (AY_51) and may pre-date the current complex⁴⁰. Possibly pre-dating the Anglo-Norman colonisation of Dublin, the graveyard encloses a 12th to 15th century dressed limestone stone church (St. Doolagh's Church; AY_53) comprising a coursed stone building with a central tower and a vaulted stone roof, as well as a later 19th century entrance⁴¹. Archaeological excavations in the 1980s and 1990s identified 13th and 14th century pottery sherds, post-medieval coins, burials, and evidence of an inner and outer enclosing ditch. Two holy wells, St Doolaghs well (AY_54) and St. Catherine's Well (AY_55), are located to the north of the church. The former comprises a circular stone-lined well below ground level within an octagonal building with a cone-shaped roof and sunken entrance and the latter comprises an underground bath enclosed by a rectangular vaulted building. A stone roadside cross (AY_56) also forms part of the complex in Saint Doolaghs comprising a low granite cross with short arms and a triangular shaped head of early medieval date (Fingal Historic Graveyards Project, 2008). The

³⁸ <http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html>.

³⁹ <https://excavations.ie/report/2000/Dublin/0005128/>.

⁴⁰ <https://excavations.ie/report/2015/Dublin/0024753/>.

⁴¹ https://heritagemaps.ie/documents/Therefore_ArchaeologyReports/E000508.pdf.

complex is depicted on First Edition Ordnance Survey mapping (1837 – 1842) with a 'U'-shaped 'school house' immediately to the east, which was later removed (Ordnance Survey 25", 1888-1913). Views are limited to the north and west by an established belt of trees; however, are open to the east down the drive towards the road.

- The site of a chapel and burial ground (AY_39 and AY_40), located in Forrest Great approximately 85m to the south of Option C (Yellow), comprises a complex of features identified during geophysical survey in advance of construction of a proposed equestrian centre on Killeek Lane (Licence Number 12R0059). Features included a circular ditch measuring 55m in diameter, internal pits and rectilinear responses extending from the enclosure. While a chapel is not depicted on historic mapping (First Edition Ordnance Survey mapping, 1837 – 1842 and Ordnance Survey 25", 1888-1913), human bone has reportedly been recovered from the site previously and there is a tradition of a chapel in this location.
- A mound (AY_03) and the site of a holy tree or bush (AY_04) are located within the Batterstown North off-road focus area in Limahon (see Section 3.2.1).
- A possible circular enclosure (AY_18) in Ballintry, located approximately 35m to the south of Option C (Yellow) (see Section 3.1.1).
- The site of a castle (AY_25), approximately 37m to the north of Option C (Yellow), a church and graveyard (AY_23 and AY_24), located adjacent to the R121 immediately to the north-west of Option C (Yellow), and holy well (AY_22) in Ward Upper and Ward Lower (see Section 3.1.1).
- The site of an 18th/19th century house (AY_27) in Newpark, approximately 60m to the south of Option C (Yellow) (see Section 3.1.1).
- An enclosure (AY_29) in Common, approximately 54m to the north of Option C (Yellow) (see Section 3.1.1).
- A graveyard (AY_30) located to the north of Option C (Yellow) in Common (see Section 3.1.1).
- The site of a 16th/17th century house (AY_42) approximately 30m to the north of Option C (Yellow) in Forrest Great (see Section 3.1.1).
- A church and its associated graveyard (AY_44 and AY_45) in Cloghran, approximately 65m to the south of Option C (Yellow) (see Section 3.1.1).
- A moated site (AY_62) and a field system (AY_63) located within the Batterstown North off-road focus area in Portan (see Section 3.2.1).

Sites on the Sites and Monuments Record

A total of seven sites recorded on the SMR have been identified within the study area for Option C (Yellow). These comprise the locations of cropmarks and evidence of medieval and post-medieval religious activity. These are included in Table 3.7 and are shown on Figure B.1.1 in Annex B.

Two further sites recorded on the SMR have not been included in Table 3.7. These comprise the sites excavated in advance of development including the M3 Motorway (AY_10) and the N2 Motorway (AY_21). While these sites provide an indication of possible activity in these locations, given these sites have been removed and developed, they are no longer constraints.

Table 3.7: Sites recorded on the SMR within the study area for Option C (Yellow)

Reference Number	SMR Reference	Description	Townland	Location (Easting / Northing)
AY_05	ME044-038	A medieval rectangular granite font, located in the grounds of the Roman Catholic church in Batterstown (AH_02) within the Batterstown North off-road focus area. The original location of the font is unknown.	Rathregan	697159 / 747637
AY_19	ME051-017	A circular cropmark, measuring approximately 30m in diameter in Nuttstown, approximately 75m to the north of Option C (Yellow), interpreted as an enclosure. The enclosure is located within an arable field to the north of Kilbride Road.	Nuttstown	705085 / 745365
AY_28	DU011-156	A circular cropmark, measuring approximately 30m in diameter in Common, approximately 45m to the north of Option C (Yellow), interpreted as an enclosure. While not depicted on historic mapping, this enclosure may correspond with the 'fort' identified on First Edition Ordnance Survey mapping (1837 – 1842). A circular feature is vaguely perceptible on aerial imagery in a pasture field to the north of the R121.	Common	712145 / 745847
AY_31	DU011-124	A large circular cropmark in Ballystrahan approximately 33m to the south-west of Option C (Yellow), interpreted as an enclosure, as well as a possible associated field system (DU011-125). The circular enclosure is visible on aerial imagery in an arable field, south-west of the R122, along with a number of linear features in the surrounding fields.	Ballystrahan	712641 / 745143
AY_33	DU011-126	A circular cropmark in Kingstown approximately 64m to the west of Option C (Yellow), interpreted as a ring ditch. In addition, other linear features were also identified from aerial imagery and interpreted as a possible field system in the same arable field (DU011-127).	Kingstown	713322 / 745300
AY_49	DU015-009008	A network of linear features identified during geophysical survey (Licence Number: 09R0165) to the south of St. Doulagh's Church (AY_53) interpreted as the remains of an early settlement associated with the ecclesiastical enclosure (AY_50) ⁴² .	Saint Doolaghs	721026 / 742043
AY_52	DU015-009007	Late medieval mouldings used as cope stones of the wall south of St. Doulagh's Church (AY_53).	Saint Doolaghs	721048 / 742098

Archaeological Potential

While previous archaeological excavations within the study area for Option C (Yellow) have identified evidence of human activity dating from the prehistoric period onward (see Section 3.3.3), Option C (Yellow) largely follows the existing local and regional roads, and the potential for previously unknown archaeological remains is lower than in less developed areas given the construction of these roads may have removed or truncated any archaeological remains that may have been present. However, Option C (Yellow) is also located within pre-1840 roadways, including the R156, R154, the road from the M3 to Kilbride, the R121, Killeek Lane, Forest Road, and the road from the M1 to Woodlands and there is the potential for the presence of historic road surfaces in these locations. There is a higher potential for previously unknown archaeological remains to be present within the Batterstown North off-road focus area. There is also the potential for previously unknown archaeological remains associated with

⁴² https://heritagemaps.ie/documents/Therefore_ArchaeologyReports/GeophysicalReports/09R0165.pdf.

known archaeological constraints to be present, for example within the Zones of Notification of Recorded Monuments.

Option C (Yellow) crosses the Tolka River, Pinkeen River, Ward River and Mayne River. This route option also crosses a number of minor watercourses. There is the potential for votive offerings, objects apparently deposited for religious reasons, in rivers. The underlying geology is largely limestone with conglomerate, calcareous shale and unbedded lime-mudstone. Superficial deposits comprise tills and shales, limestone gravels, alluvium, and pockets of outcropping bedrock in Killamonan, Newpark, Ballystrahan and Forrest Great⁴³. In areas of alluvium there is the potential for previously unknown archaeological remains, including paleoenvironmental and organic materials, to be preserved.

3.3.2 Architectural Heritage

A total of 37 architectural heritage constraints were identified within the study area for Option C (Yellow). These comprise:

- Eleven Protected Structures (see Figure B.1.2 in Annex B);
- Seven structures included on the NIAH (see Figure B.1.2 in Annex B), assessed by the NIAH to be of Regional importance; and
- 19 GDLs (see Figure B.1.3 in Annex B).

No ACAs have been identified within the study area for Option C (Yellow).

Record of Protected Structures

Saint Thomas's Church (AH_04), is located approximately 15m to the north-east of Option C (Yellow), comprises a 19th century rectangular plan Church of Ireland church to designs by William John Welland (c.1832-95) and William Gillespie (1818-99). The granite church includes an octagonal turret, rose window, and pitched slate roof. The church is positioned in the centre of Hollystown, set back from the main road, within landscaped grounds bounded by established trees.

In addition the remains of medieval church within oval shaped enclosed graveyard (AH_08) and the medieval church, graveyard, stone cross and two holy wells at Saint Doolaghs (AH_14) are also Recorded Monuments AY_37, AY_51, AY_53, AY_54—6; see above). These constraints have been described above under Recorded Monuments (Section 3.3.1).

A late 18th or early 19th century single-storey thatched cottage (AH_07) with stone outbuildings is located approximately 5m to the east of Option C (Yellow). The dwelling comprises a rendered stone structure, with a later projecting entrance porch, and a double pitched thatched roof; while the two outbuildings have later slate and corrugated roofs. Depicted on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842) the group of three buildings form a courtyard plan farm bounded by a whitewashed coursed rubble stone wall with vertical copes. The cottage is positioned perpendicular to Kilreesk Road with the outbuildings located to the south, parallel to the road, including one forming the roadside boundary to the farm.

A cast-iron milestone (AH_16), located at the entrance to Lime Hill House (DL_22) approximately 8m to the west of Option C (Yellow) adjacent to the R107. Set within a harled and painted entrance wall at ground level, the milestone reads 'GPO / Dublin / 6 / Malahide / 3'. A milestone is depicted in this location on historic mapping (Ordnance Survey 25", 1888-1913) annotated with 'M.S Malahide 3 Dublin 6'.

⁴³ <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>.

Wellfield House (AH_17) is located approximately 30m to the east of Option C (Yellow) and comprises a late 18th century house within its surrounding demesne (DL_24). Depicted on First Edition Ordnance Survey mapping (1837 – 1842) as '*St. Doolagh's Lodge*', the two-storey house is 'T'-shaped in plan, with a portico entrance on the western facing elevation and belvedere (a structure built in an elevated position to provide lighting and ventilation and to take in views) to the east. Associated buildings are located to the north; however, these appear to have been demolished. The house is set within a high rendered stone walled plot, with established trees and hedges obscuring views to the road (R107).

The gate lodge to Saint Doolagh's Park (AH_21) comprises a 19th century single storey rendered former gate lodge. The building, depicted on historic mapping (Ordnance Survey 25", 1888-1913), is positioned behind a high rubblestone wall at the entrance to Saint Doolagh's Park – a set of rendered stone gate piers with iron railings atop low rendered walls.

In addition the remains of a medieval parish church within a walled graveyard (AH_06), the site of 'Cloghran Church' and graveyard (AH_09), and an enclosed stone well (AH_10) are also located within the study area for Option A (Red) (see Section 3.1.2). Batterstown Roman Catholic Church (AH_02), is also located within the Batterstown North off-road focus area (see Section 3.2.2).

National Inventory of Architectural Heritage

Seven structures included on the NIAH have been identified within the study area for Option C (Yellow). These comprise gate lodges (AH_05, AH_15 and AH_18), houses (AH_12, AH_13 and AH_19) and a post box (AH_20), assessed by the NIAH to be of Regional importance.

A gate lodge (AH_05) in Hollywood, located approximately 18m to the north-east of Option C (Yellow), also lies within the study area for Option A (Red) (see Section 3.1.2). Two further gate lodges (AH_15 and AH_18) are located 8m and 19m to the west of Option C (Yellow) respectively. AH_15 comprises the late 19th century single-storey gate lodge to Lime Hill House (NIAH 11350015). AH_18 comprises a mid-19th century single-storey gable-fronted gate lodge to Bohomer (NIAH 11350011); however, on First Edition Ordnance Survey mapping (1837 – 1842) the house the gate lodge is associated with identified as '*St. Doolagh's*'. Both gate lodges are located adjacent to the driveways to their respective houses at entrances on the R107, behind low rubble stone boundary walls.

Wellfield House (AH_19) comprises a two-storey rubble stone house with brick dressings. Located 25m to the east of Option C (Yellow), the house is set within its associated demesne (DL_24). The house is depicted on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842) as '*St. Doolagh's Lodge*' with associated buildings to the north, and on later mapping (Ordnance Survey 25", 1888-1913) associated with '*St. Doolagh's Park*', a large house, to the north. The house is reportedly derelict⁴⁴. Positioned behind high rendered stone boundary walls, within established grounds, outward views are limited towards the R107. In addition, Belcamp House (AH_12 and AH_13) in Belcamp, located within the Belcamp off-road focus area, is also located within the study area for Option A (Red) (see Section 3.2.2).

A post box (AH_20) located on Malahide Road comprises an early 20th century wall-mounted cast-iron post box, with 'ER VII' monogram. This area has been redeveloped and the wall within which the post box was located appears to have been removed (Google StreetView, June 2022).

Eight additional structures included on the NIAH have been identified within the study area for Option C (Yellow). These are also Protected Structures and, to avoid double counting of constraints, have been included above under Protected Structures.

⁴⁴ <https://www.buildingsofireland.ie/buildings-search/building/11350020/wellfield-malahide-road-saintdoolaghs>.

Gardens and Designed Landscapes

A total of 19 GDLs have been identified within the study area for Option C (Yellow). Of these nine have been identified from the Survey of Historic Gardens and Designed Landscapes and ten have been identified from historic mapping (Ordnance Survey 6", 1837 – 1842). Information on these 29 GDLs is presented in Table 3.8 and are shown on Figure B.1.3 in Annex B.

Table 3.8: GDLs identified within the study area for Option C (Yellow)

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_02	Glebe	Demesne identified from historic mapping in Glebe (Ordnance Survey 6", 1837 – 1842) and on later mapping identified as 'Rathregan Rectory' (Ordnance Survey 25", 1888-1913). Located on the R154 in Batterstown. While the principal buildings remain extant, the driveway appears to have been realigned. Retains boundary features, including belts of woodland, as well as sections of the roughly coursed rubble stone boundary wall and a pair of squared gate piers on the R154.	Glebe	N/A	Ordnance Survey 6", 1837 – 1842
DL_04	Priest Town House	The GDL to Priest Town House, including principal house and ancillary buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Retains elements of parkland and woodland, as well as original driveways and entrances. Boundary along Belgree Lane formed of hedgerows and 'Crockanee' woodland.	Priest Town	NIAH 5156	Survey of Historic Gardens and Designed Landscapes
DL_05	Hollywoodrath	The GDL to Hollywoodrath, including principal building as well as garden and ancillary buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842; Ordnance Survey 25", 1888-1913). While there has been development within the footprint of the site, including the golf course to the west, a section of roadside rubblestone boundary wall remains extant to the south of the site along the road that bisects the demesne.	Hollystown; Hollywood; Hollywoodrath; Sprickletown	NIAH 2267	Survey of Historic Gardens and Designed Landscapes
DL_07	Ward House	Demesne identified from historic mapping as 'Ward House' (Ordnance Survey 6", 1837 – 1842) located on the crossroads between the R135 and R121. The principal house appears to have been demolished and the area redeveloped, including a new high roadside boundary wall.	Ward Lower	N/A	Ordnance Survey 6", 1837 – 1842
DL_08	Newpark House	Demesne identified from historic mapping as 'Newpark House' (Ordnance Survey 6", 1837 – 1842) located to the south of the R121. The area appears to have been redeveloped as a commercial complex, including a concrete block boundary wall.	Newpark	N/A	Ordnance Survey 6", 1837 – 1842
DL_09	Kingstown House	Demesne identified from historic mapping as 'Kingstown House' (Ordnance Survey 6", 1837 – 1842). The boundaries of the demesne reflect those depicted on historic mapping (Ordnance Survey 6", 1837 – 1842); however, the buildings appear to have been removed and, while the driveway is still perceptible, the entrance has been replaced by a modern field gate. Boundary features along Kilreesk Road include a ditch and established boundary (trees and hedgerow), as well as a modern post and rail fence.	Kingstown	N/A	Ordnance Survey 6", 1837 – 1842
DL_10	Little Forest House	Demesne identified from historic mapping as 'Little Forrest House' (Ordnance Survey 6", 1837 – 1842). This area has been redeveloped into Forrest Little Golf Club. While a short section of rubblestone boundary wall appears to remain extant	Forrest Little	N/A	Ordnance Survey 6",

Reference Number	Name	Description	Townland	NIAH Reference	Source
		alongside Forest Road, at the junction with Cooks Road, the boundary appears to have largely been replaced by the modern entrance to the golf club.			1837 – 1842
DL_11	Castle Mount	The GDL to Castle Mount. The principal building remains extant (RPS 611); however, the area has been developed. The boundary depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) is vaguely perceptible in places as hedgerows. The boundary on the R132 appears to have been replaced with a new wall.	Cloghran	NIAH 5726	Survey of Historic Gardens and Designed Landscapes
DL_12	Kitronan House	Demesne identified from historic mapping as 'Kitronan House' (Ordnance Survey 6", 1837 – 1842). While development has been undertaken within this demesne, the footprint remains perceptible. Boundary features appear to have been replaced along the R132.	Cloghran	N/A	Ordnance Survey 6", 1837 – 1842
DL_13	Limepark	Demesne identified from historic mapping as 'Limepark' (Ordnance Survey 6", 1837 – 1842). The principal building appears to have been demolished and the majority of the boundaries depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) are no longer present apart from sections of hedgerow. The demesne is bisected by Stockhole Lane.	Cloghran	N/A	Ordnance Survey 6", 1837 – 1842
DL_16	Glebe House	Demesne identified from historic mapping as 'Glebe House' (Ordnance Survey 6", 1837 – 1842), located to the east of Stockhole Lane. While the principal building appears to have been replaced with modern dwellings, the boundary and sub-divisions of the demesne reflect those depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Boundaries comprise established hedgerows, including trees, some of which have modern fence running parallel.	Glebe	N/A	Ordnance Survey 6", 1837 – 1842
DL_17	Belcamp	The GDL to Belcamp. The principal building (NIAH 11349005) and ancillary buildings appears to have been demolished. The footprint is vaguely perceptible on aerial imagery and features depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), such as the bridge, weir and gardens are perceptible.	Belcamp	NIAH 2455	Survey of Historic Gardens and Designed Landscapes
DL_18	Baskin Hill	The GDL to Baskin Hill. The boundary along Baskin Lane appears to have been replaced with a modern post and rail fence. The entrance comprises a set of modern rubblestone and brick entrance walls with iron gates with a drive to Baskin Hall that corresponds with the drive on historic mapping (Ordnance Survey 6", 1837 – 1842).	Baskin	NIAH 2456	Survey of Historic Gardens and Designed Landscapes
DL_20	Abbeyville House	The GDL to Abbeyville House. Footprint remains perceptible along with the principal building (NIAH 11350002, RPS 452), ancillary buildings and designed landscape features, such as the remains of a boating lake and areas of woodland and	Abbeyville	NIAH 2486	Survey of Historic

Reference Number	Name	Description	Townland	NIAH Reference	Source
		parkland. While houses have been built to the south of this demesne on the site of the old brewery (Ordnance Survey 6", 1837 – 1842), the boundary along Baskin Lane comprises an established hedgerow / tree line.			Gardens and Designed Landscapes
DL_21	Belcamp Hutchinson	The GDL to Belcamp Hutchinson. While some development has taken place within the footprint, features of the demesne remain extant including the 18th century three-storey house (RPS 789) and walled garden. A section of rubblestone boundary wall remains extant along the R107 to the north of the demesne along with a terrace of buildings depicted on the edge of the demesne on historic mapping (CH_38; Ordnance Survey 6", 1837 – 1842).	Belcamp	NIAH 5682	Survey of Historic Gardens and Designed Landscapes
DL_22	Lime Hill House	The GDL to Lime Hill House. The principal building remains extant (NIAH 11350015) along with other features of the demesne including the alignment of the driveway, areas of parkland and gate lodge (AH_15). A rubblestone boundary wall bounds the R107; however, appears to have been rendered or replaced north of the entrance.	Saint Doolaghs	NIAH 2488	Survey of Historic Gardens and Designed Landscapes
DL_23	Emsworth	The GDL to Emsworth. The house (RPS 458) remains extant at the centre of the demesne with the footprint of the site still perceptible. While some development has encroached on the site, the gate lodge (AH_18), coach house and stable yard also remain. A rubblestone boundary wall, harled in places, with triangular vertical copes, remains extant along the R107, along with established trees lining the boundary.	Bohammer	NIAH 2490	Survey of Historic Gardens and Designed Landscapes
DL_24	St Doolagh's Lodge	Demesne identified from historic mapping as 'St. Doolagh's Lodge' (Ordnance Survey 6", 1837 – 1842), located to the east of Malahide Road. The principal building remains extant (AH_17), as well as the southern boundary and area of parkland to the east. The boundary adjacent to the R107 comprises a high rendered stone wall.	Saint Doolaghs	N/A	Ordnance Survey 6", 1837 – 1842
DL_25	Balgriffin	Demesne identified from historic mapping 'Balgriffin' (Ordnance Survey 6", 1837 – 1842), located south of an unnamed watercourse and east of Malahide Road. Now Fingal Burial Ground. Boundary wall, comprising a coursed rubblestone construction, remains extant along with a section of rendered wall to the northern extent.	Balgriffin	N/A	Ordnance Survey 6", 1837 – 1842

3.3.3 Cultural Heritage

A total of 25 cultural heritage sites identified within the study area for Option C (Yellow) from the sources identified in Section 2. These largely comprise extant post-medieval buildings and structures, including road bridges, houses and farm buildings. Summary information on these cultural heritage sites is presented in Table 3.9 and are shown on Figure B.1.4 in Annex B.

Table 3.9: Cultural heritage sites identified within the study area for Option C (Yellow)

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_05	696892 / 747290	Portan	Farmhouse	A single storey rubblestone farmhouse depicted on historic Ordnance Survey mapping (1888-1913) located within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_06	696967 / 747353	Lismahon	Road Bridge	A stone road bridge depicted on historic Ordnance Survey mapping (1888-1913) located within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_07	697221 / 747488	Glebe	Buildings	Extant buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) along the road through Batterstown within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_12	702502 / 744660	Ballymagillin	Courtyard farm	A group of rendered stone farm buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_13	702660 / 744657	Whitesland	House	A house depicted on historic mapping (Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_14	703920 / 745061	Nuttstown	Road Bridge	A stone road bridge that carries the road through Nuttstown across an unnamed watercourse depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).
CH_15	705608 / 745439	Belgree	Road Bridge	A stone road bridge that carries the road across the Ward River in Belgree depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).
CH_16	706594 / 745764	Belgree	Road Bridge	A rubble stone bridge that carries the Kilbride Road over a minor watercourse depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).
CH_19	708295 / 743234	Hollywood	Police Barracks	A 'police barracks' depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Comprises a two-storey rectangular plan building, now ruinous (Google StreetView, July 2021) within a walled plot with an entrance to the north. Positioned immediately adjacent to the R121 views outwards are obscured by established vegetation.

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_24	710160 / 745108	Ward Upper	House	'Six Mile House' depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).
CH_25	710338 / 745269	Newpark	Agricultural ranges	A group of agricultural buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_29	712626 / 745191	Ballystrahan	House	A house depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_35	719145 / 743156	Baskin	Farm	A cluster of agricultural ranges depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_36	720576 / 742969	Bohammer	Farm	A group of agricultural buildings forming a courtyard depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) to the south of Baskin Lane, including a two-storey rendered farmhouse, perpendicular to the road, and rendered rubblestone stables, positioned immediately adjacent to the road enclosed by a rubblestone wall. Views are across the yard, and beyond the boundary to the north, across Baskin Lane towards the fields beyond.
CH_37	721014 / 741741	Saint Doolaghs	Road Bridge	A road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), identified as 'St Doolagh's Bridge', comprising a single arch with a low stone parapet to the west of Malahide Road. Carries the Malahide Road across an unnamed watercourse.
CH_38	721109 / 741427	Belcamp	Buildings	Extant buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) in Balgriffin fronting the R107, including rendered commercial units with residential floors, and harled houses on the R123.
CH_39	721123 / 742238	Kinsaley	Memorial	A modern roadside memorial comprising a granite carved stone, with cross, adjacent to the R107, positioned in front of the remains of a rubblestone boundary wall.
CH_40	721156 / 741198	Belcamp	Road Bridge	A road bridge and weir depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). The bridge comprises a pair of low stone parapets, the western parapet appears to have been rendered and extends along Malahide Road. Carries the Malahide Road across the Mayne River.

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_43	695461 / 747780	Woodland	Agricultural Buildings	A group of agricultural buildings depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_44	695803 / 748317	Portan	Thatched Building	A thatched building depicted as 'Portan' on First Edition Ordnance Survey mapping (1837 – 1842) located within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_45	695477 / 747147	Ribstown	Agricultural Buildings	Two buildings depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_46	696925 / 747831	Rathregan	Tree	The site of 'The Big Tree' depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_47	697158 / 747323	Glebe	House	A house depicted on First Edition Ordnance Survey mapping (1837 – 1842) located within the Batterstown North off-road focus area (see Table 3.6 in Section 3.2.3).
CH_48	700948 / 745680	Piercetown	Railway (Site of)	Alignment of the M.G.W.R (Dublin and Navan Branch) railway, depicted on Ordnance Survey 25" mapping (1888-1913), perceptible as an earthwork, located within the M3 off-road focus area.
CH_51	707212 / 744554	Court	Enclosure	A square enclosure with associated linear features identified from aerial imagery (GoogleEarth, Sept 2003) (see Table 3.3 in Section 3.1.3).

Previous Excavations

A review of Excavations Bulletin and TII's Archaeological Excavation Reports identified the following archaeological excavations in the Option C (Yellow) study area:

- Archaeological monitoring for the High Voltage Cable—East–West Interconnector Project (Licence Number: 10E155) identified two areas of charcoal rich soil and deposits of medieval and post-medieval pottery, 19th century clay pipe and possible flint fragments.
- Archaeological excavation in advance of the M3 Clonee to north of Kells motorway (Licence Numbers: A017/014, E3036) identified a drainage system comprising a series of 19th century French drains and ditches and an isolated pit.
- Monitoring for the Airport-Balbriggan Bypass (Licence Number: 00E0950) identified an isolated area of charcoal-rich soil, interpreted as a possible ploughed out pit of unknown date.
- Archaeological testing for the Clonee-North of Kells PPP scheme (Licence Number: 04E0468) identified an isolated pit of unknown date.
- Archaeological testing of the outer enclosing ditch of the ecclesiastical enclosure as part of a community project (Licence Number: 15E0329) identified by geophysical survey to the south of St. Doolagh's.
- Archaeological excavations in advance of the N2 Finglas- Ashbourne realignment (Licence Number: 03E1358) in Ward Upper identified a small pit or token cremation, as well as a pit containing a large amount of prehistoric pottery.
- Archaeological monitoring (Licence Number: 04E1066) on Malahide Road identified a ring ditch with an entrance in the south-east of the ditch and a central pit. Fragments of Bronze Age pottery were recovered from the ditch fill and the central pit as well as burnt and unburnt bone.
- Archaeological excavations at St Doolaghs (Licence Number: E000508) did not identify any early activity or burials near the baptistry; however, did identify occupation and burial evidence within a circular enclosure, as well as iron working, from the late medieval period onwards.
- Archaeological monitoring for a proposed water main (Licence Number: 12E0185) identified possible structural remains east of St Doolagh's Church, as well as a post-medieval field boundary at the entrance to Bohomer estate, and two linear features between the entrance to Abbeville and the Malahide Road junction with Feltrim Road interpreted as possible robbed out walls.

A further 15 archaeological excavations were also identified (under Licence numbers: 15E0572, 18E0722, 06E0563, 06E0563 ext., 09E0467, 08E0333, 00E0951, 06E1029, 99E0470, 03E0104, 00E0688, 13E0361, 98E0479, 06E0343 99E0693); however, these did not identify any archaeological remains or deposits of archaeological significance.

A review of the National Museum Topographical Finds available online identified a casual find of a belt mount (IA/241/1988 (6)) within the study area for Option C (Yellow) in Saint Doolaghs.

3.4 Option D (Blue)

3.4.1 Archaeology

A total of 25 archaeological constraints were identified within the study area for Option D (Blue) (see Annex A and Figure B.1.1 in Annex B). These comprise:

- 20 Recorded Monuments; and

- Five sites recorded on the SMR.

No National Monuments, sites with Preservation Orders placed on them, or sites on the RHM were identified within the study area for Option D (Blue).

Recorded Monuments

A total of 20 Recorded Monuments are located within the study area for Option D (Blue) (see Figure B.1.1 in Annex B). These comprise:

- A mound (AY_06), approximately 70m to the west of Option D (Blue), comprising a sub-circular grass-covered mound, with a slight outer bank, measuring approximately 24m in diameter. The mound is depicted on First Edition Ordnance Survey mapping (1837 – 1842) and later mapping (Ordnance Survey 25", 1888-1913) as a 'Moat'. Archaeological testing to the south of the mound (Licence Number: 20E0014) did not identify any associated remains. The mound is visible on aerial imagery as a sub-circular area of rough ground to the south-west of a modern garden and as a low-profile mound from the road to the east. The mound is positioned to the north of the Tolka River in an area of pasture fields.
- A possible circular enclosure (AY_18) in Ballintry, located approximately 35m to the south of Option d (Blue) (see Section 3.1.1).
- The site of a castle (AY_25), approximately 37m to the north of Option D (Blue), a church and graveyard (AY_23 and AY_24), located adjacent to the R121 immediately to the north-west of Option D (Blue), and holy well (AY_22) in Ward Upper and Ward Lower (see Section 3.1.1).
- The site of an 18th/19th century house (AY_27) in Newpark, approximately 60m to the south of Option D (Blue) (see Section 3.1.1).
- An enclosure (AY_29) in Common, approximately 54m to the north of Option D (Blue) (see Section 3.1.1).
- A graveyard (AY_30) located to the north of Option D (Blue) in Common (see Section 3.1.1).
- The site of an enclosure (AY_34), located by the RMP approximately 55m to the north of Option D (Blue) in Killeek (see Section 3.3.1).
- An ecclesiastical enclosure (AY_35), walled graveyard (AY_36) and a ruinous church (AY_37) in Killeek, approximately 38m to the north of Option D (Blue) (see Section 3.3.1).
- An enclosure (AY_38) in Killeek to the south of Option D (Blue) (see Section 3.3.1).
- The site of a chapel and burial ground (AY_39 and AY_40), located in Forrest Great approximately 85m to the south of Option D (Blue) (see Section 3.3.1).
- The site of a 16th/17th century house (AY_42) approximately 65m to the north of Option B (Green) in Forrest Great (see Section 3.1.1).
- A ringfort (AY_43), approximately 28m to the south of Option D (Blue) in Cloghran (see Section 3.1.1).
- A church and its associated graveyard (AY_44 and AY_45) in Cloghran, approximately 65m to the south of Option D (Blue) (see Section 3.1.1).

Sites on the Sites and Monuments Record

A total of five sites recorded on the SMR have been identified within the study area for Option D (Blue). These comprise the locations of cropmarks. These are included in Table 3.10 and are shown on Figure B.1.1 in Annex B.

A further two sites on the SMR have not been included in Table 3.10 as these comprise sites excavated in advance of development including the M3 Motorway (AY_10), and the N2 Motorway (AY_21). While these sites provide an

indication of possible activity in these locations, given these sites have been removed and developed, they are no longer constraints.

Table 3.10: Sites recorded on the SMR within the study area for Option D (Blue)

Reference Number	SMR Reference	Description	Townland	Location (Easting / Northing)
AY_19	ME051-017	A cropmark interpreted as a sub-circular enclosure, measuring approximately 30m in diameter, located approximately 75m to the north of Option D (Blue). The enclosure comprises a single fosse (ditch) identified from aerial imagery. No corresponding features are depicted on historic mapping.	Nuttstown	705085 / 745365
AY_28	DU011-156	A circular cropmark, measuring approximately 30m in diameter in Common, approximately 45m to the north of Option D (Blue), interpreted as an enclosure. While not depicted on historic mapping, this enclosure may correspond with the 'fort' identified on First Edition Ordnance Survey mapping (1837 – 1842). A circular feature is vaguely perceptible on aerial imagery in a pasture field to the north of the R121.	Common	712145 / 745847
AY_31	DU011-124	A large circular cropmark in Ballystrahan approximately 33m to the south-west of Option D (Blue), interpreted as an enclosure, as well as a possible associated field system (DU011-125). The circular enclosure is visible on aerial imagery in an arable field, south-west of the R122, along with a number of linear features in the surrounding fields.	Ballystrahan	712641 / 745143
AY_33	DU011-126	A circular cropmark in Kingstown approximately 64m to the west of Option D (Blue), interpreted as a ring ditch. In addition, other linear features were also identified from aerial imagery and interpreted as a possible field system in the same arable field (DU011-127).	Kingstown	713322 / 745300
AY_46	DU014-111	An enclosure identified from aerial imagery located in the Belcamp off-road focus area (see Table 3.1 in Section 3.1.1).	Stockhole	718714 / 743074

Archaeological Potential

Similar to the other route options, previous archaeological excavations in advance of development within the study area for Option D (Blue) have identified evidence of human activity dating from the prehistoric period onward (see Section 3.4.3) and there is the potential for previously unknown archaeological remains to be present, particularly in greenfield areas, including within the Batterstown South off-road focus area and Belgree West off-road focus area. There is also the potential for previously unknown archaeological remains associated with known archaeological constraints to be present, for example within the Zones of Notification of Recorded Monuments.

Option D (Blue) follows the existing local and regional road network, and there is a lower potential for previously unknown archaeological remains in these areas given construction of these roads may have removed or truncated any archaeological remains that may have been present. However, some sections of Option D (Blue) are located within pre-1840 roadways, including the road from Lismahon to Batterstown, the R154, the road from the M3 to Kilbride, the R121, the road through Ballystrahan, Killeek Lane, the R108, Dublin Road, Baskin Lane, Malahide Road, and Belcampe Lane and there is the potential for the presence of historic road surfaces in these locations.

Option D (Blue) crosses the Tolka River, Pinkeen River, and Mayne River as well as a number of minor watercourses. There is the potential for votive offerings, objects apparently deposited for religious reasons, in rivers. The underlying geology is largely limestone with conglomerate, calcareous shale and unbedded lime-mudstone. Superficial deposits comprise till, gravel, alluvium and lacustrine sediments, as well as pockets of outcropping bedrock in Killamonan, Ward Upper, Newpark, Ballystrahan, and Forrest Great⁴⁵. In areas of lacustrine sediments and alluvium there is the potential for previously unknown archaeological remains, including paleoenvironmental and organic materials, to be preserved.

3.4.2 Architectural Heritage

A total of 20 architectural heritage constraints were identified within the study area for Option D (Blue). These comprise:

- Six Protected Structures (see Figure B.1.2 in Annex B);
- Two structures included on the NIAH (see Figure B.1.2 in Annex B), assessed by the NIAH to be of Regional importance; and
- 12 GDLs (see Figure B.1.3 in Annex B).

No ACAs have been identified within the study area for Option D (Blue).

Record of Protected Structures

The six Protected Structures identified within the study area for Option D (Blue) are shown on Figure B.1.2 in Annex B and comprise:

- Saint Thomas's Church (AH_04) is located approximately 15m to the north-east of Option D (Blue) and is described in Section 3.3.2.
- The remains of a medieval parish church within a walled graveyard (AH_06), the site of 'Cloghran Church' and graveyard (AH_09), and an enclosed stone well (AH_10) are also located within the study area for Option A (Red) (see Section 3.1.2).
- The remains of a medieval church within and oval shaped enclosed graveyard (AH_08). This is also a Recorded Monument (AY_37) and has been described under Recorded Monuments (see Section 3.4.1).
- A late 18th or early 19th century single-storey thatched cottage (AH_07) with stone outbuildings is located approximately 5m to the east of Option D (Blue).

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A gate lodge (AH_05) in Hollywood, is located approximately 12m to the north-east of Option D (Blue), is also located within the study area for Option A (Red) and is described in Section 3.1.2. In addition, Belcamp House (AH_13) in Belcamp, located approximately 70m to the south of Option B (Green), is also located within the study area for Option A (Red) (see Section 3.2.2).

Three additional structures included on the NIAH are also Protected Structures (AH_04, AH_07, and AH_08) and, to avoid double counting constraints, has been included above under Protected Structures.

⁴⁵ <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>.

Gardens and Designed Landscapes

A total of 12 GDLs have been identified within the study area for Option D (Blue). Of these five were recorded by the Survey of Historic Gardens and Designed Landscapes and seven have been identified from historic mapping (Ordnance Survey 6", 1837 – 1842). Information on these GDLs is presented in Table 3.11 and are shown on Figure B.1.3 in Annex B.

Table 3.11: GDLs identified within the study area for Option D (Blue)

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_04	Priest Town House	The GDL to Priest Town House, including principal house and ancillary buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Retains elements of parkland and woodland, as well as original driveways and entrances. Boundary along Belgree Lane formed of hedgerows and 'Crockanee' woodland.	Priest Town	NIAH 5156	Survey of Historic Gardens and Designed Landscapes
DL_05	Hollywoodrath	The GDL to Hollywoodrath, including principal building as well as garden and ancillary buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842; Ordnance Survey 25", 1888-1913). While there has been development within the footprint of the site, including the golf course to the west, a section of roadside rubblestone boundary wall remains extant to the south of the site along the road that bisects the demesne.	Hollystown; Hollywood; Hollywoodrath; Sprickletstown	NIAH 2267	Survey of Historic Gardens and Designed Landscapes
DL_07	Ward House	Demesne identified from historic mapping as 'Ward House' (Ordnance Survey 6", 1837 – 1842) located on the crossroads between the R135 and R121. The principal house appears to have been demolished and the area redeveloped, including a new high roadside boundary wall.	Ward Lower	N/A	Ordnance Survey 6", 1837 – 1842
DL_08	Newpark House	Demesne identified from historic mapping as 'Newpark House' (Ordnance Survey 6", 1837 – 1842) located to the south of the R121. The area appears to have been redeveloped as a commercial complex, including a concrete block boundary wall.	Newpark	N/A	Ordnance Survey 6", 1837 – 1842
DL_09	Kingstown House	Demesne identified from historic mapping as 'Kingstown House' (Ordnance Survey 6", 1837 – 1842). The boundaries of the demesne reflect those depicted on historic mapping (Ordnance Survey 6", 1837 – 1842); however, the buildings appear to have been removed and, while the driveway is still perceptible, the entrance has been replaced by a modern field gate. Boundary features along Kilreesk Road include a ditch and established boundary (trees and hedgerow), as well as a modern post and rail fence.	Kingstown	N/A	Ordnance Survey 6", 1837 – 1842
DL_10	Little Forest House	Demesne identified from historic mapping as 'Little Forrest House' (Ordnance Survey 6", 1837 – 1842). This area has been redeveloped into Forrest Little Golf Club. While a short section of rubblestone boundary wall appears to remain extant alongside Forest Road, at the junction with Cooks Road, the boundary appears to have largely been replaced by the modern entrance to the golf club.	Forrest Little	N/A	Ordnance Survey 6", 1837 – 1842
DL_11	Castle Mount	The GDL to Castle Mount. The principal building remains extant (RPS 611); however, the area has been developed. The boundary depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) is vaguely perceptible in places as hedgerows. The boundary on the R132 appears to have been replaced with a new wall.	Cloghran	NIAH 5726	Survey of Historic Gardens and Designed Landscapes

Reference Number	Name	Description	Townland	NIAH Reference	Source
DL_13	Limepark	Demesne identified from historic mapping as 'Limepark' (Ordnance Survey 6", 1837 – 1842). The principal building appears to have been demolished and the majority of the boundaries depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) are no longer present apart from sections of hedgerow. The demesne is bisected by Stockhole Lane.	Cloghran	N/A	Ordnance Survey 6", 1837 – 1842
DL_14	Woodlands	The GDL to Woodlands. While there has been some development to the north (R139 and roundabout), the footprint of this site and features within it, including the drive, trees and parkland remain perceptible. The principal building remains extant and appears to be on the site of an earlier dwelling. A belt of trees forms the northern boundary along the R139.	Clonshagh	NIAH 2435	Survey of Historic Gardens and Designed Landscapes
DL_15	Upper Middletown	Demesne identified from historic mapping as 'Upper Middletown' (Ordnance Survey 6", 1837 – 1842). The principal building is no longer extant, along with the driveway and 'Turret' depicted on historic mapping, and the location of the gate lodge to the east of Stockhole Lane has been redeveloped as modern dwellings. The boundary of the demesne remains extant as established hedgerows with sub-divisions visible as cropmarks on aerial imagery and extant as a hedgerow / ditch.	Middletown	N/A	Ordnance Survey 6", 1837 – 1842
DL_16	Glebe House	Demesne identified from historic mapping as 'Glebe House' (Ordnance Survey 6", 1837 – 1842), located to the east of Stockhole Lane. While the principal building appears to have been replaced with modern dwellings, the boundary and sub-divisions of the demesne reflect those depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Boundaries comprise established hedgerows, including trees, some of which have modern fence running parallel.	Glebe	N/A	Ordnance Survey 6", 1837 – 1842
DL_17	Belcamp	The GDL to Belcamp House. The principal building (AH_12 and AH_13) and ancillary buildings appears to have been demolished. The footprint is vaguely perceptible on aerial imagery and features depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), such as the bridge, weir and gardens are perceptible.	Belcamp	NIAH 2455	Survey of Historic Gardens and Designed Landscapes

3.4.3 Cultural Heritage

A total of 23 cultural heritage sites identified within the study area for Option D (Blue) from the sources identified in Section 2. These largely comprise extant post-medieval buildings and structures, including stone road bridges, vernacular housing and farm buildings. Summary information on these cultural heritage sites is presented in Table 3.12 and are shown on Figure B.1.4 in Annex B.

Table 3.12: Cultural heritage sites identified within the study area for Option D (Blue)

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_01	694857 / 745004	Blackhall Big	Roadside house	A single storey roadside cottage depicted on historic mapping (Ordnance Survey 25", 1888-1913) approximately 8m to the south of Option D (Blue) (see Table 3.3 in Section 3.1.3).
CH_04	696348 / 744292	Staffordstown Little	Roadside house	A single storey house depicted on historic mapping (Ordnance Survey 25", 1888-1913) approximately 12m to the south of Option D (Blue) (see Table 3.3 in Section 3.1.3).
CH_08	698026 / 744453	Baytownpark	Road Bridge	A road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842), comprising a pair of unmatching parallel stone parapets. Carries the road across an unnamed watercourse.
CH_09	698208 / 744723	Vesingtown	Road Bridge	A road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Comprises a pair of parallel rubblestone stone parapets with semi-circular copes. Appears to have been subject to repair (Google StreetView, March 2019). Carries the road across an unnamed watercourse.
CH_10	698964 / 745271	Vesingtown	Road Bridge	A stone road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Harled parallel parapets, western parapet obscured by vegetation (Google StreetView, March 2019). Carries the road across an unnamed watercourse.
CH_11	699269 / 745582	Lustown	Road Bridge	A stone road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) comprising parallel parapets, the eastern of which has splayed approaches. The bridge appears to have been repaired / restored (Google StreetView, March 2019). Carries the road over the Tolka River.
CH_12	702502 / 744660	Ballymagillin	Courtyard farm	A group of rendered stone farm buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_13	702660 / 744657	Whitesland	House	A house depicted on historic mapping (Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_14	703920 / 745061	Nuttstown	Road Bridge	A stone road bridge that carries the road through Nuttstown across an unnamed watercourse depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).
CH_15	705608 / 745439	Belgree	Road Bridge	A stone road bridge that carries the road across the Ward River in Belgree depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) located within the Belgree West off-road focus area (see Table 3.3 in Section 3.1.3).
CH_16	706594 / 745764	Belgree	Road Bridge	A rubble stone bridge that carries the Kilbride Road over a minor watercourse depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) located within the Belgree West off-road focus area (see Table 3.3 in Section 3.1.3).
CH_19	708295 / 743234	Hollywood	Police Barracks	A police barracks depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.9 in Section 3.3.3).
CH_24	710160 / 745108	Ward Upper	House	'Six Mile House' depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) (see Table 3.3 in Section 3.1.3).

Reference Number	Location (Easting / Northing)	Townland	Site Type	Description
CH_25	710338 / 745269	Newpark	Agricultural ranges	A group of agricultural buildings depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_29	712626 / 745191	Ballystrahan	House	A house depicted on historic mapping (Ordnance Survey 6", 1837 – 1842 and Ordnance Survey 25", 1888-1913) (see Table 3.3 in Section 3.1.3).
CH_30	718730 / 741985	Clonshaugh	House	A two-storey, roadside farmhouse with agricultural ranges depicted on historic mapping (Ordnance Survey 6", 1837 – 1842). Modern single-storey porch to east, and a single storey extension to the south (Google StreetView, January 2022). The house is set back from Clonshaugh Road in a low walled garden, with views across the road, towards the fields beyond.
CH_31	718755 / 742792	Stockhole	Ford	'Shane's Ford' depicted on First Edition Ordnance Survey mapping (1837 – 1842) (see Table 3.6 in Section 3.2.3).
CH_41	694713 / 746280	Culcommon	Road Bridge	The western coursed, rubble stone parapet of a road bridge depicted on historic mapping (Ordnance Survey 6", 1837 – 1842) located within the Batterstown South off-road focus area (see Table 3.3 in Section 3.1.3).
CH_42	694977 / 746856	Ribstown	House	A roadside cottage depicted on historic mapping (Ordnance Survey 25", 1888-1913) located within the Batterstown South off-road focus area (see Table 3.3 in Section 3.1.3).
CH_48	700948 / 745680	Piercetown	Railway (Site of)	The alignment of the M.G.W.R (Dublin and Navan Branch) railway, depicted on Ordnance Survey 25" mapping (1888-1913) within the M3 off-road focus area (see Table 3.9 in Section 3.3.3).
CH_49	705928 / 745630	Priest Town	Gravel Pit	A 'Gravel Pit' depicted on First Edition Ordnance Survey mapping (1837 – 1842), within the Belgree West off-road focus area, in a small area of woodland east of Priest Town Demesne (DL_04).
CH_50	705636 / 745261	Belgree	Gravel Pit	A 'Gravel Pit' depicted on First Edition Ordnance Survey mapping (1837 – 1842). Not identified on later mapping. Located in an arable field to the south of Belgree Lane within the Belgree West off-road focus area.
CH_51	707212 / 744554	Court	Enclosure	A square enclosure with associated linear features identified from aerial imagery (GoogleEarth, Sept 2003) (see Table 3.3 in Section 3.1.3).

Previous Excavations

A review of Excavations Bulletin and TII's Archaeological Excavation Reports identified the following archaeological excavations in the Option D (Blue) study area:

- Archaeological testing for the Clonee-North of Kells PPP scheme (Licence Number: 04E0468) identified an isolated pit of unknown date.
- Archaeological excavation in advance of the North Runway development at Dublin airport (Licence Number: 17E0090) in Barberstown identified the remains of an earth-cut early medieval kiln and a ditch which contained fragments of iron knives and sherds of 12th – 13th century pottery. An oval bivalent enclosure previously identified through geophysical survey undertaken for the North Runway development at Dublin airport was confirmed through archaeological testing, along with a number of other features including pits and structural slot trenches (Licence Number: 19E0006). Archaeological testing (Licence Number: 17E0282) also identified multi-phase occupation evidence including fulacht fia, late Neolithic pits, and a medieval field system.
- Monitoring for the Airport-Balbriggan Bypass (Licence Number: 00E0950) identified an isolated area of charcoal-rich soil, interpreted as a possible ploughed out pit of unknown date.
- Archaeological excavations in advance of the N2 Finglas- Ashbourne realignment (Licence Number: 03E1358) in Ward Upper identified a small pit or token cremation, as well as a pit containing a large amount of prehistoric pottery.

A further nine archaeological excavations were also identified (under Licence numbers: 02E1388, 18E0219, 99E0226, 99E0693, 18E0722, 17E0091, 04E0381, 98E0479, and 00E0951); however, these did not identify any archaeological remains or deposits of archaeological significance.

A review of the National Museum Topographical Finds available online identified no casual finds within the study area for Option D (Blue).

4. References

Aerial Photographs

Cambridge University Collection of Aerial Photography (CUCAP): <https://www.cambridgeairphotos.com/>

CUCAP Number	Date	Subject
BDK006	1970	Crop marks. Dunboyne, Meath, Ireland

Historic Maps

The Down Survey of Ireland, 1656-1658, <http://downsurvey.tcd.ie/index.html>

Rocque, 1760, Dublin County, <http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html>

Ordnance Survey, 6" to 1 mile, 1837 – 1842,
<https://geohive.maps.arcgis.com/apps/webappviewer/index.html?id=9def898f708b47f19a8d8b7088a100c4>

Ordnance Survey, 25" to 1 mile, 1888-1913,
<https://geohive.maps.arcgis.com/apps/webappviewer/index.html?id=9def898f708b47f19a8d8b7088a100c4>

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Annex A. Inventory of Archaeology, Architectural Heritage and Cultural Heritage Constraints

Table A1: Inventory of Archaeological Constraints

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
AY_01	ME050-002001	N/A	Ballymaglassan	Meath	Graveyard	696087 / 745606	Situated on a rise in a fairly level landscape. The site of the medieval parish church of Ballymaglassan (ME050-002-----), of which there is no physical trace, is within a D-shaped graveyard (max. dims c. 50m NE-SW; c. 40m NW-SE) defined by masonry walls with the straight sides at NE and SE. The headstones date from c. 1780 to c. 1930.	Medieval	Archaeological Survey of Ireland SMR
AY_02	ME050-002	Recorded Monument	Ballymaglassan	Meath	Church	696095 / 745606	Situated on a rise in a fairly level landscape. A church at Balinacglassan is listed in the ecclesiastical taxation (1302-06) of Pope Nicholas IV (Cal. doc. Ire., 5, 254). Ussher (1622) describes the church as in reasonable repair but the chancel was ruined (Erlington 1847-64, 1, lxxi). A ruined church is marked on the Down Survey (1656-8) parish map at Ballymaglassan. According to Dopping (1682-5) the church and chancel of St Kenan's (Kieran ?) were ruined since 1641 but the walls were standing and the graveyard was not enclosed (Ellison 1971, 38). A new church, described as a 'neat little edifice' was built in 1800 (Lewis 1837, 1, 146), but this is now closed. The E window from this church, which had come from the Church of Ireland church at Ratoath is now in the E wall of St Seachnall's Church of Ireland Church at Dunshaughlin (Kenny 1994-5). The site of the medieval church, of which there is no physical trace, is within a D-shaped graveyard (max. dims c. 50m NE-SW; c. 40m NW-SE) defined by masonry walls with straight sides at NE and SE. The headstones date from c. 1780 to c. 1930 and have been published (ibid). Depicted on 17th century mapping as being in ruins (Down, 1656-1658). Depicted on First Edition Ordnance Survey mapping (1837 – 1842) as the 'Site of Old Church' south of a new church (AH_01). The site of the church is located within Ballymaglassan House GDL (DL_01). The site of the medieval church is within an enclosed graveyard (AY_01). The site of the church is located on a rise in the landscape. Views are of its immediate surroundings and distant views are limited by established belts of trees in all directions.	Medieval	NMS, 1996, Record of Monuments and Places (County Meath) The Down Survey of Ireland, 1656-1658 Ordnance Survey 6", 1837 – 1842
AY_03	ME044-027	Recorded Monument	Lismahon	Meath	Mound	696401 / 746575	Situated on a level landscape and just N of where three old field drains meet. A small circular feature described as 'Lismahon Moat' is depicted on the 1836 edition of the OS 6-inch map and it is described similarly on the 1908 edition. This is an oval, flat-topped and grass-covered mound (dims of base 16m E-W; 9m N-S; dims of top 6.5m E-W; 1.5m; H 1.6m at E to 2.2m at W) at the S corner of a field with large, silted drains just to the E and W.	Unknown	NMS, 1996, Record of Monuments and Places (County Meath) Ordnance Survey 6", 1837 – 1842 https://www.duchas.ie/en/cbes/5008916/4966

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							The mound is depicted on First Edition Ordnance Survey mapping (1837 – 1842) as ‘Lismahon Moat’. Possibly the mound within the field known locally as ‘The House Division,’ where a group of men digging for gold under the mound and were struck down as a result.		449/5106948 [Accessed August 2022]
AY_04	ME044-035	Recorded Monument	Lismahon	Meath	Ritual site - holy tree/bush	696416 / 746776	<p>Situated on a level landscape and on a small NE-SW roadway c. 1km SW of Batterstown village. A bush, described as the ‘Monument Bush’ in italic script is depicted in the roadway on the 1835 edition of the OS 6-inch map, but it had been removed by the start of the next century as it is described as the site of the monument bush on the 1908 edition. According to the OS letters of the 1830s funerals were carried in procession around the Big Tree in Rathregan and the Monument Bush, but there was no explanation of the name (Herity 2001, 114). In the folk tradition it was regarded as a Mass bush where Mass was celebrated in Penal times (IFC Schools’ Collection vol. 0687, P 316). The roadway with its banks and hedges is still slightly wider at this point.</p> <p>A ‘Monument Bush’ depicted on First Edition Ordnance Survey mapping (1837 – 1842), and later mapping shows ‘Monument Bush (Site of)’.</p> <p>Tradition notes funerals were carried in procession around the big tree in Rathregan and the Monument Bush, and that mass was celebrated at the bush during Penal Times.</p> <p>Road workers also recovered two human skulls from this location in the 1930s, believed to be the remains of Irish soldiers who were hanged in this location while retreating from the Battle of Tara (AD 980).</p>	Unknown	NMS, 1996, Record of Monuments and Places (County Meath) Ordnance Survey 6”, 1837 – 1842 Ordnance Survey 25”, 1888-1913 https://www.duchas.ie/en/cbes/5008916/4966444/5106937?ChapterID=5008916 [Accessed August 2022] https://www.duchas.ie/en/cbes/5008921/4966731/5107671 [Accessed August 2022]
AY_05	ME044-038	N/A	Rathregan	Meath	Font	697159 / 747637	Located in the grounds of the Roman Catholic church of the Assumption at Batterstown. This is a rectangular granite font (ext. dims 0.58m x 0.58m; H 0.34m) with a rectangular basin (int. dims 0.42m x 0.41m; D 0.16m). Externally, it has chamfered corners at the bottom (H 0.21m) and its drain-hole is obscured by soil. Two of the sides have two shallow depressions (diam. 4cm) on the rim for the attachment of a lid. It is not known from which medieval church site it came.	Unknown	Archaeological Survey of Ireland SMR
AY_06	ME050-003	Recorded Monument	Quarryland	Meath	Barrow - mound barrow	699247 / 745732	Situated on a gentle SW-facing slope, this feature is described as a ‘Moat’ on the 1836 and 1908 editions of the OS 6-inch map. This is a subcircular grass-covered mound (diam. of base 24m NE-SW; diam. of top 11.5m N-S; 11.3m E-W; ext. H 1.2m at NE to 1.8m at SW), with a slight outer bank (Wth c. 2m; H 0.2m) at NE. Archaeological testing (20E0014) by P. D. Sweetman (2020) in an area (dims c. 80m NW-SE; c. 80m NE-SW) immediately S of the monument failed to produce any related material.	Bronze Age	NMS, 1996, Record of Monuments and Places (County Meath) Ordnance Survey 6”, 1837 – 1842 Ordnance Survey 25”, 1888-1913

CP1021: East Meath to North Dublin Grid Upgrade

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							<p>Depicted on First Edition Ordnance Survey mapping (1837 – 1842) and later mapping as a 'Moat'.</p> <p>The mound is visible on aerial imagery as a sub-circular area of rough ground to the south-west of a modern garden and as a low-profile mound from the road to the east.</p> <p>The mound is positioned to the north of the Tolka River in an area of pasture fields.</p>		
AY_07	ME050-030	N/A	Dunboyne	Meath	Field system	700971 / 743204	<p>Situated on a fairly level landscape. Aerial photographs by L. Swan (LS_AS_67BWN_00132) from the early 1970s record elements of a rectangular field system covering an extensive area (dims c. 220m NW-SE; c. 220m NE-SW) between the large enclosure (ME050-027----) to the SE and the possible church site (ME050-029----) to the NW, but not connected directly with either and different in character to both. The fields are large and rectangular (dims c. 60-120m x c. 30-50m), and appear to be defined by single ditches that correspond closely to features represented on the Down Survey (1656-8) barony and parish maps. They also run generally parallel with the current boundaries but are probably medieval in date.</p> <p>The area was subject to a partial magnetic gradiometer and earth resistance survey (00R0014) by I. Elliott (2000) where the features recorded in the aerial photographs are confirmed. Elliott's results suggest that the enclosing elements consisted primarily of hedges. The NE-SW by-pass road (R157) for Dunboyne cut through the area, and centre-line testing (04E0487) by R. O'Hara (2004, 10-11) noted four of these ditches of uniform character (Wth c. 1.2m; D 0.5m) with homogenous fills from which nothing was recovered except some snail shells (excavations.ie 2004:1229). Further excavation (E003024) by R. Elliott (excavations.ie 2004:1554) of Dunboyne 4 recorded the drain features in detail and recovered post-medieval and modern ceramics from them. The long structure (ME050-062001-) and its associated possible kiln (ME050-062002-) were also identified and excavated but they are unrelated to the fields (Elliott 2008).</p>	Post-medieval	Archaeological Survey of Ireland SMR
AY_08	ME050-062001	N/A	Dunboyne	Meath	Structure	701066 / 743342	<p>Situated on a slight rise in a generally level landscape. Archaeological testing (04E0487) by R. O'Hara on the link-road (R157) for Dunboyne set aside this area for resolution as Dunboyne 4 (excavations. ie 2004:1229). Archaeological excavation (E003024) by R. Elliott (excavations.ie 2004:1554) recorded elements of the field system (ME050-030----) as well as this prehistoric structure and the possible kiln (ME050-062002-). Nineteenth century quarrying, the importation of soils and subsequent ploughing severely truncated most of the archaeological features.</p>	Middle – Late Bronze Age	<p>Archaeological Survey of Ireland SMR</p> <p>https://excavations.ie/report/2004/Meath/0012351/</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							Thirty one stake and post-holes were recorded in one area, and twenty three of these create a long narrow structure (dims 13m plus ENE-WSW; 3.5m NNW-SSE) extending outside the road-take to the WSW. A strictly regular pattern is not discernible but two post-holes just outside the S line towards the E end have ramps from the S, and a C14 date of 2117-1779 cal. BC was returned from one of these. A large post-hole at the E edge also has a ramp at the E edge. This produced two sherds of Middle-Late Bronze Age pottery together with cremated bone, from which a C14 date of 971-804 cal. BC was returned. A sample of charcoal from another post-hole yielded a date of 1115-853 cal. BC. The nature of this structure is uncertain, but it has neither slot-trenches nor a hearth, and the fairly even distribution of the post-holes suggests that it could be a post-alignment, except that its scale is reduced.		
AY_09	ME050-062002	N/A	Dunboyne	Meath	Kiln	701098 / 743314	Situated on a slight rise in a generally level landscape. Archaeological testing (04E0487) by R. O'Hara on the link-road (R157) for Dunboyne set aside this area for resolution as Dunboyne 4 (excavations. ie 2004:1229). Archaeological excavation (E003024) by R. Elliott (excavations.ie 2004:1554) recorded elements of the field system (ME050-030----) as well as this structure that is interpreted as a kiln and the prehistoric structure (ME050-062001-). This consists of a large sub-oval pit (max. dims 3.35m N-S; 1.3m E-W; D 0.43m) with a clay lining. It has two bowls with a connecting flue but many of the fills contained burnt stone. Some uncharred grain was recovered, but a sample of hazel charcoal from a basal fill yielded a C14 determination of 2117-1779 cal. BC. This sample must have been contaminated somehow. A subrectangular cut (dims 1.9m x 1.35m; D 0.17m) for a bellows was connected to the S bowl by a narrow channel, but much of the bellows pit was damaged by a large modern quarry to its S. (Elliott 2008, 3-4)	Unknown	Archaeological Survey of Ireland SMR https://excavations.ie/report/2004/Meath/0012351/
AY_10	ME050-041	N/A	Piercetown (Dunboyne By.)	Meath	Kiln - corn-drying	701477 / 745137	Systematic archaeological testing (16E0451) by Deirdre Murphy of the development area within Piercetown explored the larger enclosures (excavations.ie 2016:463). This programme also identified a third enclosure and three other potential, but smaller, archaeological areas. Final archaeological monitoring (16E0451) by Deirdre Murphy of the removal of topsoil identified further features throughout the large development area, but most of these were either related to the identified monuments or to drainage and almost all were resolved under the original licence (excavations.ie 2016:463). A cereal-drying kiln was excavated in Area 2. It was an irregularly-shaped area (dims 8.6m NE-SW x 1m; max. D 0.68m) and consisted of a flue (Wth 0.6m) connecting the firing and drying chambers. The kiln had four fills of silty clays with charcoal or ash and there were	Medieval	Archaeological Survey of Ireland SMR

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							two recuts of the bowl. Plentiful evidence of cereals was recovered, and a sample produced a C14 date of 1020-1160 cal. AD. (Murphy 2019a 11, 17-18)		
AY_11	ME050-057	N/A	Bennetstown	Meath	Excavation - miscellaneous	701490 / 743915	Situated on the E-facing slope of a rise in a fairly level landscape. Centre-line testing (04E0488) by R. O'Hara on the Dunboyne link road (R157) to the M3 (excavations.ie 2004:1183) identified archaeological features that were fully excavated (E003027) by R. Elliott in February and March 2006 as Bennetstown 3 (excavations.ie 2006:1509). A group of eight post-holes (diam. 0.2-0.6m; D 0.2-0.66m) from which most of the posts had been removed rather than being burnt or left to rot form a rough rectangular structure (max. int. dims 4.3m NE-SW; 2.6m NW-SE) that might have been open (Wth c. 1.1m) on the NW side. Two small pits (dims 0.67m x 0.32m; D 0.16m: diam. 0.37-0.39m; D 0.13m) were just to the W and two patches of burnt clay (dims 1.2m x 0.7m; T 0.1m: 0.63m x 0.24m; T 0.07m) 11m to the NW may be the remains of hearths. There were four other pits (dims 0.69m x 0.41m; D 0.3m to 1.15m x 1.04m; D 0.17m) c. 20m to the W, some with charcoal and burnt bone inclusions, and a curving trench (dims 2m x 0.5m; D 0.09m) could represent a slot-trench for a hut-site but there is no further evidence of it. A charcoal sample from its fill produced a C14 date of 1490-1310 cal. BC, which accords well with a sherd of coarse pottery from the same context. (Elliott and Ginn 2008)	Prehistoric	Archaeological Survey of Ireland SMR https://excavations.ie/report/2004/Meath/0012305/
AY_12	ME050-058	N/A	Bennetstown	Meath	Burnt mound	701594 / 743995	Situated in the valley of the N-S Tolka or Tullaghanoge River, with a canalised NW-SE section of the stream just to the NE, although the original meandering stream is c. 50m to the NE. Centre-line testing (04E0488) by R. O'Hara on the Dunboyne link road (R157) to the M3 (excavations.ie 2004:1183) identified a spread of dark soil that was partially excavated (E003026) by R. Elliott in January 2006 as Bennetstown 2 (excavations.ie 2006:1508). It consisted of a spread (dims 11.5m N-S; 4.5m E-W; T 0.2m plus) of black silty clay with burnt and broken stones that extended outside the excavated area to the NW. It was over a black/brown clay peat, into which a small pit (dims 0.4m x 0.34m; D 0.12m) had been cut, and it was covered by alluvial layers of silt. A rectangular pit (dims c. 1.7m x c. 0.5m plus; D 0.23) that cut into the top of the burnt mound was modern, and a sample of charcoal from the mound produced a C14 date of 2460-2200 cal. BC. No trough was recognised but much of the monument lies outside the excavated area to the NW. (Elliott and Ginn 2008)	Prehistoric	Archaeological Survey of Ireland SMR https://excavations.ie/report/2004/Meath/0012305/
AY_13	ME050-056	N/A	Pace	Meath	Excavation - miscellaneous	701771 / 744170	Situated within the valley of the Tolka River, with a meandering NNW-SSE section of the stream c. 150m to the SW, and a relict pond just to the W. Archaeological centre-line testing (04E0490)	Late Bronze Age	Archaeological Survey of Ireland SMR

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							by R. O'Hara of Testing area 6 of Contract 1 of the M3 motorway identified a spread of deposits (excavations.ie: 2004:1232) that were fully excavated (E003031) by R. Elliott (excavations.ie 2005:1229) as Pace 1 in September to November 2005. What was thought to have been a spread of burnt mound material proved to be natural riverine gravels, but a total of 24 pits (dims 0.34m x 0.26m; D 0.24 to 2.05m x 2.03m; D 0.16m) were recorded as well as numerous stake and post-holes, and a cereal-drying kiln. The pits were filled with a grey/brown/orange clayey silt with inclusions of pebbles, but charcoal flecks, largely hazel, were present in only 11 pits. A sample of hazel from one pit produced a C14 date of 2461-2155 cal. BC. Water-logged remains of thistle and grass were recorded in two pits, and animal bones were recovered from six, a sample of which provided a radiocarbon date of 924-806 cal. BC. There were few artefacts recovered from the pits, but sherds of likely Late Bronze Age pottery and a fragment of a clay mould of a bladed weapon were recovered as well as flint debitage and a cockle shell. There were 15 post-holes and 175 stake-holes, but no pattern is discernible amongst the post-holes, and the stake-holes clustered, together with the pits, at the W end of a ditch (Wth 0.5-0-.55m; D 0.24m) that terminated at the edge of a pond. Post-medieval material was recovered from the upper fill of this drain. (Elliott et al. 2008)		https://excavations.ie/report/2004/Meath/0012354/
AY_14	ME050-056001	N/A	Pace	Meath	Kiln - corn-drying	701799 / 744162	Located on slightly higher ground than the pits (ME050-056----) just to the S was a figure-of-eight kiln consisting of an oval pit (dims 1.37m x 1-1.2m; D 0.36m) connected at S to a circular pit (diam. 0.82-0.94m; D 0.46m). It was filled with silty clay with inclusions of charcoal and burnt bone over a red-stained clay indicating in situ burning. The oval pit produced charred evidence of wheat and barley but a sample of hazel charcoal from it yielded a C14 date of 422-596 cal. AD. A sample of charred hazel from the circular pit produced a C14 date of 267-540 cal. AD. The subsoil was scarred with ard-marks running NW-SE and NE-SW. (Elliott et al. 2008, 2-3)	Prehistoric	Archaeological Survey of Ireland SMR
AY_15	ME050-060001	N/A	Dunboyne	Meath	Structure	701885 / 743642	Archaeological centre-line testing (04E0489) by R. O'Hara of Testing Area 5 of Contract 1 prior to the construction of the M3 motorway identified archaeological features (excavations.ie: 2004:1191) that were fully excavated (E003034) by the same archaeologist as Dunboyne 2 in August/September 2005. The features were deeply truncated by medieval quarrying, and tree-bowls, possibly from a prehistoric clearance, were also present. Two parallel NW-SE drains c. 1.5m apart run through the excavated area and contained both medieval and post-medieval artefacts. Numerous small finds, including flint and chert flakes, the base of a stone mortar, and an iron arrowhead	Prehistoric	Archaeological Survey of Ireland SMR https://excavations.ie/report/2004/Meath/0012313/

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							were retrieved from the ploughsoil. A circular structure, two corn-drying kilns, and evidence of metal-working was recorded. An arc of seven pits enclosed more than half a circular area (int. diam. c. 6.1m) but its S edge had been destroyed by medieval quarrying. The pits are broad shallow ovals (dims 0.9m x 0.6m; D 0.07m to 1.9m x 0.5m; D 0.07m) filled with dark grey/brown silty clays with charcoal flecking. One pit (dims 1.65m x 0.67m; D 0.37m) was less truncated with a similar fill from which a C14 date of 729-262 cal. BC was derived from a piece of blackthorn charcoal. Two smaller pits and a post-hole were less than 1m inside the line of defining pits. The outer pits may have been a drip-gully from the eaves or the slot-trench for the wall of a small circular hut-site. An area of oxidised subsoil (dims 1.5m x 1m) c. 3m to the N was probably a hearth where a Group VI tuff stone axe was found. Two flint flakes were the only (residual) artefacts recovered. (O'Hara 2009, 2-4)		
AY_16	ME050-060002	N/A	Dunboyne	Meath	Kiln - corn-drying	701890 / 743637	Archaeological centre-line testing (04E0489) by R. O'Hara of Testing Area 5 of Contract 1 prior to the construction of the M3 motorway identified archaeological features (excavations.ie: 2004:1191) that were fully excavated (E003034) by the same archaeologist as Dunboyne 2 in August/September 2005. The features were deeply truncated by medieval quarrying, and tree-bowls, possibly from a prehistoric clearance, were also present. Two parallel NW-SE drains c. 1.5m apart run through the excavated area and contained both medieval and post-medieval artefacts. Numerous small finds, including flint and chert flakes, the base of a stone mortar, and an iron arrowhead were retrieved from the ploughsoil. A circular structure, two corn-drying kilns, and evidence of metal-working was recorded. The remains of two oval kilns (dims 1.39m x 0.68m; D 0.26m: 1.02m x 0.68m; D 0.26m) were located c. 5-6m NW and E of the structure (ME050-060----). They both had oxidized bases where charred wheat, hazel and cherry were present, although barley was dominant. A fragment of alder charcoal from the smaller of the kilns yielded a C14 date of 401-206 cal. BC. (O'Hara 2009, 5)	Prehistoric – post-medieval	Archaeological Survey of Ireland SMR https://excavations.ie/report/2004/Meath/0012313/
AY_17	ME050-060003	N/A	Dunboyne	Meath	Furnace	701915 / 743647	Archaeological centre-line testing (04E0489) by R. O'Hara of Testing Area 5 of Contract 1 prior to the construction of the M3 motorway identified archaeological features (excavations.ie: 2004:1191) that were fully excavated (E003034) by the same archaeologist as Dunboyne 2 in August/September 2005. The features were deeply truncated by medieval quarrying, and tree-bowls, possibly from a prehistoric clearance, were also present. Two parallel NW-SE drains c. 1.5m apart run through the excavated area and contained both medieval and post-medieval artefacts. Numerous small finds, including flint and chert flakes, the base of a stone mortar, and an iron arrowhead	Unknown	Archaeological Survey of Ireland SMR https://excavations.ie/report/2004/Meath/0012313/

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							were retrieved from the ploughsoil. A circular structure, two corn-drying kilns, and evidence of metal-working was recorded. Two Ironworking bowl-furnaces were c. 32 and c. 37m ENE of the structure. A small furnace bottom (diam. 0.25m; D 0.08m) was c. 5m E of a large furnace (diam. 1m; D 0.1m). Both had oxidised bases and were filled with loose black/grey clays with hazel charcoal and metal waste. A date cannot be ascribed to them. (O'Hara 2009, 5)		
AY_18	ME051-002	Recorded Monument	Ballintry	Meath	Enclosure	704748 / 744981	Located on a fairly level landscape with an E-W road just to the N. The faint cropmark of a circular enclosure (diam. c. 50m) defined by a single fosse is visible on oblique aerial photographs (CUCAP: BDK006-007) from 1970. A gradiometer survey (18R01789) by J. Leigh proved inconclusive, and archaeological testing (18E0445) by F. O'Carroll in a trench parallel with the road bank and probably just N of the enclosure produced no evidence of it, although an area of burning did come to light and is preserved in situ. (O'Carroll 2019). Not depicted on historic mapping. Visible on aerial imagery as a faint circular feature in a field adjacent to the road.		NMS, 1996, Record of Monuments and Places (County Meath) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913 https://www.cambridgeairphotos.com/location/bdk006/ [Accessed August 2022]
AY_19	ME051-017	N/A	Nuttstown	Meath	Enclosure	705085 / 745365	Situated on a low WNW-ESE ridge. The cropmark of a subcircular enclosure (diam. c. 30m) defined by a single fosse feature is visible on Google Earth (24/06/2018). It was first reported to the National Monuments Service by Anthony Murphy.		Archaeological Survey of Ireland SMR
AY_20	ME051-001	Recorded Monument	Priest Town	Meath	Castle - motte	706639 / 746395	Located at the N end of a NE-SW ridge and c. 400m SW of the medieval parish church of Kilbride (ME045-025----). It is depicted as a circular feature (diam. c. 20m) and described in gothic lettering as 'Kilbride Moat' on the 1835 and 1908 editions of the OS 6-inch map. It was described in 1942 (SMR file) as a tumulus '20 feet (c. 6m) high by 50 feet (c. 15m) in diameter surrounded by a circular rath 50 yards (c. 45m) in diameter.' Its profile had been removed by 1969 as the result of a quarry encroaching from the SW and even the outer enclosure, which was probably on the outer edge of a fosse, was no longer evident. Archaeological testing (99E0580) by F. O'Carroll c. 200m to the W produced no related material (excavations 1999:691). Depicted as 'Kilbride Moat' on historic mapping. No earthworks are visible on aerial imagery and the location appears to have been developed. The 'Moate field' in Priest Town is reportedly where Cromwell set up his guns to destroy a church that had been built (located in the current graveyard).		NMS, 1996, Record of Monuments and Places (County Meath) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913 https://www.duchas.ie/en/cbes/5008921/4966731/5107671 [Accessed August 2022]
AY_21	DU011-091	N/A	Ward Upper	Dublin	Habitation site	709410 / 744364	Excavations in advance of the N2 Finglas-Ashbourne Road Scheme in 2004 revealed a random grouping of features	Late Bronze Age	Archaeological Survey of Ireland SMR

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							including a small burnt pit, a linear feature and a small pit or cremation (03E1358). The pit (diam 1.65m, D 0.65m) produced 280 pieces of prehistoric pottery of Late date (NRA).		
AY_22	DU011-038	Recorded Monument	Ward Lower	Dublin	Ritual site - holy well	709519 / 744730	The site is located in a large level field under tillage S of a medieval church (DU011-039001-). Formerly an open pool, dedicated to St. Brigid. Now enclosed and used for domestic and farm purposes (Ó Danachair 1958, 76). Depicted on historic mapping as the 'Church Well.' The well is not visible on aerial imagery. Branigan records that "the site of Church Well is located under a field of tillage south-west of the graveyard ruined church of Ward Lower. The well was in use up until the 1970s for agricultural purposes, having formerly a pump and subsequently a manhole cover erected over it. There are not no surviving surface indications of the well, but it was located at the edge of the field to the rear of the third bungalow south of the graveyard" (Branigan 2012: 61).	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 https://ihwcbc.omeka.net/items/show/527 [Accessed August 2022]
AY_23	DU011-039001	Recorded Monument	Ward Lower	Dublin	Church	709652 / 744834	Dedicated to St Brigid the church fell into ruin between 1630 and 1650 (Fingal Historic Graves Project 2008). This site was described as the walls of an old church in the Civil survey (1654-6) (Simington 1945, 235). The foundations of the medieval parish church can be traced within a raised, walled graveyard. In the 1992 report they appeared as a low rectangular mound, aligned WNW-ESE (dims. L 14m, Wth 8-9m, H.1m). The church has since undergone 'improvement'. It is defined by a rectilinear stone wall with a grass ramp built into south wall and return in north wall with a stone built concrete roofed alcove in east wall. the alcove contains a statute of the Blessed Virgin Mary. Wall stands to 0.75m-1m in height and is extensively ribbon pointed. Presumed enclosure of original mound remains. A fragment of a limestone window jamb of late medieval date has been re-used as a headstone east of the church.	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal)
AY_24	DU011-039002	Recorded Monument	Ward Lower	Dublin	Graveyard	709652 / 744825	A raised, roughly oval, walled graveyard (L 70m, Wth 50m) which encloses the foundations of the medieval parish church (DU011-039001-). Fragment of a limestone window jamb of late medieval date is used as gravemarker in the graveyard E of church. The memorials are 19th/20th century in date. The site was formerly surveyed (Egan 1992). Still in use.	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal)
AY_25	DU011-068	Recorded Monument	Ward Upper	Dublin	Castle - unclassified	710002 / 745096	The Civil survey (1654-6) describes the walls of an old castle at the Ward, held by Sir James Ware (Simington 1945, 235). This may have been formerly located where Ward House is situated just NE of the medieval parish church (DU011-039----). Austin Cooper's in 1779 describes the remains of an 'old castle. It is nothing more than the lower storey....built of small flat stones and is in a ruinous condition. The door is at one end opposite a	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal) https://www.irishmanuscripts.ie/digital/TheCivilSurveyAD1654-56VolVIICountyof

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							<p>window and the left corner as you enter a Gothic door which leads to the Orchard where there are pieces of other stone walls'. There are remains of an orchard to the rear of the present Ward House but no visible remains of a castle. Described as 'the walls of an olde castle.' Part of a holding with other buildings including the ruins of an old church (AY_23). A ruined church is depicted on historic mapping, no castle is depicted.</p> <p>No remains are visible on aerial imagery.</p>		<p>Dublin/The Civil Survey AD 1654-56 Vol VII County of Dublin.pdf [Accessed August 2022] http://www.dublinhistoricalmaps.ie/maps/1600-1799/index.html [Accessed August 2022] https://iif.harvard.edu/manifests/view/ids:10653105 [Accessed August 2022]</p>
AY_26	DU011-077	Recorded Monument	Newpark (Castleknock By.)	Dublin	Inn	710430 / 744652	<p>An article in the Fingal Independent dated 23 December 1994 reports on the discovery of a 16th century arch in the White House, a public house at the Ward, county Dublin. It is a bow-shaped arch which is unlikely to be pre-1700 in date. It has been extensively ribbon pointed.</p> <p>Depicted on First Edition Ordnance Survey mapping (as 'Carman's stage,' the roadside inn is also shown on later mapping as the 'White House (P.H.).'</p>	Post-medieval	<p>NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913</p>
AY_27	DU011-076	Recorded Monument	Newpark (Castleknock By.)	Dublin	House - 18th/19th century	711009 / 745599	<p>The Down Survey (1655-6) map mentions a 'Fayre House'. It has been suggested that Newpark House could be the site of or incorporated this dwelling. A single wall with hearth visible, possible remains of Newpark House were demolished. Surviving stable building to north. Located within a yard used for machinery storage and plant hire.</p> <p>May correspond with Newpark House shown on historic mapping (1760) with associated grounds and ancillary buildings. 'Newpark House' is depicted on later mapping; however, the buildings appear in a different layout.</p> <p>No longer extant - This location has been redeveloped into a commercial premises</p>	Post-medieval	<p>NMS, 1998, Record of Monuments and Places (County of Fingal) https://source.southdublinlibraries.ie/bitstream/10599/8879/3/wm_Duncan02.jpg [Accessed August 2022] Ordnance Survey 6", 1837 – 1842</p>
AY_28	DU011-156	N/A	Common	Dublin	Enclosure	712145 / 745847	<p>Circular enclosure identified as a crop mark on Bing (viewed 03/01/2015). The enclosure (c.30m diam.) appears to predate a field boundary that formed the western limit of Kit's Green and the townland boundary between Common and Corstown. The field boundary has since been removed. It is possible that this site is the 'supposed site of old Fort or Burying Ground' marked on the 1st edition OS map.</p> <p>May correspond with the 'fort' identified on First Edition Ordnance Survey mapping.</p> <p>A circular feature is vaguely perceptible on aerial imagery in a pasture field.</p>	Unknown	<p>Archaeological Survey of Ireland SMR Ordnance Survey 6", 1837 – 1842</p>
AY_29	DU011-023001	Recorded Monument	Common	Dublin	Ringfort - unclassified	712321 / 745846	<p>Located in a field of low-lying pasture. The 1837 OS 6-inch map shows an oval enclosure (50m N-S; 30m E-W). The depiction of the site on the current OS 6-inch map suggests that it was a</p>	Unknown	<p>NMS, 1998, Record of Monuments and Places (County of Fingal)</p>

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							ringfort. An archaeological assessment of the site in the winter of 1999 revealed no archaeological evidence for the monument. A dwelling had been constructed on the site (Conway, 2000, 57-8). An oval enclosure is depicted nearby on historic mapping but is not depicted on later mapping This location has been developed. Archaeological testing in advance of proposed residential development in this location did not identify any features of archaeological significance or relating to these constraints.		Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913 https://excavations.ie/report/1999/Dublin/0004056/ [Accessed August 2022]
AY_30	DU011-023002	Recorded Monument	Common	Dublin	Graveyard	712321 / 745859	This is a small field in the N end of the townland. There is a local tradition that it was 'an old fort or burying place' (Healy1975, 23). Not visible at ground level. Identified as 'Kits Green supposed site of old fort or Burying place' on First Edition Ordnance Survey mapping. Historic mapping dating to 1760 depicts this area as agricultural. The area currently comprises a large open pasture field.	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 https://source.southdublinlibraries.ie/bitstream/10599/8879/3/wm_Duncan02.jpg [Accessed August 2022]
AY_31	DU011-124	N/A	Ballystrahan	Dublin	Enclosure	712641 / 745143	A large circular enclosure visible as a crop mark on an aerial photograph together with other features that could indicate an associated field system (DU011-125----) (SMR file; pers. comm. T. Condit). Located in open field that rises slightly from the roadway. No visible remains at ground level. Visible on aerial imagery with a number of linear features in the surrounding fields.	Unknown	Archaeological Survey of Ireland SMR
AY_32	DU014-099	N/A	Shanganhill	Dublin	Ringfort - unclassified	712747 / 743085	Aerial photograph (GB89. AF.01) shows cropmark of a curvilinear enclosure defined by a fosse. This is probably a ploughed out ringfort. Within rough pasture. No visible remains. No corresponding features are depicted on historic mapping; however, cropmarks visible on aerial imagery correspond with the field pattern on First Edition Ordnance Survey mapping.	Unknown	Archaeological Survey of Ireland SMR Ordnance Survey 6", 1837 – 1842
AY_33	DU011-126	N/A	Kingstown (Coolock By.)	Dublin	Ring-ditch	713322 / 745300	A circular ring-ditch visible as a crop mark on an aerial photograph together with other features that could indicate a possible field system (DU011-127----) (SMR file; pers. comm. T. Condit). Slight rise to north-east quadrant of relatively flat field indicates where the site is located. Despite being recently ploughed there were no visible remains at ground level.	Unknown	Archaeological Survey of Ireland SMR
AY_34	DU011-025	Recorded Monument	Killeek	Dublin	Enclosure	713680 / 745730	The site of an enclosure is marked on Duncan's map (1821). This is occupied by a fenced paddock behind a house. Not visible at ground level.	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal)

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							Visible on aerial imagery as an ephemeral circular cropmark (Google Earth, May 2017) Not depicted on historic mapping, although a gravel pit is located nearby on later mapping.		Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_35	DU011-031001	Recorded Monument	Killeek	Dublin	Ecclesiastical enclosure	714326 / 746205	Located off crossroads in a raised, walled graveyard which is oval in plan. There was a broad earthen bank evident outside the graveyard (dims. L 50m, Wth 35m, bank Wth 5m, H 1.5m) with an entrance ramp in the S. This is probably an early ecclesiastical enclosure. Possible remnants of bank to north, faced with graveyard wall and planted. To west a new entrance and landscaping to private residence-bank appears to have disappeared.	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal)
AY_36	DU011-031003	Recorded Monument	Killeek	Dublin	Graveyard	714330 / 746202	Located off crossroads amidst rolling countryside. This is a walled graveyard which is oval in plan. The wall is planted with sycamores and elders. There is a broad earthen bank evident outside the graveyard (DU011-031001-). Within the graveyard are the ruins of a church (DU011-031002-). The interior is raised above external ground level (H1.50m). The graveyard contains grave markers dating from 18th century, the earliest of which appears to be 1701. The graveyard was previously surveyed (Egan 1992). Still in use. Depicted on historic Ordnance Survey mapping.	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_37	DU011-031002	Recorded Monument	Killeek	Dublin	Church	714337 / 746189	Within the graveyard (DU011-031003-) is a plain church of nave and chancel type with a round chancel arch. It is built of roughly coursed limestone blocks. The nave is entered through opposing doorways at W end with slightly pointed segmental arches (Nave dims. L12m, Wth 6m, wall T 0.85m). The interior has been used for interments. There are plain windows with splayed embrasures in the W wall, N wall, and two in the S wall (Healy 1975, 23). Has been subjected to ribbon pointing. Northwall built up 4-6 courses to make wall height even. Vegetation re-establishing itself and there is wash out of mortar along base of church. A small roofless rectangular building identified as a 'church' within 'Killeek Grave Yd' is depicted on First Edition Ordnance Survey mapping. Later mapping identifies the church 'in ruins.'	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_38	DU011-041	Recorded Monument	Killeek	Dublin	Enclosure	714642 / 745449	Situated in an elevated position enjoying extensive views. There is a tradition of a 'fort' at this site (Healy 1975, 24). Had been in use for poly tunnels, now abandoned. Not visible at ground level. No enclosure is depicted on historic mapping dating to 1760, or later mapping. Aerial imagery shows this location to be subject to disturbance. Archaeological testing in advance of development (Licence Number 00E0688) did not identify any remains of archaeological significance.	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal) http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html [Accessed August 2022] Ordnance Survey 6", 1837 – 1842

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									https://excavations.ie/report/2000/Dublin/0005128/ [Accessed August 2022]
AY_39	DU011-042001	Recorded Monument	Forrest Great	Dublin	Chapel	714979 / 745315	There is a tradition of a chapel at this site which is in an elevated position under tillage. Human bones have been exposed (Healy 1975, 24). No visible surface remains. The area was subject to geophysical survey (Licence no. 12R0059) undertaken in advance of a proposed development. Anomalies suggestive of an archaeological complex measuring 100m north-south were identified. These are characterised by a circular enclosure (c.55m diam.) within which are numerous responses indicative of pit features. Associated rectilinear responses extend from the enclosure some of which may be contemporary (Leigh 2012, 8). No chapel is depicted on historic mapping in this location.	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_40	DU011-042002	Recorded Monument	Forrest Great	Dublin	Burial ground	714979 / 745315	An elevated position under tillage. Human bones have been exposed (Healy 1975, 24). There are no visible surface remains. There is a tradition of a chapel at this site (DU011-042001-). The area was subject to geophysical survey (Licence no. 12R0059) undertaken in advance of a proposed development. Anomalies suggestive of an archaeological complex measuring 100m north-south were identified. These are characterised by a circular enclosure (c.55m diam.) within which are numerous responses indicative of pit features. Associated rectilinear responses extend from the enclosure some of which may be contemporary (Leigh 2012, 8).	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal)
AY_41	DU011-043	Recorded Monument	Forrest Great	Dublin	Ringfort - unclassified	715314 / 744668	Situated on level grassland. This site was formerly a platform type ringfort (diam. c. 50m) with a waterlogged external fosse (Healy 1975, 23). Its southeastern quadrant has been truncated by works associated with Dublin airport but the majority of the ringfort is visible as a crop mark on the Bird'sEye viewer of Bing Depicted on First Edition Ordnance Survey mapping.	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842
AY_42	DU011-044	Recorded Monument	Forrest Great	Dublin	House - 16th/17th century	715745 / 744780	The Civil survey (1654-6) mentions a fair stone house at the Great Forrest held by Lord Ranelagh (Simington 1945, 113). This is probably the building shown on the 1840 OS 6-inch map. as 'Forrest House in ruins'. In the 1992 report there were foundations of this building present at the rear of a large farmhouse. Now a yard. No visible remains. Owned by Lord Ranelagh as 'one faire stone house slated, with several offices houses, a stable, a Barne & Six tenants houses Thatcht wth a Pigeon house, slated... belonging to said house one orchard & garden plot; & a Grove of Ashtrees set for ornament.'	Post-medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) https://source.southdublinlibraries.ie/bitstream/10599/8879/3/wm_Duncan02.jpg [Accessed August 2022] Ordnance Survey 6", 1837 – 1842

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ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							Historic mapping depicts a large house with ornamental grounds. Later mapping shows this area to be agricultural fields with 'Forrest Ho. (in Ruins)' identified. The area has since been developed as a commercial premises		
AY_43	DU011-046	Recorded Monument	Cloghran (Coolock By.)	Dublin	Ringfort - unclassified	717244 / 744290	Named 'fort' on the 1837 OS 6-inch map. It was partly demolished in 1822 and cleared away in 1873 (Healy 1975, 24). The area has been incorporated into an extension to the recently constructed runway at Dublin Airport. Not visible at ground level.	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842
AY_44	DU014-009001	Recorded Monument	Cloghran (Coolock By.)	Dublin	Church	717763 / 744003	There foundation remains of the early medieval church survive to the north east of the graveyard (DU014-009002-). An early 18th parish church was located in the centre of the graveyard and survives as a low grassed over platform. The medieval church was said to have been erected by Rryd son of Owain, Prince of Wales and was in reasonable condition in 1630 (Fingal Historic Graveyards project 2008). 'Cloghran Church' is depicted on First Edition Ordnance Survey mapping, with a quarry and lead mine nearby.	18th century	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842
AY_45	DU014-009002	Recorded Monument	Cloghran (Coolock By.)	Dublin	Graveyard	717763 / 744003	A roughly rectangular graveyard built on a rock outcrop. This rock has been quarried along the exterior of the graveyard wall to create a steep precipice around the north and east side of the site. It encloses the remains of an 18th century church on the site of the medieval parish church (DU014-009001-). The graveyard contains 18th-20th century gravestones, undecorated markers and two vaults. Previously surveyed (Egan 1991).	18th century	NMS, 1998, Record of Monuments and Places (County of Fingal)
AY_46	DU014-111	N/A	Stockhole	Dublin	Enclosure	718714 / 743074	An irregular shaped enclosure visible as a crop mark on an aerial photograph together with other features that could indicate a possible field system (DU014-112----) (SMR file; pers. comm. T. Condit). Located within flat open land. No visible remains. No corresponding features on historic mapping.	Unknown	Archaeological Survey of Ireland SMR Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_47	DU015-001	Recorded Monument	Cloghran (Coolock By.)	Dublin	Mound	718868 / 743533	In field of pasture N of farm house. An aerial photograph (FSI 453/2) taken in 1971 shows evidence for an earthen mound (diam. c. 15m). Not visible at ground level. Not depicted on historic mapping. Not visible on aerial imagery.	Unknown	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_48	DU015-120	N/A	Baskin	Dublin	Enclosure	718994 / 742902	A circular enclosure visible as a crop mark on an aerial photograph (SMR file; pers. comm. T. Condit).	Unknown	Archaeological Survey of Ireland SMR
AY_49	DU015-009008	N/A	Saintdoolaghs	Dublin	Field system	721026 / 742043	Geophysical survey (Licence 09R 165) undertaken at St Doulagh's demonstrated that the ecclesiastical enclosure (c. 162m diam.) (DU015:009005) extends into the fields to the N, S and W of the church and graveyard. A sub-rectangular network	Post-medieval	Archaeological Survey of Ireland SMR

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							of ditches was identified to the S of the church extending further to the S as far as the ecclesiastical enclosure. These are likely to represent a network of enclosure remains contemporary with early settlement at St. Doulagh's, which later evolved according to changing patterns of landuse at the site through to the 19th century as there is a partial correlation with former boundary alignments indicated on 1st edition Ordnance Survey 6-inch map. The results of the survey further suggest that interspersed with the ditches are pits and other features (1.5m-4m diam.) that could be interpreted as kiln remains or similar industrial deposits. (Nicholls 2009, 7).		
AY_50	DU015-009005	Recorded Monument	Saintdoolaghs	Dublin	Ecclesiastical enclosure	721043 / 742091	The enclosing graveyard wall around St. Doulaghs Church (DU015-009001-) has a distinct curve in the SE quadrant. In 1977 there were traces of bank visible to N of the graveyard (OPW Report). This may indicate a former ecclesiastical enclosure in the environs of St. Doulagh's Church. Excavation undertaken at this site during 1990 revealed a well-defined ditch which was interpreted as part of the ecclesiastical enclosure revealed to the south of the site (Swan 1991, 24). Geophysical survey (Licence 09R 165) has been undertaken for the Friends of St Doulaghs. The well-defined enclosure (c.162m diam.), extends into the fields about the northern, southern and western perimeter of St Doulagh's church and graveyard. The eastern limit has been truncated by expansion of the Malahide road. Within the enclosure is an array of archaeological activity, comprising a network of enclosure remains, a dense scatter of pits, gullies, and associated features. Evidence of industrial activity in the form of possible kiln locations and associated features has also been recorded, with annexes annexes to the north.	Medieval	NMS, 1998, Record of Monuments and Places (County of Fingal)
AY_51	DU015-009006	Recorded Monument	Saintdoolaghs	Dublin	Graveyard	721045 / 742117	A sub rectangular area defined by a masonry wall which encloses the remains of St. Doulagh's Church (DU015-009001-). It is raised on the N side. There are late medieval mouldings used as coping stones for the wall S of the church. There are also two more mouldings at the foot of the stone steps in the SW (DU015-009007-). Excavations in 1989 showed that the ground level around the church had been truncated and most of the burials removed. This activity was associated with extensive reconstruction works which took place during the 19th century (Swan, 1990, 18-19). The graveyard contains a mixture of 18th, 19th and 20th century headstones (Fingal Historic Graveyards Project, 2008). Depicted on historic Ordnance Survey mapping.	Post-medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_52	DU015-009007	N/A	Saintdoolaghs	Dublin	Architectural fragment	721048 / 742098	There are late medieval mouldings used as coping stones for the wall S of the church(DU015-009001-). There are also two more mouldings at the foot of the stone steps in the SW.	Medieval	Archaeological Survey of Ireland SMR

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
AY_53	DU015-009001	Recorded Monument	Saintdoolaghs	Dublin	Church	721054 / 742100	<p>The earliest reference to St. Doulagh is found in the 9th century Martyrology of Oengus where he is referred to as 'Duilech of Clochar' (Stokes 1905, 235). The present building is multi-period. It is rectangular in plan with a central residential tower that projects above the roofline and has stepped battlements. The masonry is well coursed in the central section but the blocks are more irregular in the E end. It is entered through a later addition to the building, which dates from 1864.</p> <p>The E end of the building is the earliest portion, dating from the mid-twelfth century. It has a vaulted stone roof with a pitch of 68 degrees, apparently the steepest pitch in Ireland (Leask 1955, 40) and has a croft within. Chamber of entrance hall referred to as the 'hermits cell' reputed to be a burial place of founder. The central tower was added in the 15th century when the earlier W gable was demolished and the church extended (Harbison 1982, 34). The level of the stone roof is higher at the W end and there are two separate low vaulted rooms below the croft. The E ground floor window is a 13th century doublelight with tracery and sandstone jambs.</p> <p>The remainder of the church is of 15th century date. A mural chamber carried on a retaining arch and squinch projects above the ground floor entrance along the S wall. The E end of the S wall is lit by a sandstone tracery window with a pointed arch. The W chamber off the first floor is lit by a trilobe cusped window and another above this is made of tufa.</p> <p>Archaeological excavations were undertaken at St Doulagh's in 1989 and a number of coins and tokens were recovered, including some from the spring of the baptistry, of which the oldest was a posthumously minted silver penny of Henry VIII. Small quantities of pottery fragments of all dates from the 13th/14th centuries onwards were recovered. There were archaeologically significant deposits in a number of areas, including stratified occupation debris, indications of both inner and outer enclosing ditches, and an area of burial. The latter contained at least six extended human burials in very shallow grave pits, directly beneath the plough-soil. These were adult burials (Swan, 1990, 18-19).</p> <p>Two further periods of excavation were undertaken at this site during 1990. In the chancel of the church two fragments of roof tiling were recovered, one deeply scored and both with traces of green glaze on their outer surfaces. Along the south wall, a foundation trench 0.55m deep had been cut into the boulder clay, at the base of which a mantling of pebbles was laid. Above this, a rough paving of large, flat stones had been laid, forming the base of the wall. On this paving, a foundation of rough, uncoursed masonry rose for 0.4m to 0.45m, above which was</p>	Medieval – Post-medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							<p>the finely coursed masonry of the wall proper. The remnants of an early burial were set into the boulder clay at the lowest level, predating the construction of this wall.</p> <p>The inner face of the north wall of the chancel had been partly dismantled to allow for a large recess with a pointed arch, which had been set into the thickness of the wall. Clearance here revealed a solid masonry plinth at a depth of 0.52m below the old flooring, upon which a complete skeleton was laid. The skull, however, had been set into a recess, consisting of a single stone with a rectangular section cut through its mass, placed in an upright position on the plinth, so that the head of the burial was completely protected, and only the face could have been viewed prior to burial. The section of the trench cut to the north of the vault revealed a well-defined ditch at a point 12.8m from the vault face. This ditch was interpreted as part of the enclosure revealed to the south of the site (DU015-009005-; Swan 1991, 24).</p> <p>Depicted on First Edition Ordnance Survey mapping (1837 – 1842) with a ‘U’-shaped ‘school house’ immediately to the east. Later mapping does not show this building.</p>		
AY_54	DU015-009004	Recorded Monument	Saintdoolaghs	Dublin	Ritual site - holy well	721072 / 742150	<p>St Doolaghs well lies downslope and N of St. Doolagh’s Church. It is a circular stone-lined well below ground level which is enclosed by an octagonal building with a cone-shaped roof similar to that at St. Sylvester’s in Malahide Village (DU012-023001-). The entrance is in the south of a sunken court. Interior is lit by cross-shaped windows. Above a string course is the cone-shaped roof which is marked by projecting gables on the N, E, S, and W with narrow pointed windows. Built of coursed masonry with well-shaped blocks (Anon , 1914, 268). Frescoes in the interior painted in 1609 by a Mr. Fagan, of Feltrim were still visible in the last century (Walsh, 1888, 233). Depicted on historic Ordnance Survey mapping.</p> <p>The well and pond “are located adjacent to the stone church of Doughlagh, near Balgriffin. They are considered to be two wells, but it is likely that St Catherine’s pond is only filled via an overflow from St Doolagh’s Well. St Doolagh’s Well is a cut-stone circular well, approximately three feet deep, located within a stone-built octagonal baptistery, the only free-standing baptistery remaining in Ireland. It was [built] for the baptism of boys” (Branigan 2012: 50). The girls were baptized in St Catherine’s Pond. Additionally, Branigan states that the interior of the well house “once held plaster frescoes on each of the four walls, with images of St Patrick, St Brigid, St Colmcille, and St Doolagh, with a further fresco on the ceiling depicting the descending Holy Spirit. In addition, it held a marble plaque with an inscription in Latin” (Branigan 2012: 50).</p>	Post-medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6”, 1837 – 1842 Ordnance Survey 25”, 1888-1913 https://ihwcbc.omeka.net/items/show/409 [Accessed August 2022]

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
AY_55	DU015-009003	Recorded Monument	Saintdoolaghs	Dublin	Ritual site - holy well	721074 / 742162	<p>St. Catherine's Well borders the north wall of St. Doolaghs Well (DU015-009004-). Comprises an underground bath enclosed by a rectangular vaulted building. Entrance in the east through a pointed arched doorway. The interior is lit by a double-light window in the N. The roof is pitched as is the gable over the E door (Anon, 1914, 268).</p> <p>Depicted on historic Ordnance Survey mapping.</p> <p>The well and pond "are located adjacent to the stone church of Doughlagh, near Balgriffin. They are considered to be two wells, but it is likely that St Catherine's pond is only filled via an overflow from St Doolagh's Well. St Doolagh's Well is a cut-stone circular well, approximately three feet deep, located within a stone-built octagonal baptistery, the only free-standing baptistery remaining in Ireland. It was [built] for the baptism of boys" (Branigan 2012: 50). The girls were baptized in St Catherine's Pond. Additionally, Branigan states that the interior of the well house "once held plaster frescoes on each of the four walls, with images of St Patrick, St Brigid, St Colmcille, and St Doolagh, with a further fresco on the ceiling depicting the descending Holy Spirit. In addition, it held a marble plaque with an inscription in Latin" (Branigan 2012: 50).</p>	Post-medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913 https://ihwcbc.omeka.net/items/show/409 [Accessed August 2022]
AY_56	DU015-009002	Recorded Monument	Saintdoolaghs	Dublin	Cross	721102 / 742082	<p>A stone cross marks the entrance to St. Doolaghs church and graveyard (DU015-009002-). In the late 18th century, when Austin Cooper visited the site, it was located in the graveyard (Price 1942, 70). It has very short arms and a triangular-shaped head (H 1.6m). It is set on a double-stepped pedestal immediately next to the Malahide road.</p> <p>Depicted on historic Ordnance Survey mapping.</p>	Post-medieval	NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_57	DU014-112	N/A	Stockhole	Dublin	Field system	718668 / 743064	<p>A possible field system visible as a crop mark on an aerial photograph together with an irregular shaped enclosure in the same field (DU014-111----) (SMR file; pers. comm. T. Condit). Within flat land.</p> <p>One of the cropmarks may correspond with a field boundary depicted on First Edition Ordnance Survey mapping.</p>	Unknown	Archaeological Survey of Ireland SMR Ordnance Survey 6", 1837 – 1842
AY_58	DU015-146	N/A	Middletown	Dublin	Enclosure	719233 / 742338	<p>Located in a large arable field c. 1.1km WSW of the complex of monuments at Springhill townland centered on an enclosure (DU015-057----). An unnamed E-W running stream, a tributary of the Mayne River, is located c. 180m to S. The enclosure can be seen on Google Earth coverage (24 June 2018) and on Apple Maps imagery (June 2018) where it is visible as a positive cropmark. The site encloses a subcircular area (ext. diam. 27.4m N-S; c. 35m E-W) defined by a ditch (Wth c. 1.9m). The Apple Maps image appears to indicate the presence of two outer palisade trenches outside the S perimeter of the enclosure. There is no clear evidence for an entrance gap through the bank.</p>	Unknown	Archaeological Survey of Ireland SMR Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							Not depicted on historic Ordnance Survey mapping.		
AY_59	DU015-145	N/A	Middletown	Dublin	Enclosure	719570 / 742282	Located in a large arable field c. 725m WSW of the complex of monuments at Springhill townland centered on an enclosure (DU015-057----). An unnamed E-W running stream, a tributary of the Mayne River, is located c. 120m to S. The enclosure can be seen on Google Earth coverage (24 June 2018) where it is visible as a positive cropmark. The enclosure is circular in plan (ext. diam. c. 42.5m) defined by a ditch (Wth c. 2m). There is no clear evidence for an entrance gap through the ditch. Not depicted on historic Ordnance Survey mapping.	Unknown	Archaeological Survey of Ireland SMR Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AY_60	ME050-059	N/A	Bennetstown	Dublin	Burnt mound	701775 / 743772	Situated on a slightly undulating landscape on the lip of the W edge of the floodplain of the meandering N-S River Tolka, which is c. 40m to the E. Centre-line testing (04E0488) by R. O'Hara on the Dunboyne link road (R157) to the M3 (excavations.ie 2004:1183) identified a spread of broken and burnt stone that was fully excavated (E003025) by R. Elliott in February 2006 as Bennetstown 1 (excavations.ie 2006:1507). A crescent-shaped mound of broken and burnt stone with a charcoal enriched matrix in two large sections (dims 10m; 5m; T 0.2m: 2.8m x 1.3m; T 0.3m) was interwoven with silt layers and partly washed out. Charred grains and seeds, including nettle and fruitstones of alder were recovered from the mound, and a sample of alder produced a C14 date of 1620-1440 cal. BC. The mound was associated with features, some pre-dating and others post-dating its construction. At the centre of the area was a concentration of stake and post-holes, some of which had been removed before they filled up with burnt mound material. Beneath the mound there were some small pits (diam. c. 0.5-1m; D 0.2-0.4m), from which environmentally rich samples were recovered but none could be identified as a trough. However, a large N-S modern service trench (Wth c. 9m) immediately to the E may have destroyed any trough. The largest circular pit (diam. 2.8m; max. D 0.6m) post-dated an alluvial layer that covered the burnt mound. It had a step (D 0.25m) covered in a charcoal-rich layer with burnt bone and charred wheat but mostly charred hazel and alder, occupying its E half. A sample of alder returned a C 14 date of 1050-1270 cal. AD. The topmost layer included burnt clay, which might have derived from a superstructure. Another post-alluvium pit (diam. 1.48-1.6m; D 0.4m) had a clay lining with frequent charcoal and burnt clay inclusions. It would have been watertight and may have functioned as a plunging pool from metalworking, but absolutely no waste from metal was found. A sample from this produced a C14 date of 1030-1230 cal. AD, but the fill was a	Prehistoric / medieval	Archaeological Survey of Ireland SMR https://excavations.ie/report/2004/Meath/0012305/

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ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Location / Coordinates	Description	Approx. Date	Sources
							grey silty clay with only occasional charcoal inclusions. Only a few flint artefacts were recovered. (Elliott and Ginn 2008)		
AY_61	DU015-008	Recorded Monument	Middletown	Dublin	Enclosure	719413 / 742629	The site is in a field of pasture north of Middletown House. Shown on the 1937 edition OS 6-inch map as circular in plan (diam. c. 35m). Not visible at ground level. Depicted on First Edition Ordnance Survey mapping.		NMS, 1998, Record of Monuments and Places (County of Fingal) Ordnance Survey 6", 1837 – 1842
AY_62	ME044-018	Recorded Monument	Portan (Ratoath By.)	Dublin	Moated site	695987 / 747822	Situated on a fairly level landscape. This is a rectangular grass-covered area (dims 24m NNE-SSW; 19m NWW-SSE) defined by an earthen bank (Wth of base 5.5-7m; int. H 0.3-0.6m; ext. H 0.9-1.4m) at N and S but the bank is slighter (Wth of base 3.2m; H 0.3m) at W and absent at E. There is an outer fosse or moat (Wth of top 6m; ext. D 0.1-0.3m) at N and S which is absent at W and more substantial (Wth of top 4m) at E. Depicted on historic Ordnance Survey mapping. A square cropmark is visible on aerial imagery in this location.		Archaeological Survey of Ireland SMR Ordnance Survey 25", 1888-1913
AY_63	ME044-019	Recorded Monument	Portan (Ratoath By.)	Dublin	Field system	696355 / 747538	Situated on a fairly level landscape. A small circular embanked enclosure described as a 'Fort' is depicted on the 1836 edition of the OS 6-inch map and a hachured feature is represented on the 1908 edition. An area of about 5 acres (c. 2 ha) has elements of a relict field system consisting of platforms (dims c. 27m x c. 14m to c. 50m x c. 25m) defined by scarps (max. H 1m) separated by wide channels or drains (Wth 2-5m; D 0.3-1m) with two small ponds amongst them. One possible house site is visible as a rectangular area (dims 8m NW-SE; 5m NE-SW) defined by low earthen banks (Wth 2m; H 0.3m) but it is open on the SE side. This feature is located at a corner of one of the platforms and close to a pond. Archaeological testing (21E0414) by L. Clarke against the road at the W corner of the archaeological area recorded four field drains and a wide ENE-WSW ditch (Wth 2-2.2m; D 0.51m) which is interpreted as a cultivation ridge, but which is more likely to be a drainage ditch (excavations.ie2021:123). Depicted on First Edition Ordnance Survey mapping (1837 – 1842) as a 'Fort' and on later mapping (Ordnance Survey 25", 1888-1913) as a semi-circular earthwork.		Archaeological Survey of Ireland SMR Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913

Table A2: Inventory of Architectural Heritage Constraints

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
AH_01	NIAH 14405002	N/A	Ballymaglassan	Meath	Church/ chapel	696101 / 745637	<p>Saint Keiran's Church of Ireland Church Board of First Fruits church, built c.1800, with two-bay side elevation to nave and three-stage castellated and pinnacled tower to west. Pitched slate roof with limestone copings and cast-iron rainwater goods. Roughcast rendered walls with ashlar limestone string courses and dressings to blocked pointed arched openings. Rock-faced limestone gate piers with cast-iron double gates set in rendered boundary walls. Graveyard to site. 1798 date plaque set in boundary wall c.1998.</p> <p>Saint Keiran's Church exhibits many features which are typical of Church of Ireland churches which were built at the turn of the eighteenth century in Ireland, with funds from the Board of First Fruits. The simple architectural form of the building is articulated with limestone dressings, such as the string courses, pinnacles and surrounds to the openings. The setting of the church is enhanced by many of the carved stone grave markers to the site. The church is depicted on historic Ordnance Survey mapping (First Edition Ordnance Survey mapping; 1837 – 1842) near the 'Site of Old Church' and appears enclosed on later mapping (Ordnance Survey 25", 1888-1913).</p> <p>The church is located within Ballymaglassan House GDL (DL_01) within an area of well-established trees, with views in all directions limited.</p>	1790 – 1810	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=ME&regno=14405002 [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913</p>
AH_02	RPS 91424	Protected Structure	Rathregan	Meath	Church/ chapel	697144 / 747666	<p>Batterstown Roman Catholic Church</p> <p>Single-cell church, built c.1820, with three-bay side elevation to nave. Sacristy added to north gable and pair of porches additions flanking south gable. Bellcote to north gable. Re-roofed, pinnacles added and windows replaced c.1998. Ashlar limestone entrance piers. Some interior features remain.</p> <p>The modest exterior of this church is in many ways representative of early nineteenth-century Roman Catholic church building in Ireland. Though many of the original external features and materials have been replaced, and the interior re-ordered post Vatican II, some interesting internal features survive. Of particular interest are the hood mouldings which are terminated by render cherubs.</p> <p>The church is located within a walled graveyard adjacent to the R154, with established trees lining the northern and eastern boundaries.</p>	1800 – 1840	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=ME&regno=14404401 [Accessed August 2022]</p>
AH_03	RPS 91568	Protected Structure	Priest Town	Meath	Church (RC)	706607 / 746268	<p>Kilbride Catholic Church</p> <p>Gabled hall of rockfaced granite with an octagonal bell turret flanking the</p>		<p>https://consult.mech.ie/en/system/files/materials/74</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
							<p>entrance gable. Entrance gates and railings, Single storey schoolhouse (1929) to rear of site.</p> <p>A 'R.C. Chapel' is depicted in this location just north of the 'Kilbride Cross Roads' on First Edition Ordnance Survey mapping (1837 – 1842) and 'St. Brigid's R.C. Church' is shown on later mapping (Ordnance Survey 25", 1888-1913); however, the present church replaced this building, opening in 1930. The church is situated in an elevated position within an enclosed churchyard adjacent to the road through Priest Town, with a modern schoolhouse located to the north-east.</p>		<p>47/Appendix%20-%20Record%20of%20Protected%20Structures.pdf [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913</p>
AH_04	RPS 664	Protected Structure	Hollystown	Fingal	Church/chapel	707827 / 743780	<p>Church of Ireland Church and Graveyard</p> <p>Detached four-bay double-height single-cell Church of Ireland church, built 1870-1, on a rectangular plan to designs by William John Welland (c.1832-95) and William Gillespie (1818-99); single-bay single-storey lean-to porch abutting single-bay three-stage turret on an octagonal plan (south-west). ROOF: Pitched slate roof extending into lean-to slate roof (south-west), clay ridge tiles, trefoil-topped cut-granite chamfered coping to gables on cut-granite kneelers, and cast-iron rainwater goods with cast-iron downpipes. WALLS: Snecked rock faced limestone battered walls with benchmark-inscribed cut- or hammered granite flush quoins to corners. OPENINGS: Lancet window openings with cut- or hammered granite block-and-start surrounds having chamfered reveals framing fixed-pane fittings having margins centred on lattice glazing bars. Pointed-arch window opening (east) with cut- or hammered granite block-and-start surround having chamfered reveals. "Rose Window" (west) with cut-granite surround having chamfered reveals. INTERIOR: Full-height interior open into roof with central aisle between timber pews, stepped dais to chancel (east) with timber altar table, and exposed timber roof construction with wind braced rafters on carved timber cornice. SITE: Set in landscaped grounds with cut-granite chamfered piers to perimeter having roll topped gabled capping supporting timber gate.</p> <p>The church is positioned in the centre of Hollystown, set back from the main road, within landscaped grounds bounded by established trees.</p>	1865 - 1875	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11346001 [Accessed August 2022]</p>

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ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
AH_05	NIAH 11347003	N/A	Hollywood	Fingal	Gate lodge	708204 / 743184	<p>Hollywoodrath</p> <p>Detached three-bay single-storey gate lodge, c.1825, on an L-shaped plan. Projecting central entrance porch. Single-bay single-storey extension to east c.1940. Pair of granite ashlar piers with cast-iron gates and railings.</p> <p>Depicted on historic Ordnance Survey mapping (Ordnance Survey 25", 1888-1913) at the southern entrance to 'Hollywoodrath' (DL_05).</p> <p>Located within a tree-lined plot, behind a low stone boundary wall with cast-iron railings with a pair of ashlar gate piers and iron gates to the west.</p>	1800 - 1850	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11347003 [Accessed August 2022]</p> <p>Ordnance Survey 25", 1888-1913</p>
AH_06	RPS 660	Protected Structure	Ward Lower	Fingal	Church	709654 / 744837	<p>St. Brigid's Church & Graveyard (in ruins)</p> <p>Remains of foundations of medieval parish church within raised, walled graveyard.</p> <p>A ruined church is depicted on Rocque's map (1760) and a map of the environs of Dublin (1853).</p> <p>A church and graveyard are depicted on historic Ordnance Survey mapping, with a 'Church Well' to the south, opposite an 'Old Quarry.' Later mapping depicts the church 'in ruins.'</p> <p>Located immediately adjacent to the R121. Views to the west are open over the surrounding fields; however, are limited to the east and north by buildings and to the south by established trees.</p> <p>Also AY_23 and AY_24 (Recorded Monuments).</p>	Medieval	<p>https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022]</p> <p>http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html [Accessed August 2022]</p> <p>https://iif.lib.harvard.edu/manifests/view/ids:10653105 [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 - 1842</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
									Ordnance Survey 25", 1888-1913
AH_07	RPS 636	Protected Structure	Killeek	Fingal	House	713371 / 745437	<p>Six-bay single-storey thatched dwelling</p> <p>Late 18th or early 19th century single-storey thatched dwelling and stone outbuildings.</p> <p>Detached six-bay single-storey thatched house, c.1750, with projecting entrance porch, c.1960. Complex of farm buildings to south, c.1750 - 1850. ROOF: Double pitched thatched roof with a nap rendered chimney stack. Double pitched slate and corrugated-iron roof on farm buildings. WALLS: Nap rendered. OPENINGS: Square headed with nap rendered reveals, concrete cills, timber sash window and tongue and groove door; timber casements and panelled door, c.1980.</p> <p>Depicted on historic mapping (First Edition Ordnance Survey mapping; 1837 – 1842) forming a courtyard plan farm with two other buildings.</p> <p>Bounded by a whitewashed coursed rubble stone wall with vertical copes. The cottage is positioned perpendicular to Kilreesk Road with the outbuildings located to the south, parallel to the road, including one forming the roadside boundary to the farm.</p>	1720 – 1780	<p>https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022]</p> <p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11342006 [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p>
AH_08	RPS 633	Protected Structure	Killeek	Fingal	Church	714337 / 746190	<p>Killeek church & graveyard - Ecclesiastical Remains, graveyard still in use</p> <p>Remains of medieval church within oval shaped enclosed graveyard that is still in use.</p> <p>Medieval graveyard, with pre-1700 cut stone grave markers. Rubble stone church, now in ruins.</p> <p>A church and 'Killeek Grave Yd' are depicted on historic Ordnance Survey mapping, with the church later shown 'in ruins.'</p> <p>The building is roofless and comprises a plain, roughly coursed, limestone church positioned in a prominent location, north of a crossroads between a local road and Killeek Lane. Views north and west are limited by established trees and across the local</p>	1500 – 1700	<p>https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022]</p> <p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11342006 [Accessed August 2022]</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
							road to the east and junction to the south are filtered by mature trees along the boundary of the churchyard. Also AY_35, AY_36 and AY_37 (Recorded Monuments).		ah/search.jsp?typ e=record&county=FI&regno=11342010 [Accessed August 2022] Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AH_09	RPS 609	Protected Structure	Cloghran (Swords)	Fingal	Church	717757 / 743995	Cloghran Church (in ruins) & Graveyard Site of early 18th century parish church (now demolished) and foundation remains of early medieval church within enclosed graveyard. 'Cloghran Church' is depicted on historic Ordnance Survey mapping immediately to the south of a quarry and west of a lead mine. Later mapping shows the 'L'-shaped church, within a graveyard with steep slopes to the west and north, and a small roofless building to the north. The church and graveyard are located on an elevated position, immediately to the north of Old Stockhole Lane and south-east of a modern commercial complex. Also AY_44 and AY_45 (Recorded Monuments).	Early medieval / 18 th century	https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022] Ordnance Survey 6", 1837 – 1842
AH_10	RPS 608	Protected Structure	Swords Glebe (part of)	Fingal	Well	718010 / 744000	Enclosed stone well at base of steps under tree in field. The well is not depicted on First Edition Ordnance Survey mapping (1837 – 1842); however, is shown on later mapping (Ordnance Survey 25", 1888-1913) at the end of a trackway at the corner of a pair of field boundaries. The well is located north of Stockhole Lane, within an area of established vegetation.	Post-medieval	https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022] Ordnance Survey 6", 1837 – 1842

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
									Ordnance Survey 25", 1888-1913
AH_11	RPS 606	Protected Structure	Swords Glebe (part of)	Fingal	House	718195 / 743799	<p>Former Cloghran Stud Farm</p> <p>Early 19th century former Glebe House & entrance gates (excluding stable complex).</p> <p>Depicted on First Edition Ordnance Survey mapping (1837 – 1842) with associated buildings to the north-east; and later mapping (Ordnance Survey 25", 1888-1913), shows additional long stable ranges to the north-east.</p> <p>The house is enclosed by a rendered stone wall, with the entrance located to the south. Views out are limited by boundaries of established trees.</p>	Early 19 th century	<p>https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p>
AH_12	NIAH 11349005	N/A	Belcamp	Fingal	House	719395 / 741396	<p>Belcamp House</p> <p>Detached three-bay two-storey house, c.1840, with central portico. ROOF: M-profile double pitched slate roof; rendered chimney stacks; terracotta pots. WALLS: Pebble dashed; nap rendered plinth course. OPENINGS: Ionic columns to portico; square headed openings; stone cills; uPVC casements.</p> <p>The house has been demolished.</p>	1820 - 1860	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11349005 [Accessed August 2022]</p>
AH_13	11349005	N/A	Belcamp	Fingal	House	719398 / 741439	<p>Belcamp House</p> <p>Detached three-bay two-storey house, c.1840, with central portico. ROOF: M-profile double pitched slate roof; rendered chimney stacks; terracotta pots. WALLS: Pebble dashed; nap rendered plinth course. OPENINGS: Ionic columns to portico; square headed openings; stone cills; uPVC casements.</p> <p>The house has been demolished.</p>	1820 - 1860	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11349005 [Accessed August 2022]</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
AH_14	RPS 459	Protected Structure	Saint Doolaghs	Fingal	Church/chapel	721044 / 742110	<p>St. Doolaghs Church & Well & St. Catherine's Well Medieval stone church with tower church (with 19th century interventions). Set within graveyard with stone cross at entrance on road and two holy wells in adjoining lands (St. Doolagh's Well is enclosed in an octagonal building, St. Catherine's Well is within a rectangular vaulted building).</p> <p>Dressed limestone church, built 1864, with three bays to side elevation of nave and single-bay chancel attached to east. Incorporates earlier church and tower, built in twelfth and fifteenth centuries, attached to south-east. Set in graveyard. Church restored by Lord Talbot to design by architect W.H. Lynn. A church in a square church yard is depicted on Rocque's map (1760).</p> <p>The complex is depicted on historic Ordnance Survey mapping with a 'U'-shaped school building to the east, which is later removed.</p> <p>The wells are both recorded on the Ireland's holy wells project.</p> <p>Also AY_50, AY_51, AY_53 – AY_56 (Recorded Monuments).</p>	Medieval	<p>https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022]</p> <p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350016 [Accessed August 2022]</p> <p>http://www.dublinhistoricmaps.ie/maps/1600-1799/index.html [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913</p> <p>https://ihwcbc.omeka.net/items/show/409 [Accessed August 2022]</p>

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ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
AH_15	NIAH 11350027	N/A	Saintdoolagh	Fingal	Gate lodge	721049 / 741939	<p>Limehill</p> <p>Three-bay single-storey gate lodge, c.1895. ROOF: Hipped slate roof; single chimney stack with terracotta ridge tiles. WALLS: Pebble dash; rendered. OPENINGS: Square headed; rendered reveals; early 20th century timber casement windows; simple timber panelled door.</p> <p>Located adjacent to the driveway at entrance on the R107 to Lie Hill House (NIAH 11350015).</p> <p>A 'Lodge' is depicted on historic Ordnance Survey mapping at the entrance to 'Lime Hill,' to the south of the drive to the house.</p> <p>Positioned behind a low rubble stone boundary wall adjacent to Malahide Road.</p>	1880 - 1900	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350027 [Accessed August 2022]</p> <p>Ordnance Survey 25", 1888-1913</p>
AH_16	RPS 462	Protected Structure	Saintdoolagh	Fingal	Milestone/milestone	721056 / 741951	<p>19th century cast-iron milestone in entrance wall to Lime Hill House.</p> <p>Cast-iron milestone, c.1850, set within granite surround. Inscription reads 'GPO/Dublin/6/Malahide/3'.</p> <p>Depicted on historic Ordnance Survey mapping annotated with 'M.S Malahide 3 Dublin 6'.</p> <p>Set within a harled and painted entrance wall at ground level.</p>	1825 - 1875	<p>https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022]</p> <p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350029 [Accessed August 2022]</p> <p>Ordnance Survey 25", 1888-1913</p>
AH_17	RPS 468	Protected Structure	St. Doolagh	Fingal	House	721074 / 741838	<p>Wellfield House</p> <p>Late 18th or early 19th century five-bay two-storey house with belvedere.</p> <p>Detached five-bay two-storey house, c.1790, with portico entrance, bowed end bays. Return and belvedere to rear. ROOF:</p>	1780 - 1800	<p>https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022]</p> <p>Ordnance Survey 25", 1888-1913</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
							<p>Double-pitched slate roof to front with perpendicular M-profile hipped roof to rear; nap rendered chimney stacks with clay pots; T-shaped plan. WALLS: Pebbledash to front; nap rendered elsewhere. OPENINGS: Square-headed; rendered reveals; granite cills; replacement 6/6 timber sash windows; fluted doric granite portico; moulded door surround; timber panelled door; centrally opening doors to side.</p> <p>Depicted on First Edition Ordnance Survey mapping (1837 – 1842) as ‘St. Doolagh’s Lodge’, Associated buildings to the north appear to have been demolished.</p> <p>The house is set within a high rendered stone walled plot, with established trees and hedges obscuring views to the road (R107).</p>		<p>2023 dev plan record of protected structures.pdf [Accessed August 2022]</p> <p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350021 [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p>
AH_18	NIAH 11350012	N/A	Bohammer	Fingal	Gate lodge	721099 / 742284	<p>Bohammer</p> <p>Detached three-bay single-storey gable-fronted gate lodge, c.1830. Single-bay extension and single-bay recessed entrance porch to west, c.1970. ROOF: Double pitched slate roof with a nap rendered chimney stack. WALLS: Nap rendered with a moulded string course. OPENINGS: Segmental headed; recessed panels to openings. Square headed diamond timber casement windows and a timber door.</p> <p>First Edition Ordnance Survey mapping (1837 – 1842) identifies the associated house as ‘St. Doolagh’s’.</p> <p>Located at the entrance to the main house on the R107, behind low rubble stone boundary wall.</p>	1810 - 1850	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350012 [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p>
AH_19	NIAH 11350020	N/A	Saintdoolaghs	Fingal	House	721112 / 741864	<p>Wellfield</p> <p>Detached three-bay two-storey rubble stone house, c.1800, with brick dressings. Now derelict.</p> <p>Depicted on historic Ordnance Survey mapping as ‘St. Doolagh’s Lodge’ with associated buildings to the north, and on later mapping associated with ‘St. Doolagh’s Park.’</p> <p>Positioned behind high rendered stone boundary walls, within established grounds, outward views are limited.</p>	1790 - 1810	<p>http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350020 [Accessed August 2022]</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
									Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
AH_20	NIA 11350026	N/A	Belcamp	Fingal	Post box	721118 / 741387	Post box Wall-mounted cast-iron post box, c.1905, with 'ER VII' monogram. The wall within which the post box was located appears to have been removed (Google StreetView, June 2022).	1900 - 1910	http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350026 [Accessed August 2022]
AH_21	RPS 461	Protected Structure	Saintdoolaghs	Fingal	Gate lodge	721124 / 742158	Gate lodge of St Doolaghs Park 19th century former Gate lodge to St Doolaghs Park (now in separate ownership). Detached three-bay single-storey gate lodge, c.1850. Extensions c.1980 to north and east. Set behind entrance gates, comprising cast-iron double entrance gates and single pedestrian gates set in ashlar piers. Flanked by curved ashlar plinth walls with cast-iron railings, terminated by ashlar piers. ROOF: Double-pitched and hipped; slate with terracotta ridge tiles; single rendered chimney stack. WALLS: Nap rendered. OPENINGS: Segmental headed windows; rendered reveals; granite cills; replacement uPVC windows; segmental headed door; recessed opening; timber and glazed door. Depicted on historic mapping (Ordnance Survey 25", 1888-1913). Located behind a high rubblestone wall at the entrance to Saint Doolagh's Park.	1840 - 1860	https://www.fingal.ie/sites/default/files/2019-04/2017-2023_dev_plan_record_of_protected_structures.pdf [Accessed August 2022] http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11350018 [Accessed August 2022] Ordnance Survey 25", 1888-1913
AH_22	RPS 665	Protected Structure	Hollystown	Fingal	House	708322 / 743506	Hollywoodrath House Late 18th or early 19th century seven-bay two-storey house plus gate lodge, gates & gate piers & outbuildings.	1810 - 1850	https://www.fingal.ie/sites/default/files/2019-

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Approx. Date	Sources
							Detached seven-bay two-storey house, c.1830, on an L-shaped plan. Comprising five-bay two-storey central block with single-storey prostyle ionic portico, flanked by gabled projecting end bays. Return to rear. Gate lodge and gateway c.1830 to site. ROOF: Double pitched slate with concrete ridge tiles; nap rendered chimney stacks; cast-iron rainwater goods. WALLS: Lined and ruled; nap rendered. OPENINGS: Timber sash windows with granite sills, with entablatures and pediments above. Timber panelled door surrounded by moulded granite ashlar architrave with fluted corbels supporting entablature. Depicted on First Edition Ordnance Survey mapping (1837 – 1842) as 'Hollywoodrath'. Located within established grounds.		04/2017-2023 dev plan record of protected structures.pdf [Accessed August 2022] http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=FI&regno=11347001 [Accessed August 2022] Ordnance Survey 6", 1837 – 1842

Table A3: Inventory of Gardens and Designed Landscapes

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
DL_01	NIAH 5699	N/A	Ballymaglassan	Meath	Garden and Designed Landscape	696071 / 745695	<p><u>Ballymaglassan House</u></p> <p>Principal building and garden structures. Some movement of landscape elements within the site (i.e. driveway). Areas of woodland and parkland remain extant.</p> <p>Depicted on historic mapping (Ordnance Survey 6", 1837 – 1842).</p>	Post-medieval	https://www.buildingsofireland.ie/buildingsearch/site/5699/ballymaglassan-house-co-meath [Accessed August 2022] Ordnance Survey 6", 1837 – 1842

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							The stone entrance piers and gates are set back from the L2215. While the boundary, comprising a ditch and established line of trees and hedges remains, a modern post and rail fence and hedge runs along the road.		Google StreetView
DL_02	N/A	N/A	Glebe	Meath	Garden and Designed Landscape	697170 / 747290	<p><u>Glebe</u></p> <p>Identified on historic Ordnance Survey mapping in Glebe and shown as 'Rathregan Rectory' on later mapping.</p> <p>The principal buildings remain extant; however, driveway appears to have been realigned. Retains boundary features, including belts of woodland, as well as sections of the roughly coursed rubble stone boundary wall and a pair of squared gate piers on the R154.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
DL_03	NIAH 5143	N/A	Normansgrove	Meath	Garden and Designed Landscape	702654 / 743842	<p><u>Normans Grove House</u></p> <p>Building indicated, area to north labelled Normansgrove.</p> <p>The layout of the grounds depicted on historic Ordnance Survey mapping remains perceptible.</p> <p>A belt of established woodland lines the road to the east of the house, and a low rubble stone boundary wall with vertical copes forms the boundary adjacent to the road.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/buildingsearch/site/5143/normans-grove-house-dunboyne-co-meath [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_04	NIAH 5156	N/A	Priest Town	Meath	Garden and Designed Landscape	705834 / 745825	<p><u>Priest Town House</u></p> <p>Building indicated, area labelled Priest Town.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/buildingsearch/site/5156/priest-town-house</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							House and ancillary buildings depicted on historic Ordnance Survey mapping. Parkland woodland, and original driveways and entrances remain extant. Boundary along Belgree Lane formed of hedgerows and 'Crockanee' woodland.		est-town-house-kilbride-co-meath [Accessed August 2022] Ordnance Survey 6", 1837 – 1842 Google StreetView
DL_05	NIAH 2267	N/A	Hollystown; Hollywood; Hollywoodrath; Sprickletown	Dublin	Garden and Designed Landscape	708289 / 743285	<u>Hollywoodrath</u> Buildings indicated, area labelled Hollywood. House, garden and ancillary buildings depicted on historic Ordnance Survey mapping. Some development within the footprint of the site, including the golf course to the west. A section of roadside rubblestone boundary wall remains extant to the south of the site along the road that bisects the demesne.	Post-medieval	https://www.buildingsofireland.ie/building-search/site/2267/hollywoodrath-mulhuddart-co-dublin [Accessed August 2022] Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913 Google StreetView
DL_06	NIAH 2270	N/A	Irishtown	Dublin	Garden and Designed Landscape	708572 / 744663	<u>Irishtown House</u> Building indicated, area labelled Irishtown. House appears to have been demolished and the boundary and associated buildings and features depicted on historic Ordnance Survey mapping are no longer present. A plot of modern houses has been built at the southern extent.	Post-medieval	https://www.buildingsofireland.ie/building-search/site/2270/irishtown-house-mulhuddart-co-dublin [Accessed August 2022]

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
									Ordnance Survey 6", 1837 – 1842 Google StreetView
DL_07	N/A	N/A	Ward Lower	Dublin	Garden and Designed Landscape	710057 / 745171	<p><u>Ward House</u></p> <p>Identified from historic Ordnance Survey mapping as 'Ward House'.</p> <p>Located on the crossroads between the R135 and R121. The main house appears to have been demolished. The area has been redeveloped, including a new high roadside boundary wall.</p>	Post-medieval	Ordnance Survey 6", 1837 – 1842 Google StreetView
DL_08	N/A	N/A	Newpark	Dublin	Garden and Designed Landscape	711071 / 745492	<p><u>Newpark House</u></p> <p>Identified from historic Ordnance Survey mapping as 'Newpark House'.</p> <p>Located to the south of the R121. Redeveloped as a commercial complex, including a concrete block boundary wall.</p>	Post-medieval	Ordnance Survey 6", 1837 – 1842 Google StreetView
DL_09	N/A	N/A	Kingstown	Dublin	Garden and Designed Landscape	713279 / 744623	<p><u>Kingstown House</u></p> <p>Identified from historic Ordnance Survey mapping as 'Kingstown House'. Roadside boundaries reflect those depicted.</p> <p>House and associated buildings have been removed the entrance replaced.</p> <p>Boundary features along Kilreesk Road include a ditch and established boundary (trees and hedgerow), as well as a modern post and rail fence.</p>	Post-medieval	Ordnance Survey 6", 1837 – 1842 Google StreetView

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
DL_10	N/A	N/A	Forrest Little	Dublin	Garden and Designed Landscape	716413 / 744728	<p><u>Little Forest House</u></p> <p>Identified from historic Ordnance Survey mapping as 'Little Forrest House'.</p> <p>Area redeveloped into Forrest Little Golf Club.</p> <p>A short section of rubblestone boundary wall noted alongside Forest Road, at the junction with Cooks Road; however, the boundary has been largely replaced by the modern entrance to the golf club.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_11	NIAH 5726	N/A	Cloghran	Dublin	Garden and Designed Landscape	717559 / 743989	<p><u>Castle Mount</u></p> <p>Principal building remains extant (RPS 611). The interior of the site has largely been developed.</p> <p>The boundary depicted on historic Ordnance Survey mapping is vaguely perceptible in places as hedgerows.</p> <p>The roadside boundary on the R132 has been replaced with a new wall.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/building-s-search/site/5726/castle-mount-co-dublin [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_12	N/A	N/A	Cloghran	Dublin	Garden and Designed Landscape	717813 / 744792	<p><u>Kitronan House</u></p> <p>Identified from historic Ordnance Survey mapping as 'Kitronan House'.</p> <p>Development has taken place within the site boundary; however, the footprint remains perceptible.</p> <p>Boundary features appear to have been replaced along the R132.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
DL_13	N/A	N/A	Cloghran	Dublin	Garden and Designed Landscape	718057 / 743892	<p><u>Limepark</u></p> <p>Identified from historic Ordnance Survey mapping as 'Limepark'.</p> <p>House appears to have been demolished and the majority of the boundaries are no longer present apart from some sections of hedgerow. Bisected by Stockhole Lane.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_14	NIAH 2435	N/A	Clonshagh	Dublin	Garden and Designed Landscape	718581 / 741376	<p><u>Woodlands</u></p> <p>Building indicated, not named.</p> <p>Some development to the north, including R139 and a roundabout; however, the site boundary remains perceptible.</p> <p>The house remains extant (on the site of an earlier dwelling). Features also remain extant (drive, trees and parkland). A belt of trees forms the northern boundary along the R139.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/buildings-search/site/2435/woodlands-santry-santry-co-dublin [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_15	N/A	N/A	Middletown	Dublin	Garden and Designed Landscape	718864 / 742282	<p><u>Upper Middletown</u></p> <p>Identified from historic Ordnance Survey mapping as 'Upper Middletown'.</p> <p>The house, driveway and 'Turret' are no longer extant. The gate lodge to the east of Stockhole Lane has been redeveloped as modern dwellings.</p> <p>The site boundary remains extant as established hedgerows with former sub-divisions visible as cropmarks on aerial imagery.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
DL_16	N/A	N/A	Glebe	Dublin	Garden and Designed Landscape	718945 / 743380	<p><u>Glebe House</u></p> <p>Identified from historic Ordnance Survey mapping as 'Glebe House'.</p> <p>House has been replaced with modern dwellings; however, the boundary and sub-divisions reflect those depicted on historic Ordnance Survey mapping.</p> <p>The site boundary comprises established hedgerows, including trees, some of which have modern fence running parallel.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_17	NIAH 2455	N/A	Belcamp	Dublin	Garden and Designed Landscape	719160 / 741169	<p><u>Belcamp</u></p> <p>Buildings indicated, not named.</p> <p>The house (AH_12 and AH_13) and ancillary buildings appears to have been demolished.</p> <p>The site boundary is vaguely perceptible on aerial imagery.</p> <p>Features depicted on historic Ordnance Survey mapping, including the bridge, weir and gardens remain extant.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/building-search/site/2455/belcamp-santry-co-dublin [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_18	NIAH 2456	N/A	Baskin	Dublin	Garden and Designed Landscape	719473 / 742915	<p><u>Baskin Hill</u></p> <p>Building indicated, area labelled Baskin.</p> <p>The site boundary along Baskin Lane appears to have been replaced (modern post and rail fence). The current entrance comprises a set of modern rubblestone and brick entrance walls with iron gates.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/building-search/site/2456/baskin-hill-cloghran-co-dublin [Accessed August 2022]</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							The drive reflects the alignment depicted on historic Ordnance Survey mapping.		Ordnance Survey 6", 1837 – 1842 Google StreetView
DL_19	NIAH 5219	N/A	Woodpark	Meath	Garden and Designed Landscape		<p><u>Woodpark</u></p> <p>Nothing indicated, area labelled Woodpark.</p> <p>The site has been redeveloped as Woodpark Stud Farm. Extant features include the boundary, entrances and drives. The eastern roadside boundary comprises a low rubble stone wall with irregular copes as well as mature trees.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/buildingsearch/site/5219/woodpark-dunboyne-co-meath# [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_20	NIAH 2486	N/A	Abbeyville	Dublin	Garden and Designed Landscape	720693 / 743344	<p><u>Abbeyville House</u></p> <p>Buildings indicated, area labelled Abbeyville.</p> <p>Site boundary remains perceptible. House (NIAH 11350002, RPS 452), as well as ancillary buildings and designed landscape features (remains of a boating lake, areas of woodland and parkland) remain extant.</p> <p>Houses have been built to the southern boundary on the site of the old brewery (Ordnance Survey 6", 1837 – 1842). The boundary along Baskin Lane comprises an established hedgerow / tree line.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/buildingsearch/site/2486/abbeyville-house-kinsaley-co-dublin [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_21	NIAH 5682	N/A	Belcamp	Dublin	Garden and Designed Landscape	720755 / 741339	<u>Belcamp Hutchinson</u>	Post-medieval	https://www.buildingsofireland.ie/buildingsearch/site/5682/be

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							<p>Development has taken place within the site boundary.</p> <p>Extant features include the main house (RPS 789) and walled garden.</p> <p>A section of rubblestone roadside boundary wall remains along the R107.</p>		<p>lcamp-hutchinson-co-dublin# [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_22	NIAH 2488	N/A	Saint Doolaghs	Dublin	Garden and Designed Landscape	720841 / 742057	<p><u>Lime Hill House</u></p> <p>Building indicated, not named.</p> <p>The house (NIAH 11350015), driveway, areas of parkland and gate lodge (AH_15) remain extant.</p> <p>A rubblestone roadside boundary wall is located on the R107. Appears to have been rendered later or replaced north of the entrance.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/buildingsearch/site/2488/lime-hill-house-balgriffin-co-dublin [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_23	NIAH 2490	N/A	Bohammer	Dublin	Garden and Designed Landscape	720896 / 742659	<p><u>Emsworth</u></p> <p>Building indicated, area labelled Bohammer.</p> <p>House (RPS 458) remains extant. The site footprint is still perceptible.</p> <p>There has been some modern development; however, the gate lodge (AH_18), coach house and stable yard remain extant.</p> <p>A rubblestone roadside boundary wall is located along the R107. It comprises a harled wall with</p>	Post-medieval	<p>https://www.buildingsofireland.ie/buildingsearch/site/2490/ems-worth-balgriffin-co-dublin [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							triangular vertical copes. There is also an established tree line.		
DL_24	N/A	N/A	Saint Doolaghs	Dublin	Garden and Designed Landscape	721178 / 741791	<p><u>St Doolagh's Lodge</u></p> <p>Identified from historic Ordnance Survey mapping as 'St. Doolagh's Lodge'.</p> <p>The House remains extant (AH_17), as well as the site boundary to the south and an area of parkland to the east.</p> <p>The roadside boundary to the R107 comprises a high rendered stone wall.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_25	N/A	N/A	Balgriffin	Dublin	Garden and Designed Landscape	721187 / 741672	<p><u>Balgriffin</u></p> <p>Identified from historic Ordnance Survey mapping as 'Balgriffin'.</p> <p>Now Fingal Burial Ground.</p> <p>The roadside boundary comprises a coursed rubblestone wall including a section of rendered wall to the northern extent of the demesne.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
DL_26	N/A	N/A	Middletown	Dublin	Garden and Designed Landscape		<p><u>Lower Middleton</u></p> <p>Identified from historic Ordnance Survey mapping as 'Lower Middletown'.</p> <p>The house remains extant, with a number of associated agricultural ranges. The western drive remains.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							The boundary of the demesne appears to have been removed.		
DL_27	NIAH 2477	N/A	Burgage	Dublin	Garden and Designed Landscape		<p><u>Spring Hill</u></p> <p>Building indicated, area labelled Springhill.</p> <p>The site boundary remains legible. The house remains extant along with a number of associated buildings and areas of parkland (now in use as arable farmland).</p> <p>Roadside boundaries comprise established trees and hedgerows.</p>	Post-medieval	<p>https://www.buildingsofireland.ie/building-search/site/2477/spring-hill-cloghran-co-dublin [Accessed August 2022]</p> <p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>

Table A4: Inventory of Cultural Heritage Sites

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
CH_01	N/A	N/A	Blackhall Big	Meath	Roadside house	694857 / 745004	<p>An 'L'-shaped, single storey roadside cottage depicted on historic Ordnance Survey mapping. Rendered with central stack.</p> <p>Located within a walled (low coursed, squared stone) plot, set at an angle with the road (R156), with an unenclosed drive to the north. Views are over the R156 towards the fields to the north.</p>	Post-medieval	<p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_02	N/A	N/A	Lismahon	Meath	Farm	696285 / 746457	'Lismahon Farmstead', a 'U'-shaped layout farm, depicted on historic Ordnance Survey mapping with later editions showing a slightly different layout.	Post-medieval	Ordnance Survey 6", 1837 – 1842

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							<p>A number of the ranges appear to have been demolished with one single storey range remaining extant, and more recent buildings largely forming the complex.</p> <p>The farm is located immediately to the east of the L2215.</p>		<p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView, May 2009 & June 2021</p>
CH_03	N/A	N/A	Lismahon	Meath	Road bridge	696319 / 746263	<p>'Ballymaglassan Bridge', a road bridge depicted on historic Ordnance Survey mapping.</p> <p>The bridge comprises a low harled pair of parallel parapets with semi-circular copes and a wing wall of similar construction on the north-east corner.</p> <p>The bridge carries the L2215 across an unnamed watercourse.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
CH_04	N/A	N/A	Staffordstown Little	Meath	Roadside house	696348 / 744292	<p>A house depicted on historic Ordnance Survey mapping. The house is positioned perpendicular to the R156, and comprises a single storey rendered structure with tile roof and central stack, with a high walled garden / yard to the south. Appears abandoned and plot is overgrown.</p>	Post-medieval	<p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView, June 2021</p>
CH_05	N/A	N/A	Portan	Meath	Farmhouse	696892 / 747290	<p>A farmhouse depicted on historic Ordnance Survey mapping.</p> <p>The building comprises a single storey rubblestone with slate roof and two rendered stacks.</p> <p>The farmhouse is back from the L2215 in an established garden with an established boundary hedge.</p> <p>Views east are across the road to the fields beyond.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
CH_06	N/A	N/A	Lismahon	Meath	Road bridge	696967 / 747353	<p>A road bridge depicted on historic Ordnance Survey mapping.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							<p>The bridge comprises a single rubblestone parapet with irregular vertical copes remains on a wide grass verge to the west of the road.</p> <p>The bridge carries the L2215 across the Tolka River.</p>		<p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_07	N/A	N/A	Glebe	Meath	Buildings	697221 / 747488	<p>A group of buildings depicted on historic Ordnance Survey mapping along the R154 through Batterstown. The buildings include a post office on the junction with the L2215, houses, a public house and former smithy (now petrol station).</p> <p>Modern development has taken place in Batterstown along the R154; however, these buildings form a group with historic character along the main thoroughfare.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
CH_08	N/A	N/A	Baytownpark	Meath	Road bridge	698026 / 744453	<p>A road bridge depicted on historic Ordnance Survey mapping.</p> <p>The bridge comprises a pair of unmatching parallel stone parapets. The western parapet is harled rubble stone with vertical copes whereas the eastern parapet is harled with semi-circular copes.</p> <p>Carries the R156 across an unnamed watercourse.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
CH_09	N/A	N/A	Vessingtown	Meath	Road bridge	698208 / 744723	<p>A road bridge depicted on historic Ordnance Survey mapping.</p> <p>The bridge comprises a pair of parallel rubblestone stone parapets with semi-circular copes. The bridge appears to have been subject to repair.</p> <p>The bridge carries a local road across an unnamed watercourse.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, March 2019</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
CH_10	N/A	N/A	Vessingtown	Meath	Road bridge	698964 / 745271	<p>A road bridge depicted on historic Ordnance Survey mapping.</p> <p>Harled stone parallel parapets, western parapet obscured by vegetation.</p> <p>Carries a local road across an unnamed watercourse.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, March 2019</p>
CH_11	N/A	N/A	Lustown	Meath	Road bridge	699269 / 745582	<p>A road bridge depicted on historic Ordnance Survey mapping. The bridge comprises a pair of parallel squared rubblestone parapets. The eastern parapet has splayed approaches. Both have alternate vertical and horizontal copes.</p> <p>There is a narrow walkway inside either parapet.</p> <p>The bridge appears to have been repaired / restored.</p> <p>The bridge carries a local road over the Tolka River.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, March 2019</p>
CH_12	N/A	N/A	Ballymagillin	Meath	Farm	702502 / 744660	<p>A group of farm buildings arranged in a courtyard plan depicted on historic Ordnance Survey mapping. Single and two-storey rendered stone ranges remain extant with some modern additions forming part of the farm complex.</p> <p>Views are internal across the farmyard with views out limited by a high stone wall.</p> <p>The farm is positioned immediately to the north of the L5026.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_13	N/A	N/A	Whitesland	Meath	House	702660 / 744657	<p>A house depicted on historic Ordnance Survey mapping comprising a roughly coursed rubble stone construction.</p>	Post-medieval	<p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							<p>Appears to have been altered and includes modern extensions.</p> <p>The house is located within a low stone walled garden and is positioned perpendicular to the L5026. Views outward are filtered by the surrounding established grounds.</p>		
CH_14	N/A	N/A	Nuttstown	Meath	Road bridge	703920 / 745061	<p>A road bridge depicted on historic Ordnance Survey mapping. The bridge comprises low coursed rubblestone parapets and squared ends (no copes are present).</p> <p>A narrow footway is present inside both parapets.</p> <p>The parapets appear to have been repaired / extended.</p> <p>The bridge carries the road through Nuttstown across an unnamed watercourse.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, June 2021</p>
CH_15	N/A	N/A	Belgree	Meath	Road bridge	705608 / 745439	<p>A stone road bridge depicted on historic Ordnance Survey mapping. The bridge includes a pair of low coursed rubblestone parapets with squared ends and horizontal copes.</p> <p>A footway is present inside both parapets.</p> <p>The bridge appears to have been refurbished.</p> <p>The bridge carries Belgree Lane across the Ward River.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, June 2021</p>
CH_16	N/A	N/A	Belgree	Meath	Road bridge	706594 / 745764	<p>A bridge depicted on historic Ordnance Survey mapping. The rubblestone bridge includes two parallel low coursed parapets with vertical copes. The western parapet appears to have been refurbished / replaced.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, June 2021</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							The bridge carries the Kilbride Road over a minor watercourse.		
CH_17	N/A	N/A	Baytown	Meath	Farm	707201 / 746366	<p>An L'-shaped farm and orchard depicted on historic Ordnance Survey mapping with additions shown on later editions.</p> <p>The farmhouse comprises a two-storey structure with a slate roof. The farmhouse appears to have been modernised and the agricultural ranges have been replaced.</p> <p>Views are west across the private drive / garden towards the road and fields beyond.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_18	N/A	N/A	Baytown	Meath	House	708016 / 746178	<p>A roadside house depicted on historic Ordnance Survey mapping. The house comprises a single storey rendered structure positioned perpendicular to the road through Baytown.</p> <p>Appears to be in poor condition with mounds of waste material immediately adjacent to the building. Modern agricultural buildings have been constructed to the east and a high concrete roadside boundary wall is located to the north.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView, April 2019</p>
CH_19	N/A	N/A	Hollywood	Dublin	Police barracks	708295 / 743234	<p>A 'police barracks' depicted on historic Ordnance Survey mapping.</p> <p>The building comprises a two-storey structure, rectangular in plan. The building is now in ruins. The former barracks is located within a walled plot with an entrance to the north immediately adjacent to the R121. Views outwards are obscured by established vegetation.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, July 2021</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
CH_20	N/A	N/A	Irishtown	Dublin	Field boundary	709100 / 746479	A sinuous linear feature visible on aerial imagery. The cropmark corresponds with a field boundary depicted on historic Ordnance Survey mapping. The former field boundary is located in an arable field to the south of the road through Irishtown.	Post-medieval	Digital Globe Ordnance Survey 6", 1837 – 1842meath
CH_21	N/A	N/A	Coolquoy	Dublin	Farm	709721 / 746401	<p>A farm depicted on historic Ordnance Survey mapping in a courtyard plan. The farm comprises a group of rendered stone set back from the R135. The complex includes modern agricultural buildings. The site is bounded by a modern metal railing fence.</p> <p>Views are largely across the yard with views out across the surrounding fields.</p>	Post-medieval	Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913 Google StreetView
CH_22	N/A	N/A	Coolatrath East	Dublin	Agricultural range	709787 / 746077	<p>A roadside agricultural range depicted on historic Ordnance Survey mapping as part of a courtyard farm.</p> <p>The building comprises a rendered single-storey structure with corrugated roof. The other buildings in the group appear more recent constructions.</p>	Post-medieval	Ordnance Survey 25", 1888-1913 Google StreetView
CH_23	N/A	N/A	Coolatrath East	Dublin	Field system	709833 / 746182	A network of linear cropmarks visible on aerial imagery. These cropmarks correspond with former field boundaries depicted on historic Ordnance Survey mapping that have since been removed. Located in an arable field to the east of the R135.	Post-medieval	Digital Globe Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913
CH_24	N/A	N/A	Ward Upper	Dublin	House	710160 / 745108	<p>'Six Mile House' depicted on historic Ordnance Survey mapping. The house comprises a single storey, brick and rendered building with a slate roof and gable stack.</p> <p>Original house appears to have been extended.</p>	Post-medieval	Ordnance Survey 6", 1837 – 1842 Google StreetView, July 2021

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							The house is located on the roadside on the junction between the R121 and the R135. Views out are limited by hedges, a wall, and outbuildings; however, to the north and east views are across the roundabout and roads.		
CH_25	N/A	N/A	Newpark	Dublin	Agricultural range	710338 / 745269	<p>A group of roadside agricultural buildings, forming a courtyard, depicted on historic Ordnance Survey mapping.</p> <p>The buildings comprise one and two-storey structures, constructed with stone and brick.</p> <p>Views are across the farmyard with views out limited by a wall.</p> <p>The farm is positioned immediately to the north of the R121.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_26	N/A	N/A	Broghan	Dublin	Road bridge	710606 / 744247	A road bridge depicted on historic mapping as 'Broghan New Bridge'. The bridge includes a pair of parallel squared stone parapets with possibly later copes. Carries the R135 over a minor watercourse.	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_27	N/A	N/A	Broghan	Dublin	Farm	710681 / 744121	<p>An 'L'-shaped layout roadside farm depicted on historic Ordnance Survey mapping with later editions showing additional buildings.</p> <p>The farm comprises single and two-storey ranges, as well as a more recent barn and bungalow. A modern billboard has been attached to one of the buildings. The group is enclosed by a rubblestone boundary wall adjacent to the R135.v</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView, July 2021</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
CH_28	N/A	N/A	Dunsoghly	Dublin	Farm	711958 / 743365	<p>A roadside agricultural range depicted on historic Ordnance Survey mapping.</p> <p>The building comprises a rendered single-storey structure that forms part of an operational farmyard.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_29	N/A	N/A	Ballystrahan	Dublin	House	712626 / 745191	<p>A roadside house depicted on historic Ordnance Survey mapping. The house comprises a single storey rendered five-bay structure with an off-centre stack and tile roof.</p> <p>Farm buildings, some of which are depicted on later mapping are located to the south and west.</p> <p>The house is located adjacent to R122 within a plot enclosed by a low rendered boundary wall.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_30	N/A	N/A	Clonshaugh	Dublin	Farm	718730 / 741985	<p>A roadside farmhouse and agricultural ranges depicted on historic Ordnance Survey mapping.</p> <p>The house comprises a two-storey building with a modern single-storey porch to east, and a single storey extension to the south.</p> <p>The house is set back from Clonshaugh Road in a low walled garden, with views across the road, towards the fields beyond.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView, January 2022</p>
CH_31	N/A	N/A	Stockhole	Dublin	Ford	718755 / 742792	<p>'Shane's Ford' depicted on historic Ordnance Survey mapping; later editions continue to show the location of the ford with the road also crossing an unnamed watercourse.</p> <p>The road in this location still crosses the watercourse as depicted.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
CH_32	N/A	N/A	Clonshaugh	Dublin	Field system	718916 / 741898	A network of linear cropmarks visible on aerial imagery. These cropmarks correspond with former field boundaries depicted on historic Ordnance Survey mapping that have since been removed.	Post-medieval	Digital Globe Ordnance Survey 6", 1837 – 1842
CH_33	N/A	N/A	Cloghran	Dublin	Farm	718928 / 743480	A courtyard farm depicted on historic Ordnance Survey mapping. The farm comprises an 'L'-shaped range and farmhouse on Stockhole Lane. The farm is positioned at the end of a drive within large rectangular fields. Modern agricultural buildings form part of the yard. Views are internal across the farmyard with views out limited by buildings and established field boundaries.	Post-medieval	Ordnance Survey 6", 1837 – 1842 Google StreetView
CH_34	N/A	N/A	Middletown	Dublin	Farm (Site of)	718996 / 742340	'Upper Middletown', a farm, depicted on historic Ordnance Survey mapping. The farm buildings have been demolished. However, earthworks are visible in this location on aerial imagery and may indicate the site of the footings of the buildings.	Post-medieval	Ordnance Survey 6", 1837 – 1842 Google StreetView Digital Globe
CH_35	N/A	N/A	Baskin	Dublin	Farm	719145 / 743156	A cluster of agricultural ranges depicted on historic Ordnance Survey mapping on Baskin Lane. Only one of the buildings, a rendered stone range with corrugated roof, remains extant. A modern house and agricultural buildings form part of this complex.	Post-medieval	Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913 Google StreetView
CH_36	N/A	N/A	Bohammer	Dublin	Farm	720576 / 742969	A group of agricultural buildings forming a courtyard depicted on historic Ordnance Survey mapping to the south of Baskin Lane.	Post-medieval	Ordnance Survey 6", 1837 – 1842

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							<p>The farm including a two-storey rendered farmhouse, perpendicular to the road, and rendered rubblestone stables, positioned immediately adjacent to the road. The group is enclosed by a roughly coursed rubblestone wall with semi-circular copes, and the stable buildings.</p> <p>Views are largely internal, across the yard, and beyond the boundary wall to the north, across Baskin Lane, towards the fields beyond.</p>		<p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_37	N/A	N/A	Saint Doolaghs	Dublin	Road bridge	721014 / 741741	<p>'St Doolagh's Bridge' depicted on historic Ordnance Survey mapping. The bridge comprises a single arch rubblestone bridge with one low stone parapet with semi-circular copes to the west of Malahide Road (immediately north of the junction with Limekiln Lane).</p> <p>Carries the Malahide Road across an unnamed watercourse.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_38	N/A	N/A	Belcamp	Dublin	Buildings	721109 / 741427	<p>Roadside buildings depicted on historic Ordnance Survey mapping in Balgriffin fronting the R107, on the junction with the R123.</p> <p>The group includes rendered commercial units with residential floors, as well as a terrace of harled houses on the R123.</p> <p>These buildings form a group with some historic character along the main thoroughfare.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_39	N/A	N/A	Kinsaley	Dublin	Roadside memorial	721123 / 742238	<p>A roadside memorial identified from Google StreetView. Not depicted on historic Ordnance Survey mapping. The memorial comprises an inscribed granite carved stone, topped with a decorative cross. The memorial is located immediately adjacent to the R107, in front of the remains of a rubblestone boundary wall.</p>	Modern	<p>Google StreetView</p> <p>Ordnance Survey 6", 1837 – 1842</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
									Ordnance Survey 25", 1888-1913
CH_40	N/A	N/A	Belcamp	Dublin	Road bridge	721156 / 741198	<p>A road bridge and weir depicted on historic Ordnance Survey mapping.</p> <p>The bridge includes a pair of low stone parapets with semi-circular copes, the western parapet appears to have been rendered and extends along Malahide Road.</p> <p>The bridge carries the Malahide Road across the Mayne River.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
CH_41	N/A	N/A	Culcommon	Meath	Road bridge	694713 / 746280	The western coursed, squared, rubble stone parapet of a road bridge or culvert carrying a single lane carriageway over a small watercourse depicted on historic mapping. Half-round copes, rendered. Only one side (west) remains extant.	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>
CH_42	N/A	N/A	Ribstown	Meath	House	694977 / 746856	<p>A roadside cottage depicted on historic Ordnance Survey mapping.</p> <p>The dwelling comprises a single storey, brick and rendered building with a hipped slate roof and brick stack.</p> <p>The cottage is positioned within a rectangular plot, bounded by established hedges, with views to the south-east, across the road, towards modern properties.</p>	Post-medieval	Ordnance Survey 25", 1888-1913
CH_43	N/A	N/A	Woodland	Meath	Agricultural ranges	695461 / 747780	A group of agricultural buildings depicted on historic Ordnance Survey mapping. Only three of the buildings remain extant. Roofs appear to be corrugated iron.	Post-medieval	Ordnance Survey 6", 1837 – 1842

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							The group is located within pasture fields, with views out in all direction limited by established hedgerows.		Ordnance Survey 25", 1888-1913
CH_44	N/A	N/A	Portan	Meath	Thatched building	695803 / 748317	<p>A thatched building depicted as 'Portan' on historic Ordnance Survey mapping.</p> <p>The building appears to have been extended to the north-west, with a central perpendicular wing added.</p> <p>The building is located within a private plot, south of the Tolka River, set back from the R154, within the surrounding fields. Views are largely across open fields, with a belt of trees obscuring views westward.</p>	Post-medieval	Ordnance Survey 6", 1837 – 1842
CH_45	N/A	N/A	Ribstown	Meath	Agricultural buildings	695477 / 747147	Two buildings depicted as 'Ribstown' on historic Ordnance Survey mapping and later editions. The buildings form part of a larger operational farmyard. Views are limited by modern buildings and established hedgerows.	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p>
CH_46	N/A	N/A	Rathregan	Meath	Tree	696925 / 747831	'The Big Tree' depicted on historic Ordnance Survey mapping and later editions (Ordnance Survey 25", 1888-1913), at the junction between the R154 and Rathregan Court. No longer extant. The big tree is thought to be where 'many Bishops and people were hanged'.	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey</p> <p>Google StreetView</p> <p>https://www.duchas.ie/en/cbes/5008916/4966446/5106944?ChapterID=5008916</p> <p>[Accessed August 2022]</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
CH_47	N/A	N/A	Glebe	Meath	House	697158 / 747323	<p>A house depicted on historic Ordnance Survey mapping and identified as 'Rathregan Rectory' on later editions.</p> <p>The house is set back from the R154 within its demesne (DL_02), with views in all directions limited by established gardens and grounds.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p>
CH_48	N/A	N/A	Piercetown	Meath	Railway (Site of)	700948 / 745680	<p>The alignment of the M.G.W.R (Dublin and Navan Branch) railway depicted on historic Ordnance Survey mapping.</p> <p>Located immediately adjacent to the M3 motorway. The alignment is still perceptible as an earthwork.</p>	19 th century	Ordnance Survey 25", 1888-1913
CH_49	N/A	N/A	Priest Town	Meath	Gravel pit	705928 / 745630	A 'Gravel Pit' depicted on historic Ordnance Survey mapping; however, not shown on later editions. Located in a small area of woodland east of Priest Town Demesne (DL_04).	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p>
CH_50	N/A	N/A	Belgree	Meath	Gravel pit	705636 / 745261	A 'Gravel Pit' depicted on historic Ordnance Survey mapping; however, not shown on later editions. Located in an arable field to the south of Belgree Lane.	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p>
CH_51	N/A	N/A	Court	Meath	Enclosure	707212 / 744554	Cropmarks visible on aerial imagery and interpreted as a possible square enclosure. Possible associated linear features were also identified nearby and may comprise an associated field system (a field system is recorded on the SMR (ME051-005) in this field).	Unknown	<p>GoogleEarth, Sept 2003</p> <p>Ordnance Survey 6", 1837 – 1842</p>

ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							No corresponding features are depicted on historic Ordnance Survey mapping at this location.		Ordnance Survey 25", 1888-1913
CH_52	N/A	N/A	Irishtown	Dublin	House	708438 / 744235	<p>A rectangular roadside building depicted on historic Ordnance Survey mapping. Later editions show the building with an extension to the north as well as a projecting porch.</p> <p>The dwelling is depicted as roofless on modern mapping. The building is adjacent to a local road in an overgrown area.</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p> <p>Google StreetView</p>
CH_53	N/A	N/A	Gallanstown	Dublin	Quarry	708417 / 743907	A 'Quarry' depicted on historic Ordnance Survey mapping. Located in an arable field to the west of a local road.	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Ordnance Survey 25", 1888-1913</p>
CH_54	N/A	N/A	Stockhole	Dublin	House	718534 / 742284	<p>'Edendale' depicted on historic Ordnance Survey mapping within its demesne (DL_15), including the house, a long agricultural range to the west, and gate lodge to the east.</p> <p>The agricultural range remains extant; however, the house and lodge have been demolished.</p>	Post-medieval	Ordnance Survey 6", 1837 – 1842
CH_55	N/A	N/A	Baskin	Dublin	House	719445 / 742897	<p>'Baskin Hall', depicted on historic Ordnance Survey mapping, with its associated farm to the south-west and gate lodge to the north. The house is positioned within its demesne DL_18.</p> <p>Now Newtown Stud, with a modern arena is located to the south, views from the house are largely limited to the</p>	Post-medieval	<p>Ordnance Survey 6", 1837 – 1842</p> <p>Google StreetView</p>

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ID	Reference Number(s)	Legal Status	Townland	County	Site Type	Easting / Northing	Description	Date	Sources
							north by an established boundary and to the west by modern agricultural buildings.		
CH_56	N/A	N/A	Middleton	Dublin	Farm	719498 / 742412	'Lower Middletown' depicted on First Edition Ordnance Survey mapping (1837 – 1842) as a cluster of buildings, later mapping (Ordnance Survey 25", 1888-1913) also identifies a lodge to the south of the group. Located within pasture fields, with views obscured by established hedgerows and buildings.	Post-medieval	
CH_57	N/A	N/A	Middleton	Dublin	Enclosures	719293 / 742270	A series of cropmarks identified from aerial imagery. These comprise two circular features, interpreted as possible enclosures, and a network of linear features interpreted as former field boundaries. Some of these former field boundaries correspond with those depicted on historic Ordnance Survey mapping and may post-date the enclosures.	Unknown	GoogleEarth, June 2018 Ordnance Survey 6", 1837 – 1842 Ordnance Survey 25", 1888-1913

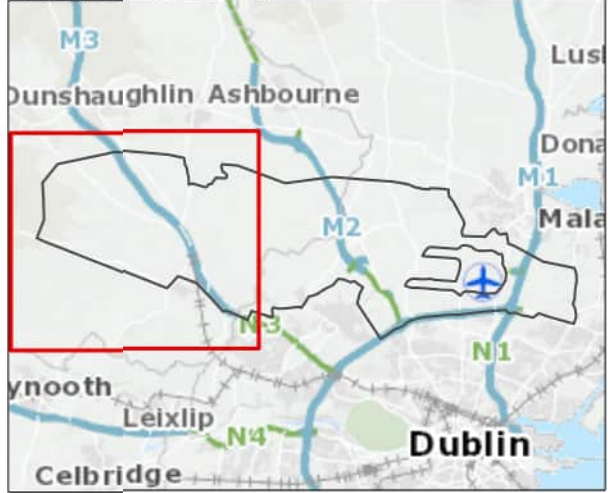
Annex B. Archaeology, Architectural Heritage and Cultural Heritage Figures

B.1.1: Archaeological Constraints

FIGURE B.1.1

- Legend
- Step 4A Study Area
 - Exclusion Zone
 - County Boundary
 - 400kV Substation
 - Proposed Cable Route - Option A (Red)*
 - Proposed Cable Route - Option B (Green)*
 - Proposed Cable Route - Option C (Yellow)*
 - Proposed Cable Route - Option D (Blue)*
 - Off-Road Options Being Explored*
 - Cable Route Option A 100m Buffer*
 - Cable Route Option B 100m Buffer*
 - Cable Route Option C 100m Buffer*
 - Cable Route Option D 100m Buffer*
 - Recorded Monument
 - Sites and Monuments Record (SMR)
 - RMP Zone of Notification

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Rev	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

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Project
CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title
Locations of Archaeological Constraints
Within the Study Areas for Option A (Red), Option B (Green),
Option C (Yellow) and Option D (Blue)
Sheet 1 of 3

Drawing Status
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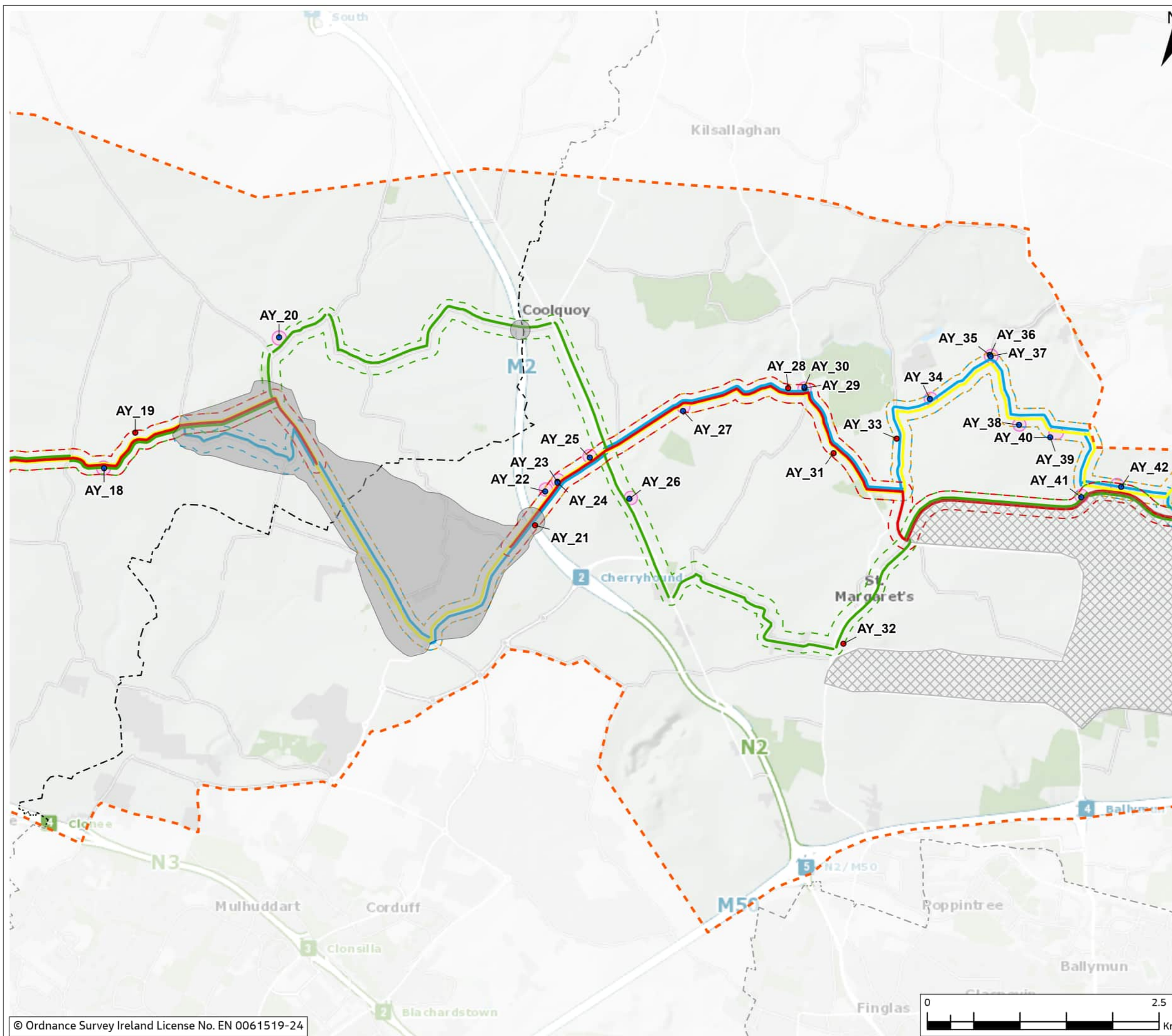
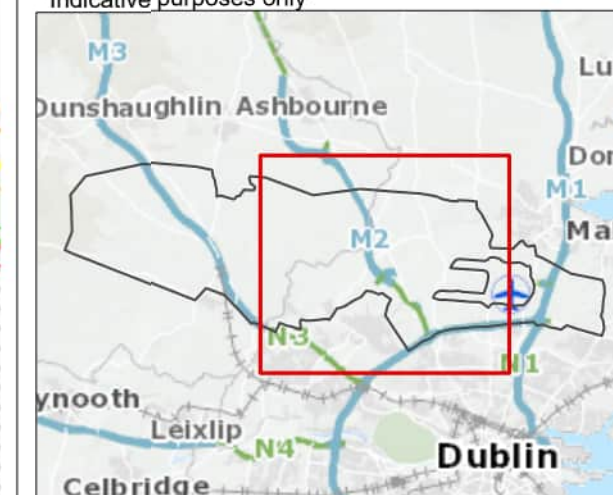


FIGURE B.1.1

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- Recorded Monument
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Locations of Archaeological Constraints
Within the Study Areas for Option A (Red), Option B (Green),
Option C (Yellow) and Option D (Blue)
Sheet 2 of 3

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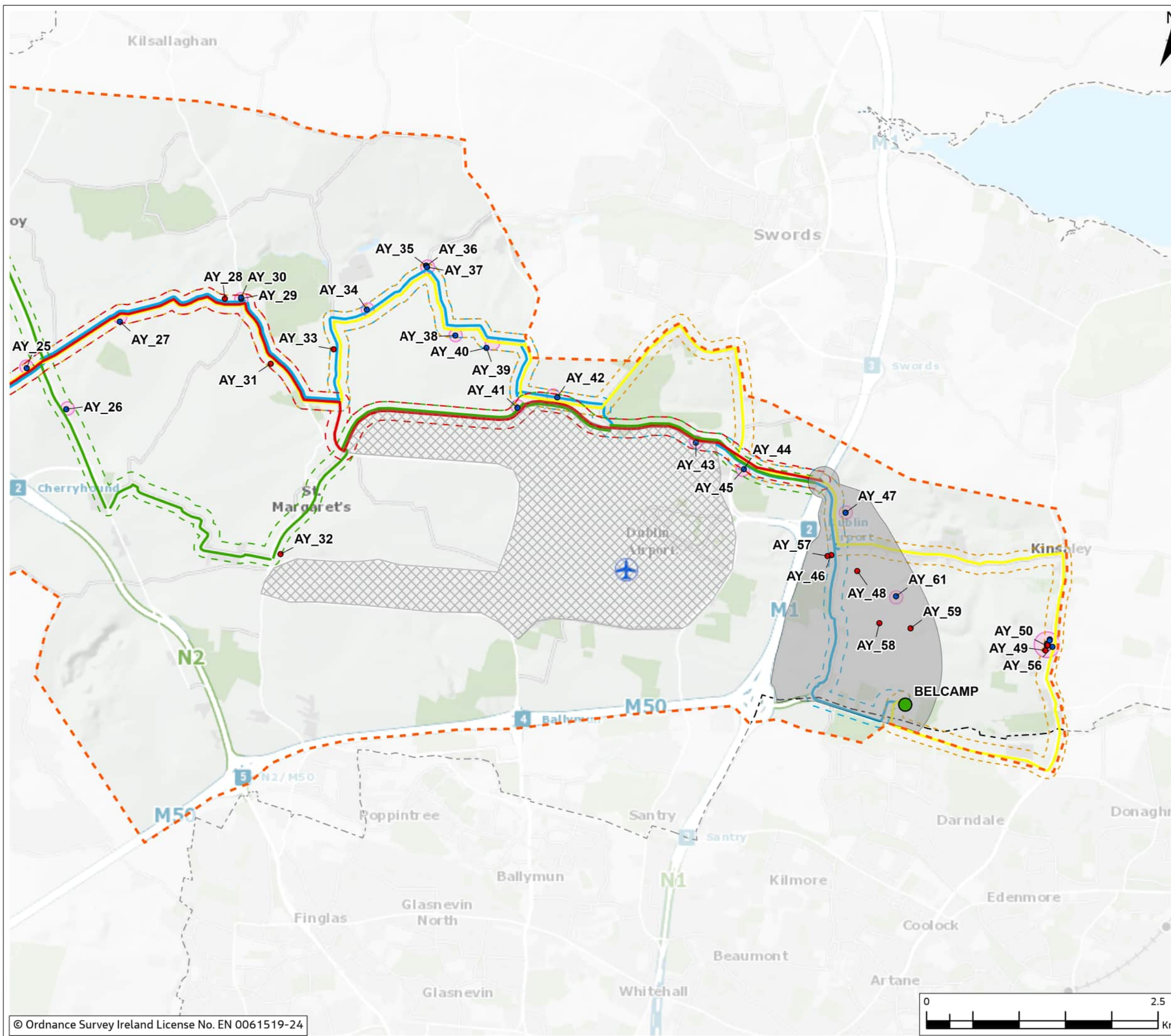
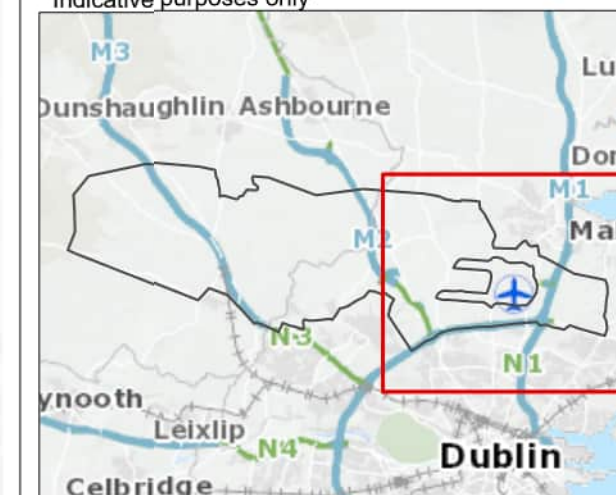


FIGURE B.1.1

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- Recorded Monument
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Drawing Title
Locations of Archaeological Constraints
Within the Study Areas for Option A (Red), Option B (Green),
Option C (Yellow) and Option D (Blue)
Sheet 3 of 3

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B.1.2: Architectural Constraints

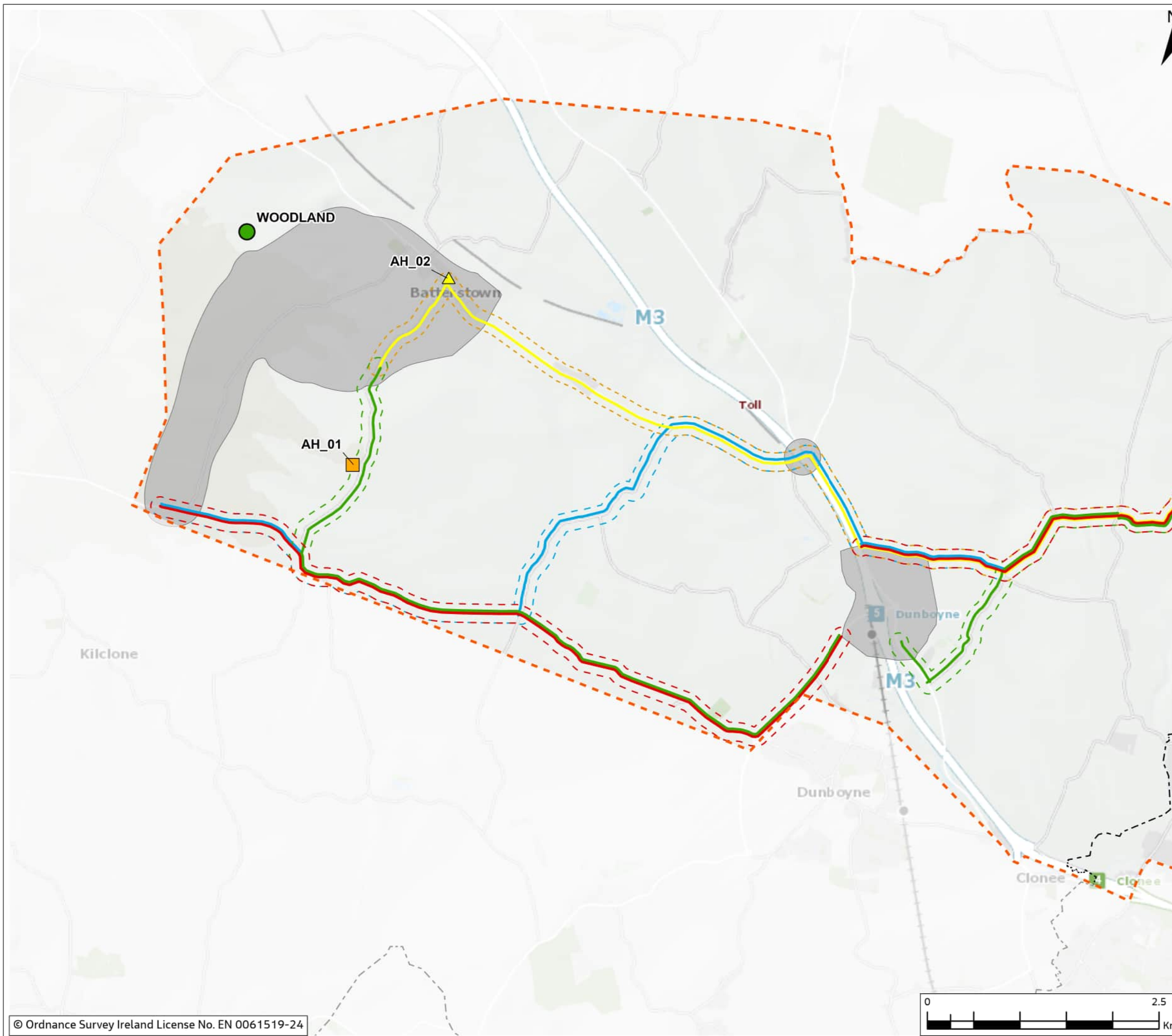
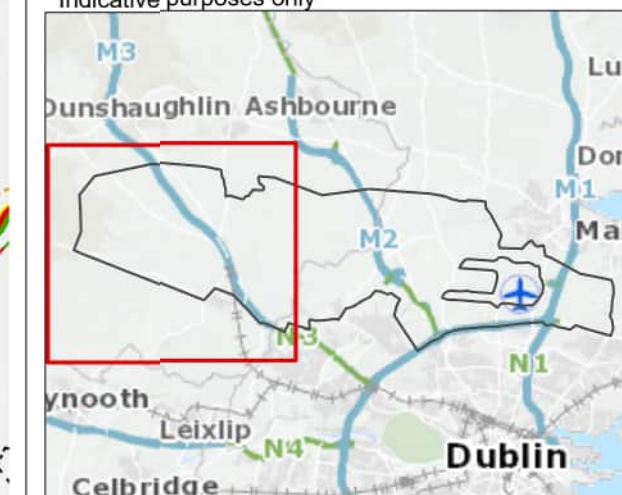


FIGURE B.1.2

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 400kV Substation
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- National Inventory of Architectural Heritage (NIAH)
- Record of Protected Structures (RPS)

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Drawing Title
Locations of Architectural Constraints
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 1 of 3

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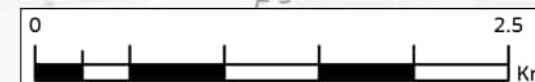
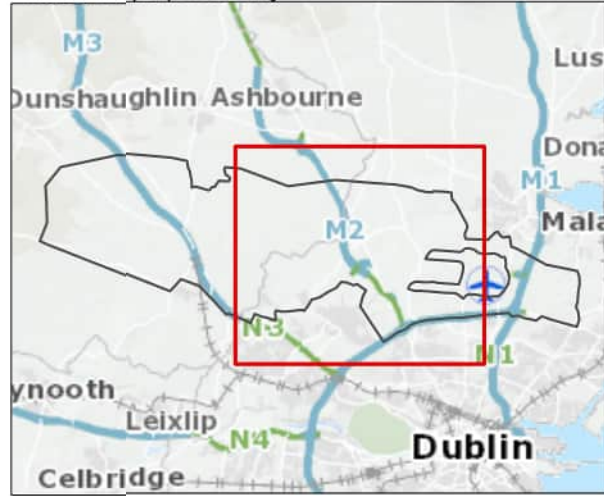


FIGURE B.1.2

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
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Locations of Architectural Constraints
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 2 of 3

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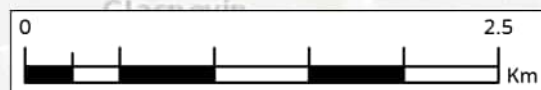
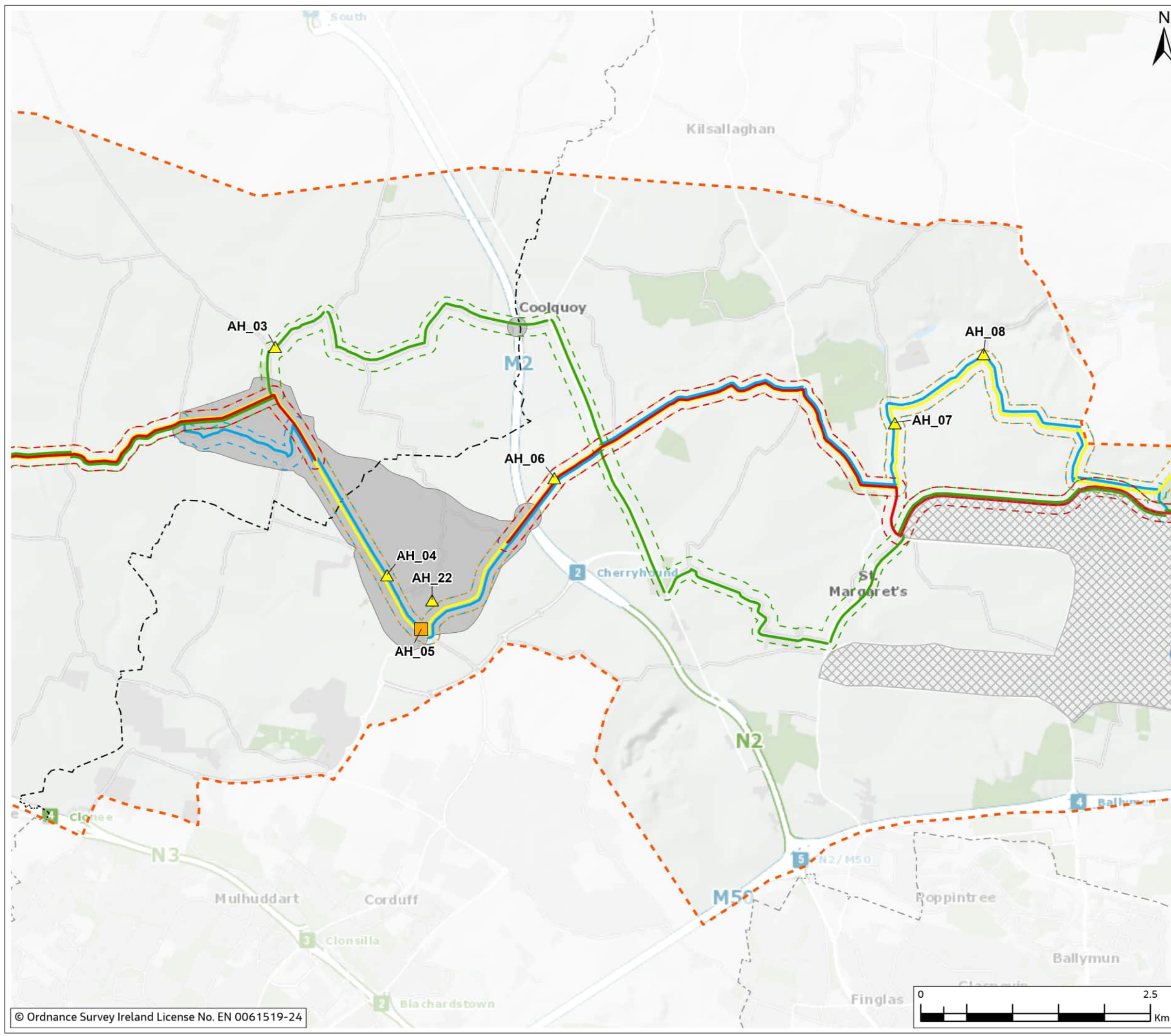
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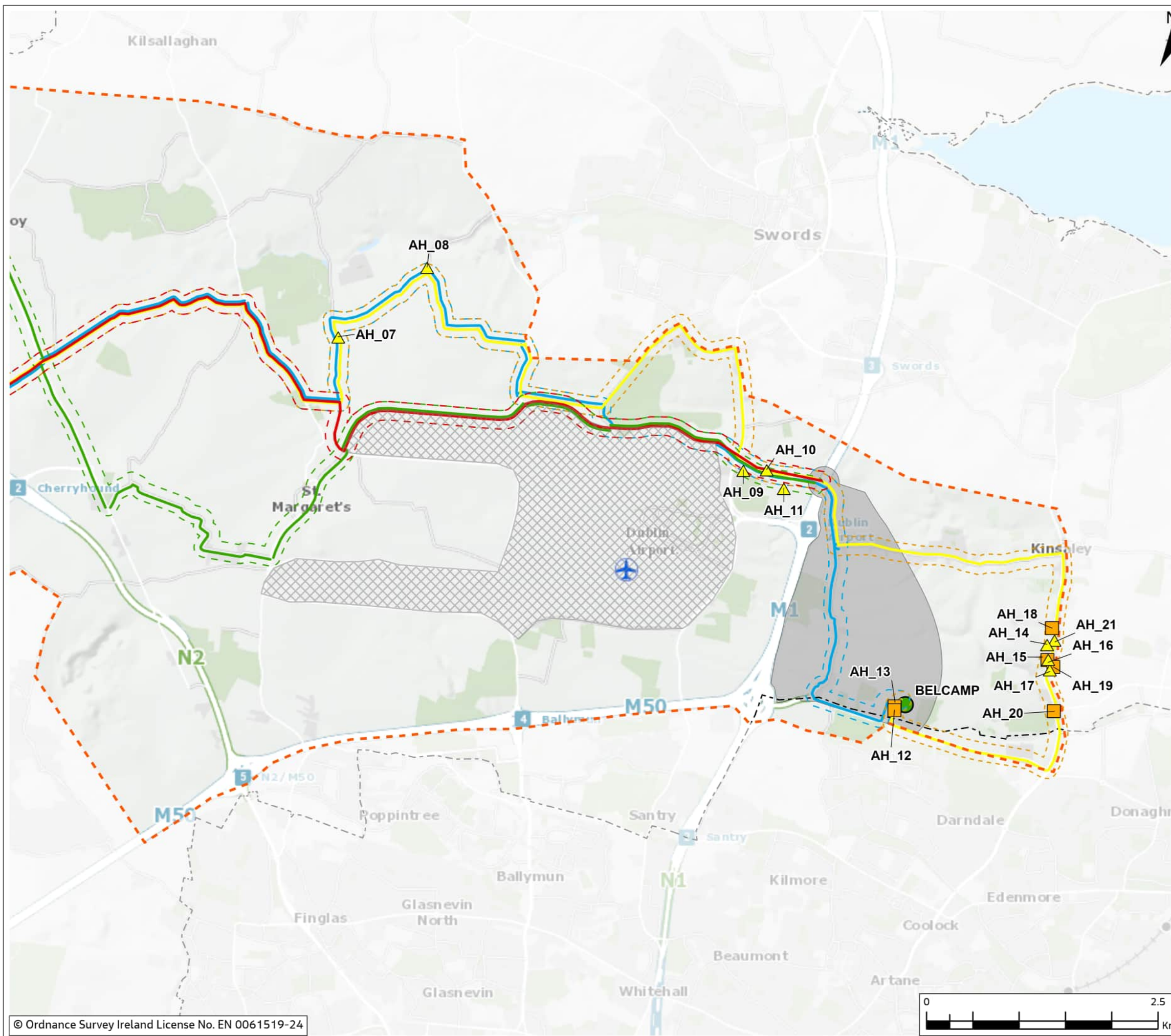
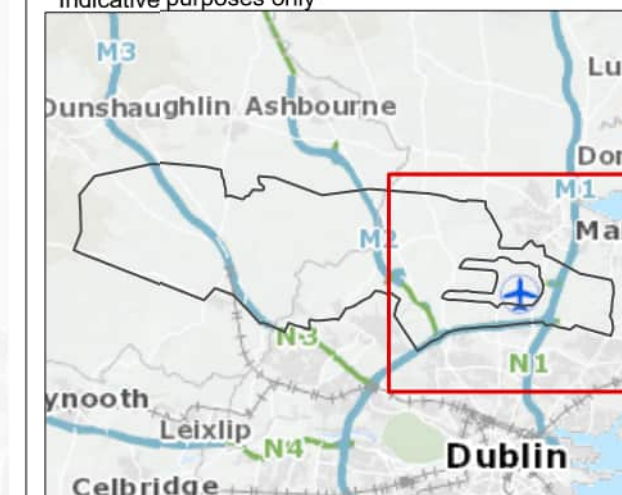


FIGURE B.1.2

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
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- Record of Protected Structures (RPS)

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Project
CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title
Locations of Architectural Constraints
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 3 of 3

Drawing Status
FINAL

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B.1.3: Gardens and Designated Landscapes

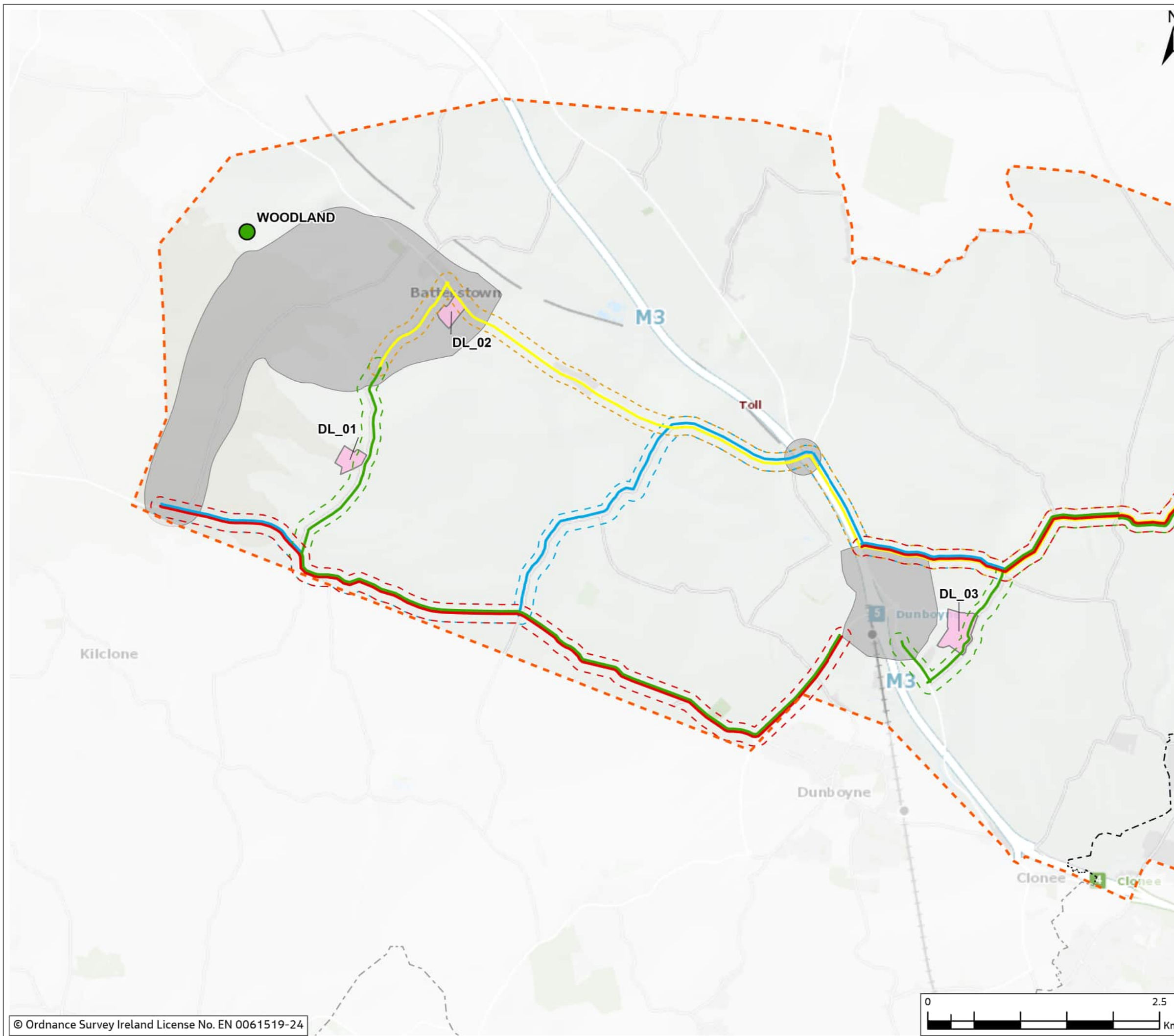


FIGURE B.1.3

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 400kV Substation
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- Gardens & Designed Landscapes (GDL)

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Project

CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title

Locations of Gardens & Designed Landscapes
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 1 of 3

Drawing Status

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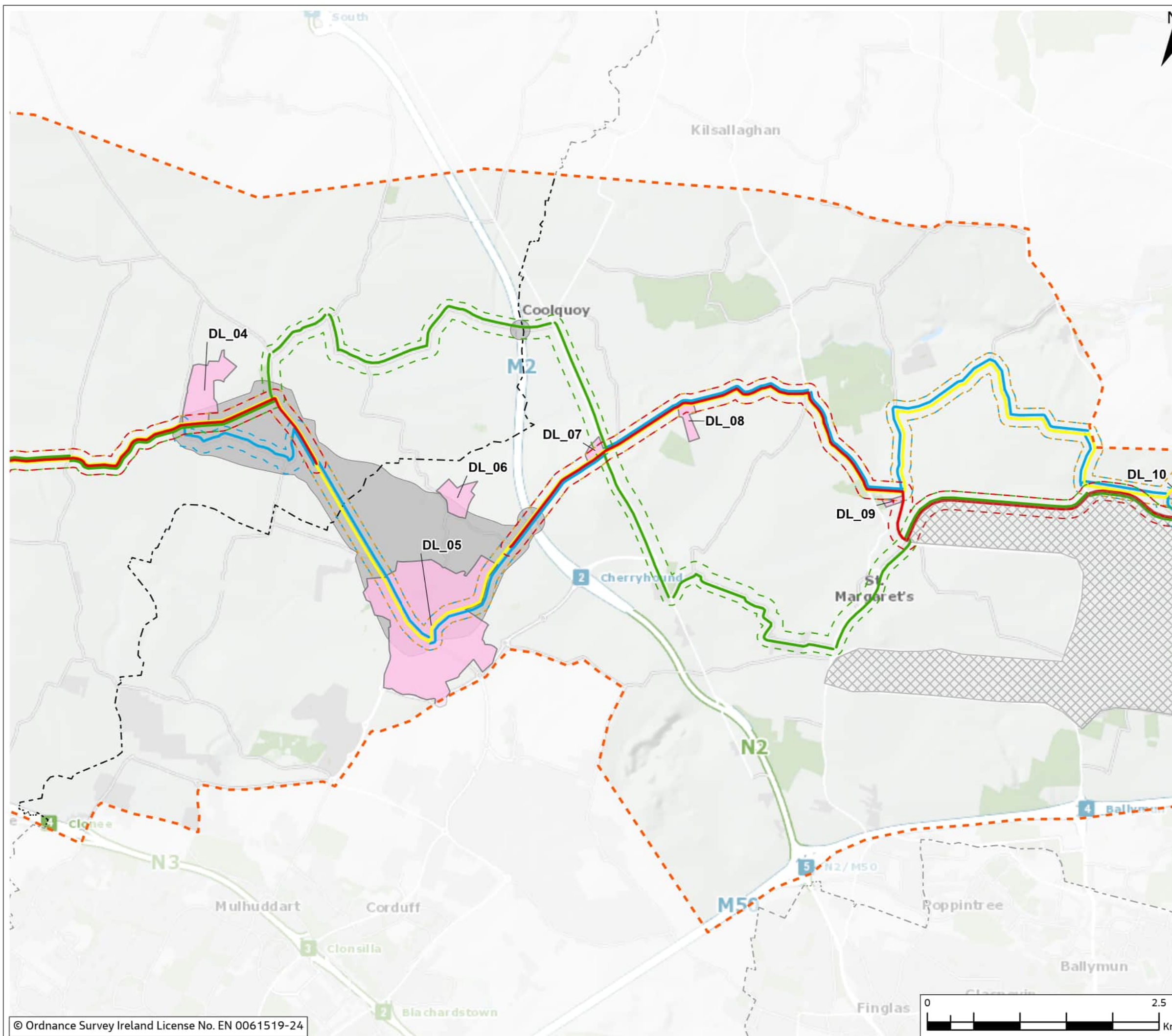
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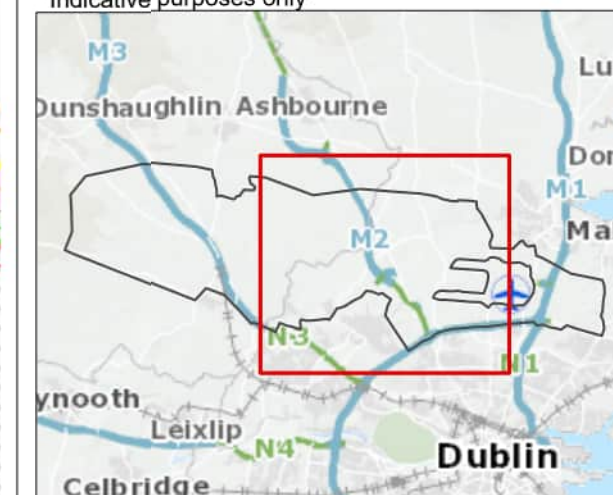
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FIGURE B.1.3

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- Gardens & Designed Landscape (GDL)

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CP1021 – East Meath-North Dublin Grid Upgrade

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Locations of Gardens & Designed Landscapes
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 2 of 3

Drawing Status

FINAL

Scale @ A3

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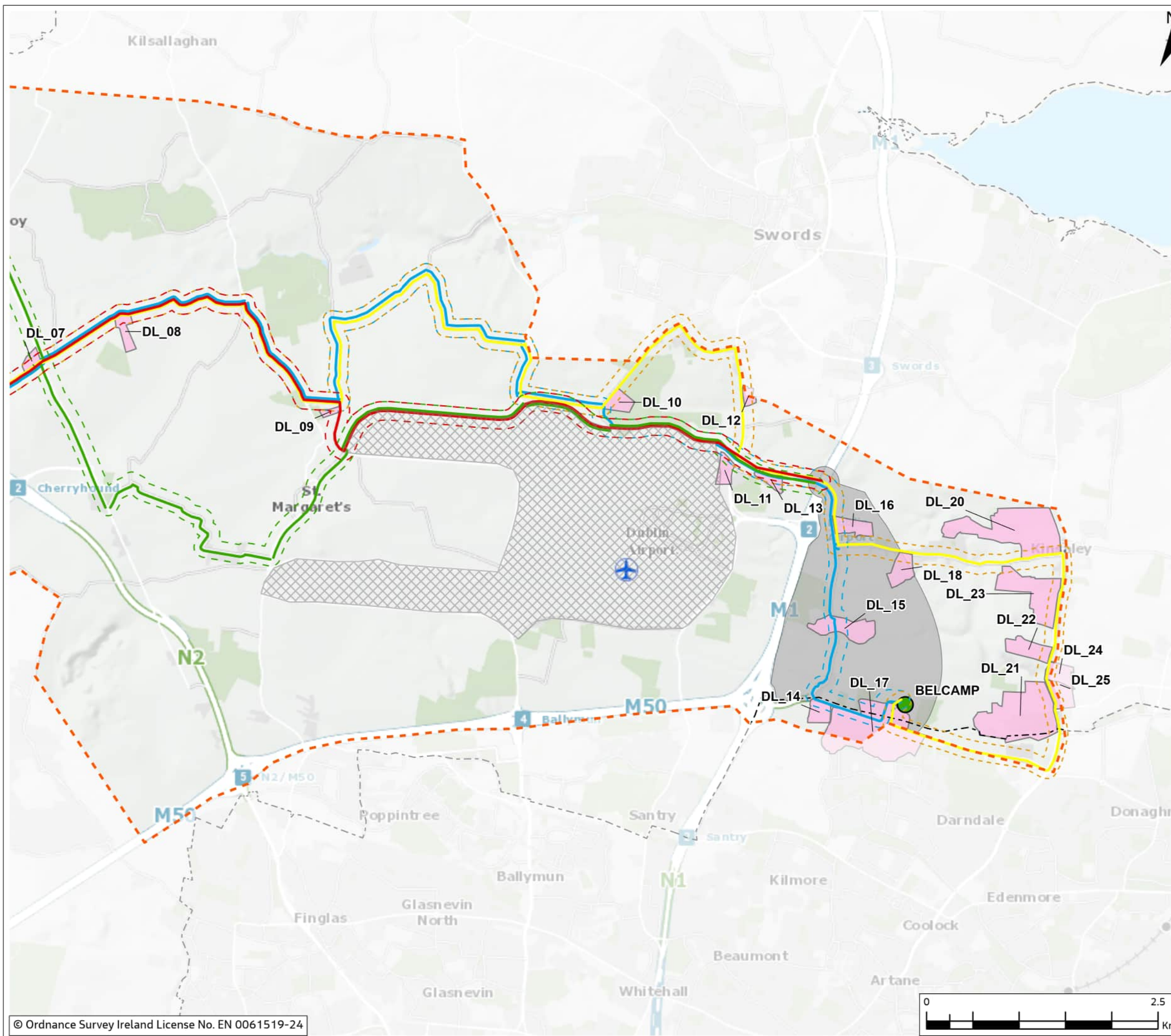
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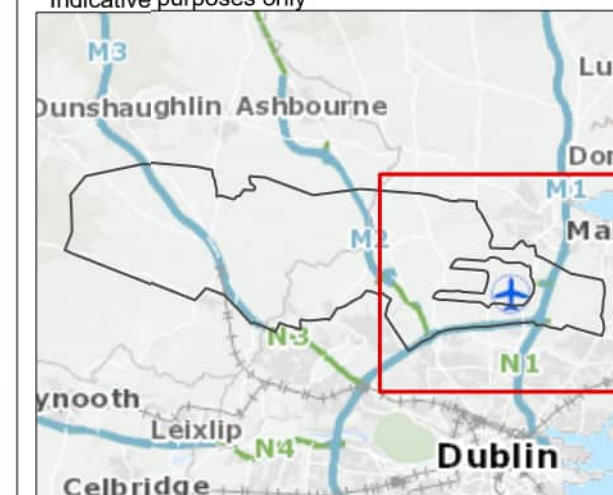
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FIGURE B.1.3

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- Gardens & Designed Landscapes (GDL)

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Project
CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title
Locations of Gardens & Designed Landscapes
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 3 of 3

Drawing Status
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B.1.4: Non-Designated Cultural Heritage Sites

FIGURE B.1.4

- Legend
- Step 4A Study Area
 - Exclusion Zone
 - County Boundary
 - 400kV Substation
 - Proposed Cable Route - Option A (Red)*
 - Proposed Cable Route - Option B (Green)*
 - Proposed Cable Route - Option C (Yellow)*
 - Proposed Cable Route - Option D (Blue)*
 - Off-Road Options Being Explored*
 - Cable Route Option A 100m Buffer*
 - Cable Route Option B 100m Buffer*
 - Cable Route Option C 100m Buffer*
 - Cable Route Option D 100m Buffer*
 - Cultural Heritage Point



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Drawing Title

Locations of Non-Designated Cultural Heritage Sites
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 1 of 3

Drawing Status

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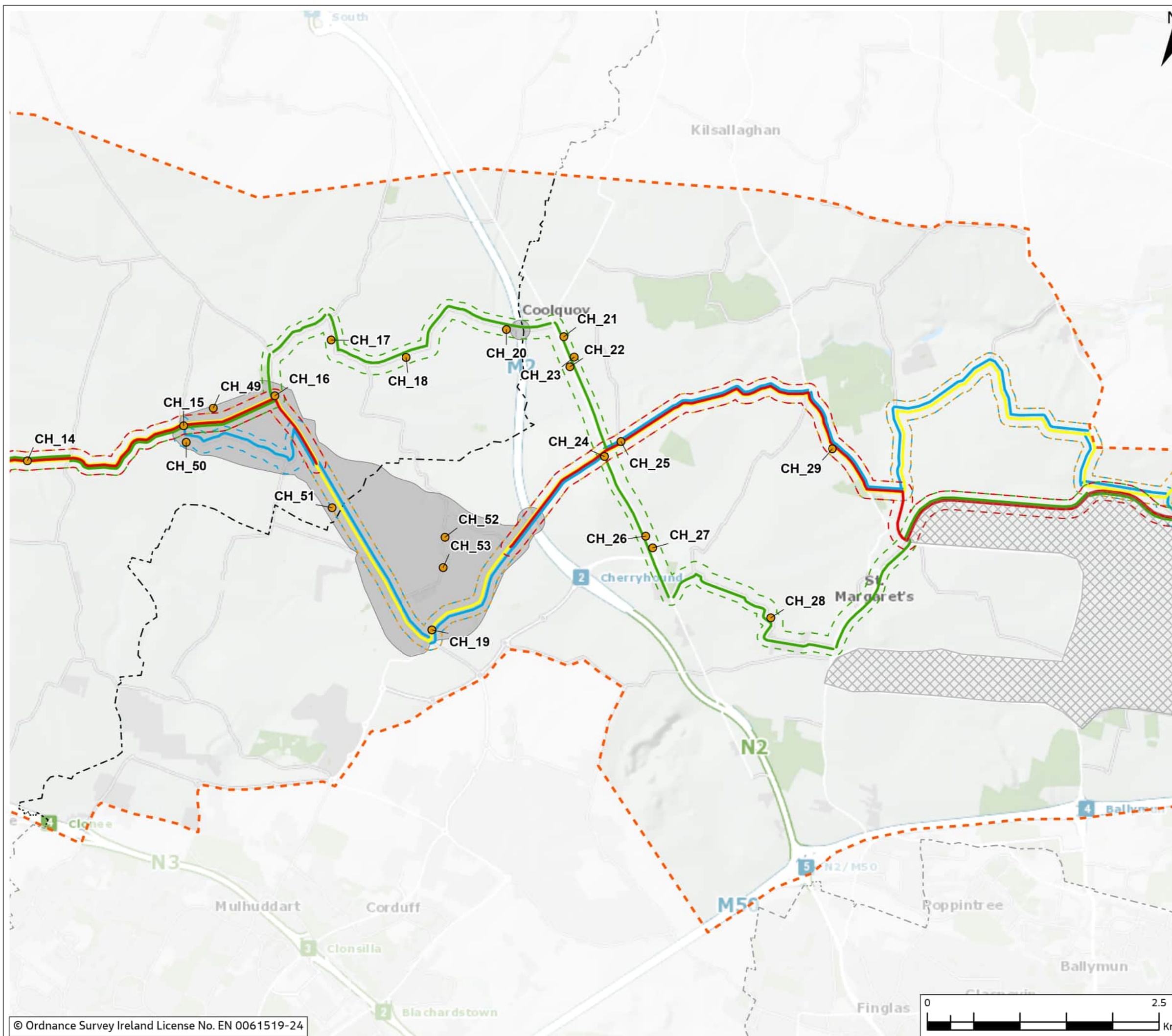
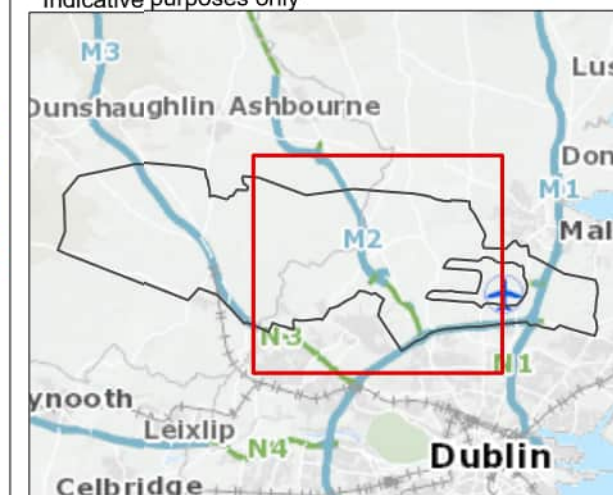


FIGURE B.1.4

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- Cultural Heritage Point

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Drawing Title

Locations of Non-Designated Cultural Heritage Sites
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 2 of 3

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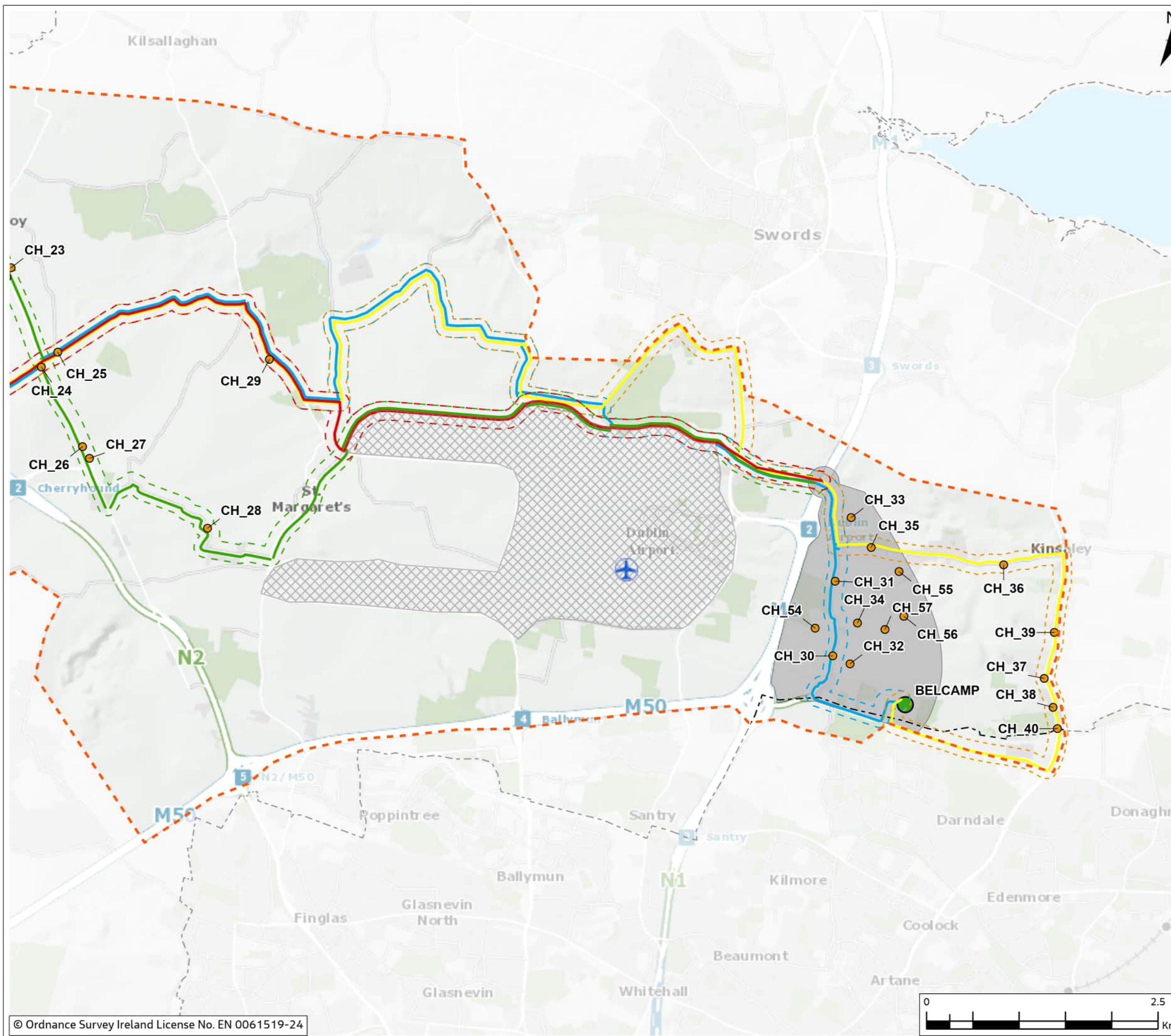
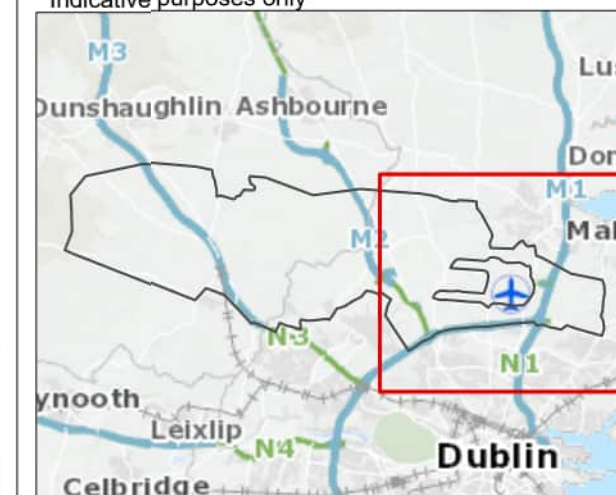


FIGURE B.1.4

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option A (Red)*
- Proposed Cable Route - Option B (Green)*
- Proposed Cable Route - Option C (Yellow)*
- Proposed Cable Route - Option D (Blue)*
- Off-Road Options Being Explored*
- Cable Route Option A 100m Buffer*
- Cable Route Option B 100m Buffer*
- Cable Route Option C 100m Buffer*
- Cable Route Option D 100m Buffer*
- Cultural Heritage Point

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Drawing Title
Locations of Non-Designated Cultural Heritage Sites
Within the Study Areas for Option A (Red),
Option B (Green), Option C (Yellow) and Option D (Blue)
Sheet 3 of 3

Drawing Status
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Appendix C – Socio-Economic Figures

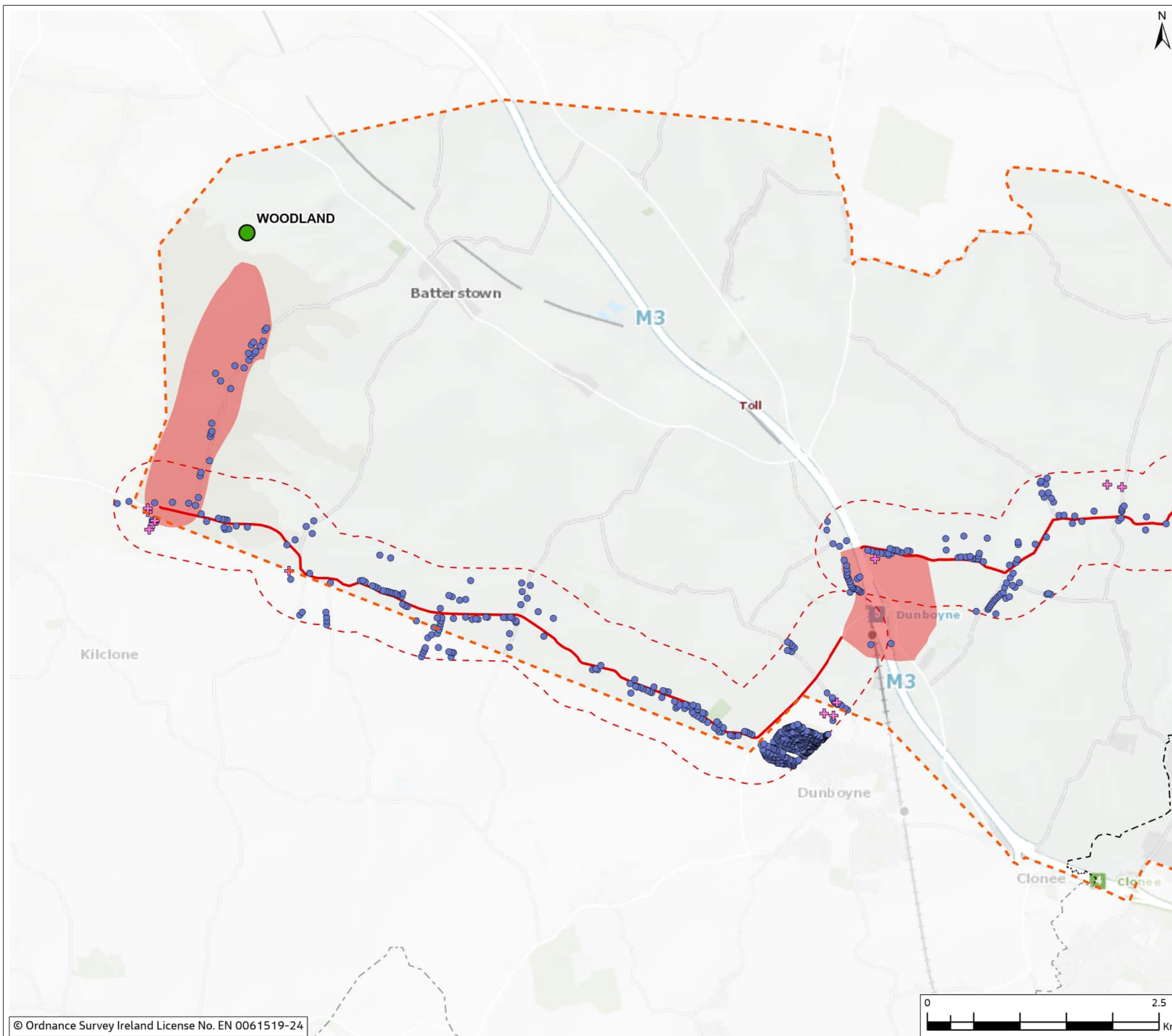
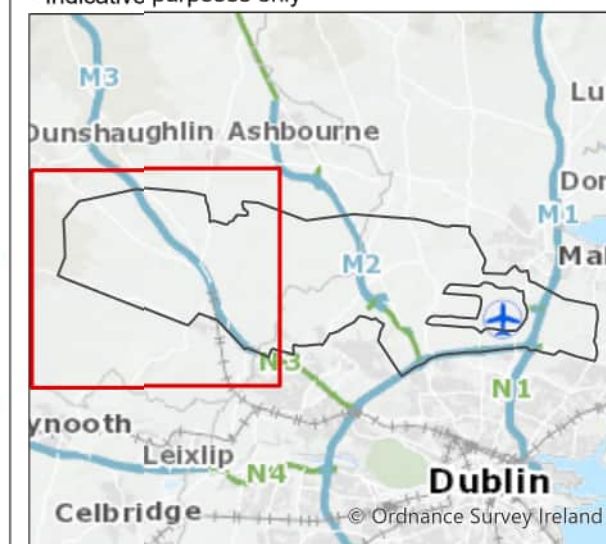


FIGURE C.1.1

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 400kV Substation
- Proposed Cable Route - Option A (Red)*
- Off Road Options Being Explored - Option A*
- Cable Route Option A 500m Buffer*
- Commercial/Retail property
- Residential property

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Drawing Title

Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option A (Red)
Sheet 1 of 3

Drawing Status

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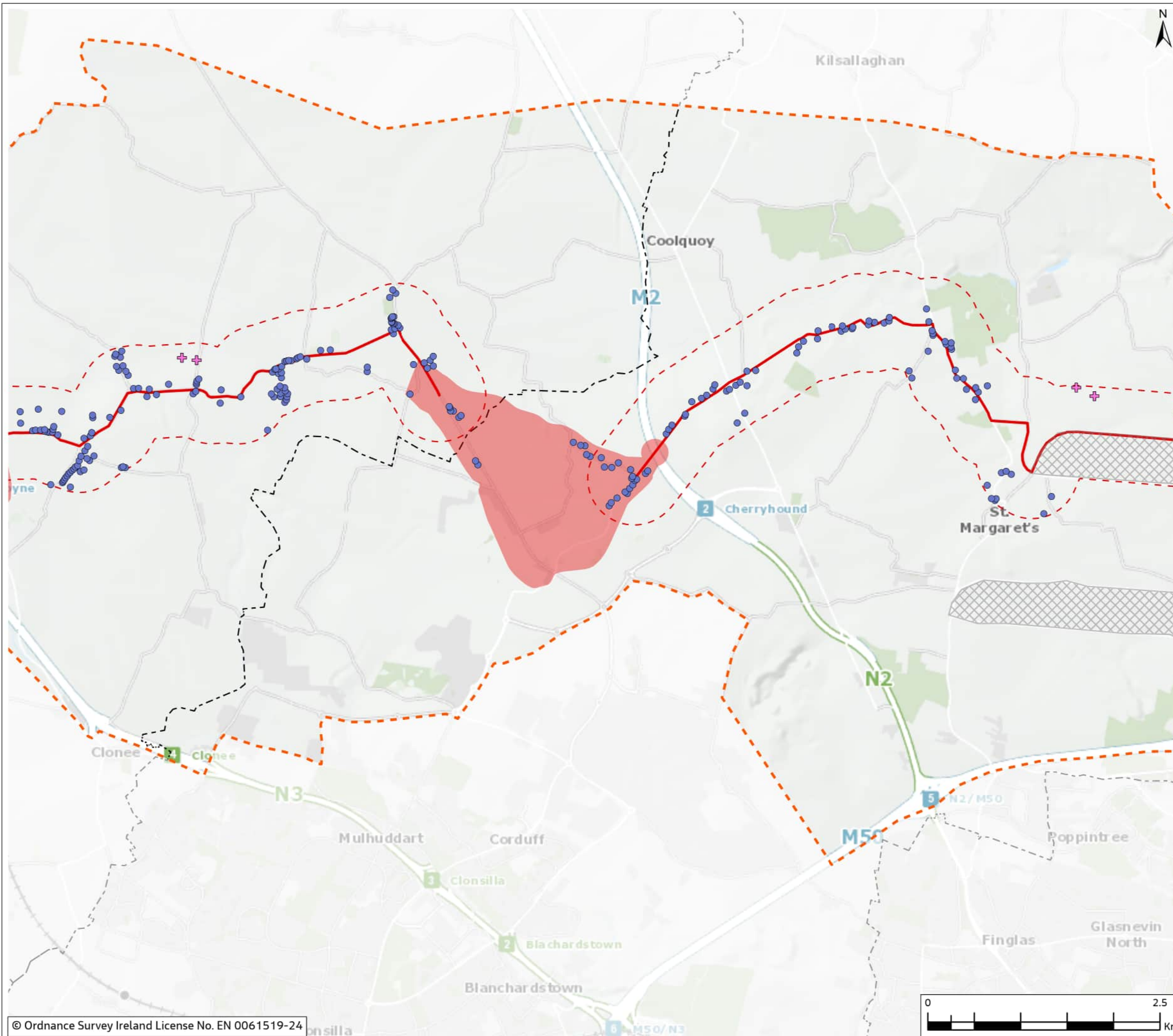
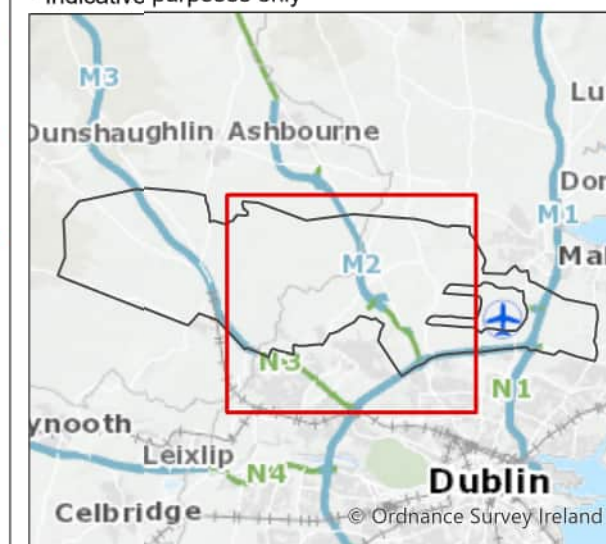


FIGURE C.1.1

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- Proposed Cable Route - Option A (Red)*
- Off Road Options Being Explored - Option A*
- Cable Route Option A 500m Buffer*
- Commercial/Retail property
- Residential property

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Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option A (Red)
Sheet 2 of 3

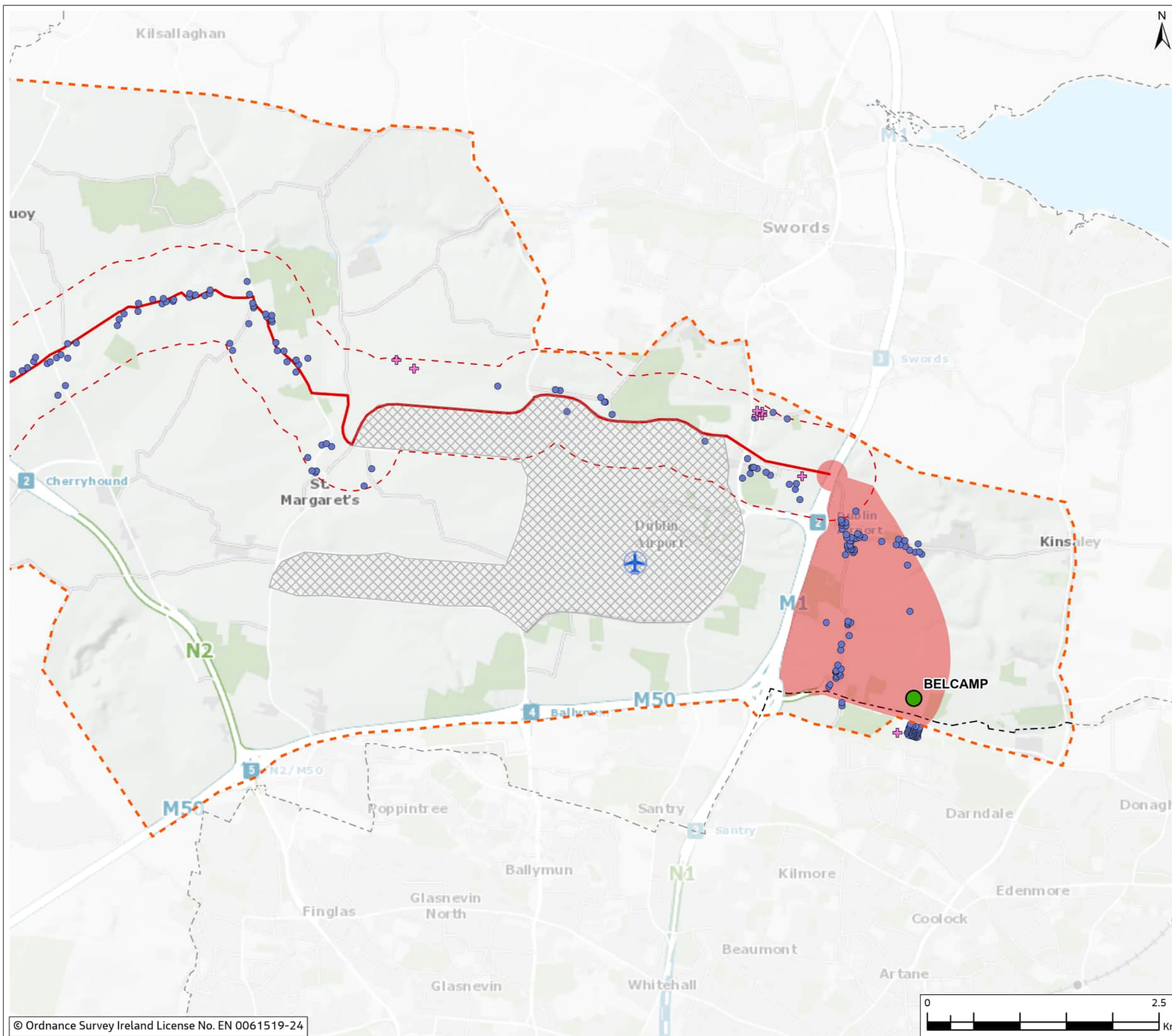
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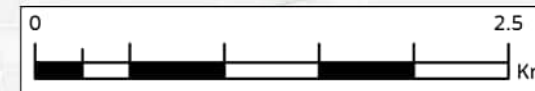
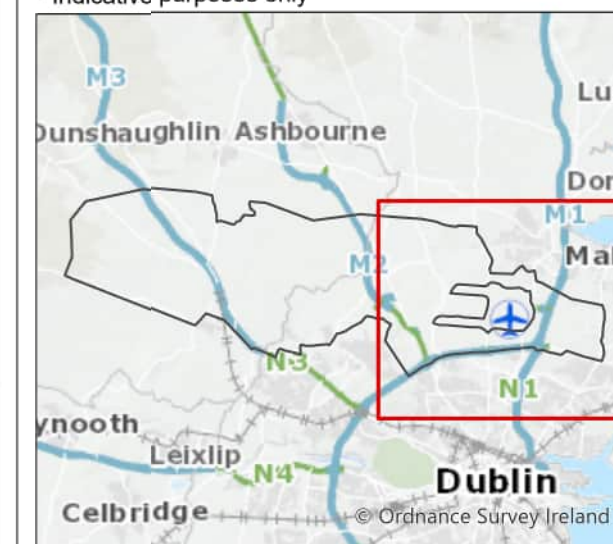


FIGURE C.1.1

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option A (Red)*
- Off Road Options Being Explored - Option A*
- Cable Route Option A 500m Buffer*
- Commercial/Retail property
- Residential property

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Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option A (Red)
Sheet 3 of 3

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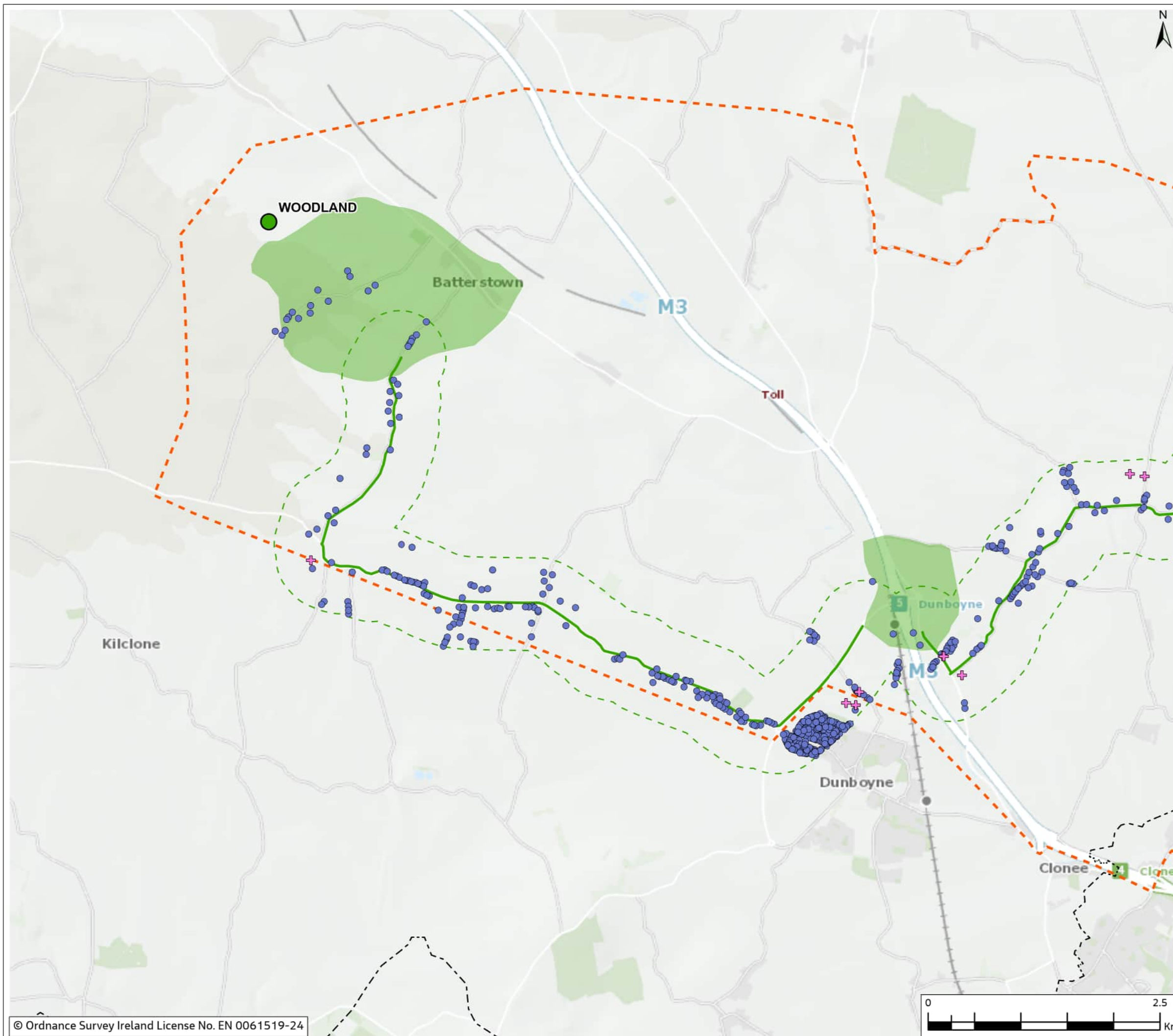
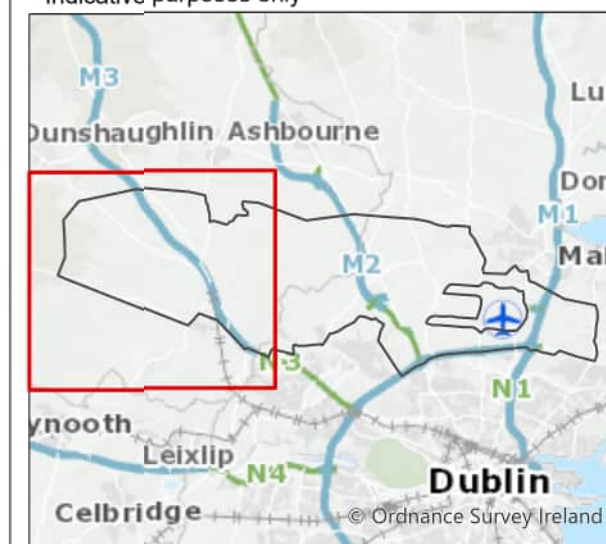


FIGURE C.1.2

Legend

- Step 4a Study Area
- County Boundary
- 400kV Substation
- Proposed Cable Route - Option B (Green)*
- Off Road Options Being Explored - Option B*
- Cable Route Option B 500m Buffer*
- Commercial/Retail property
- Residential property

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Drawing Title

Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option B (Green)
Sheet 1 of 3

Drawing Status

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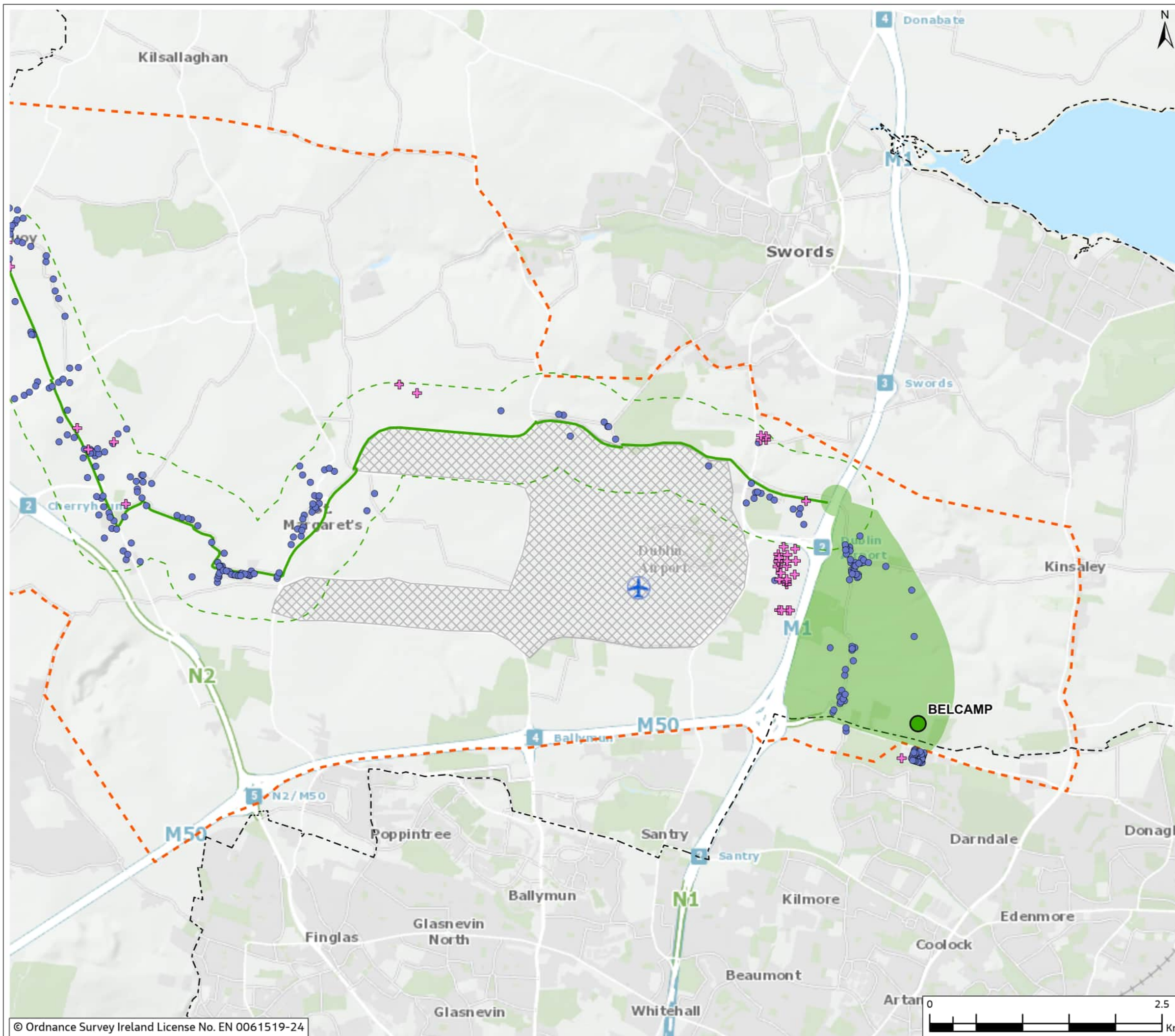
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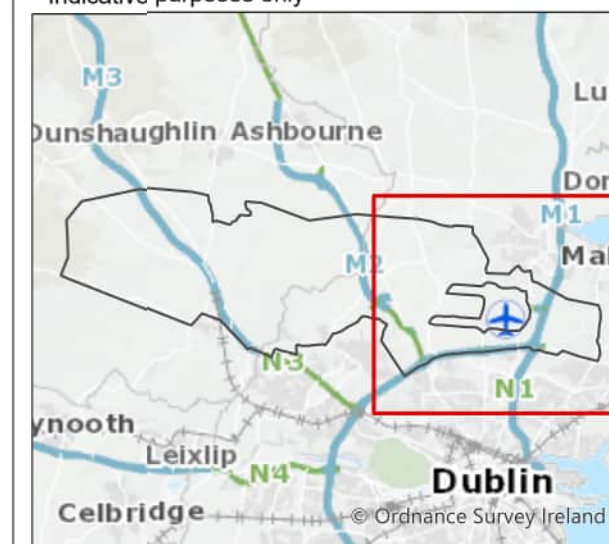
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FIGURE C.1.2

Legend

- Step 4a Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option B (Green)*
- Off Road Options Being Explored - Option B*
- Cable Route Option B 500m Buffer*
- Commercial/Retail property
- Residential property

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Proposed Cable Route Option B (Green)
Sheet 3 of 3

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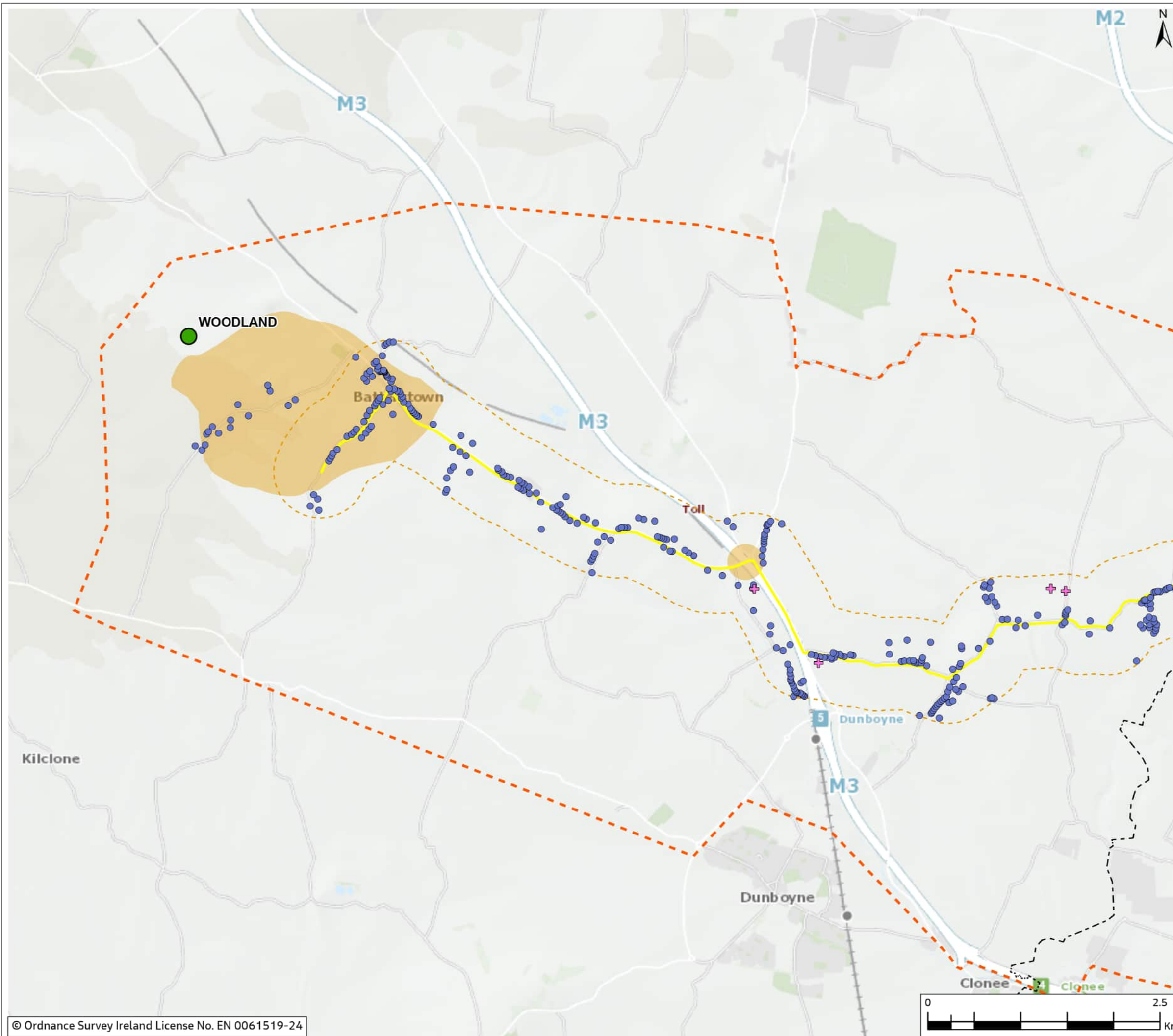
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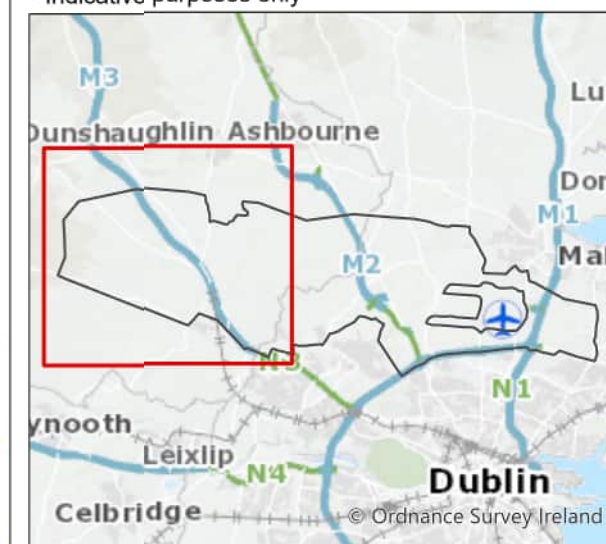
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FIGURE C.1.3

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 400kV Substation
- Proposed Cable Route - Option C (Yellow)*
- Off Road Options Being Explored - Option C*
- Cable Route Option C 500m Buffer*
- Commercial/Retail property
- Residential property

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Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option C (Yellow)
Sheet 1 of 3

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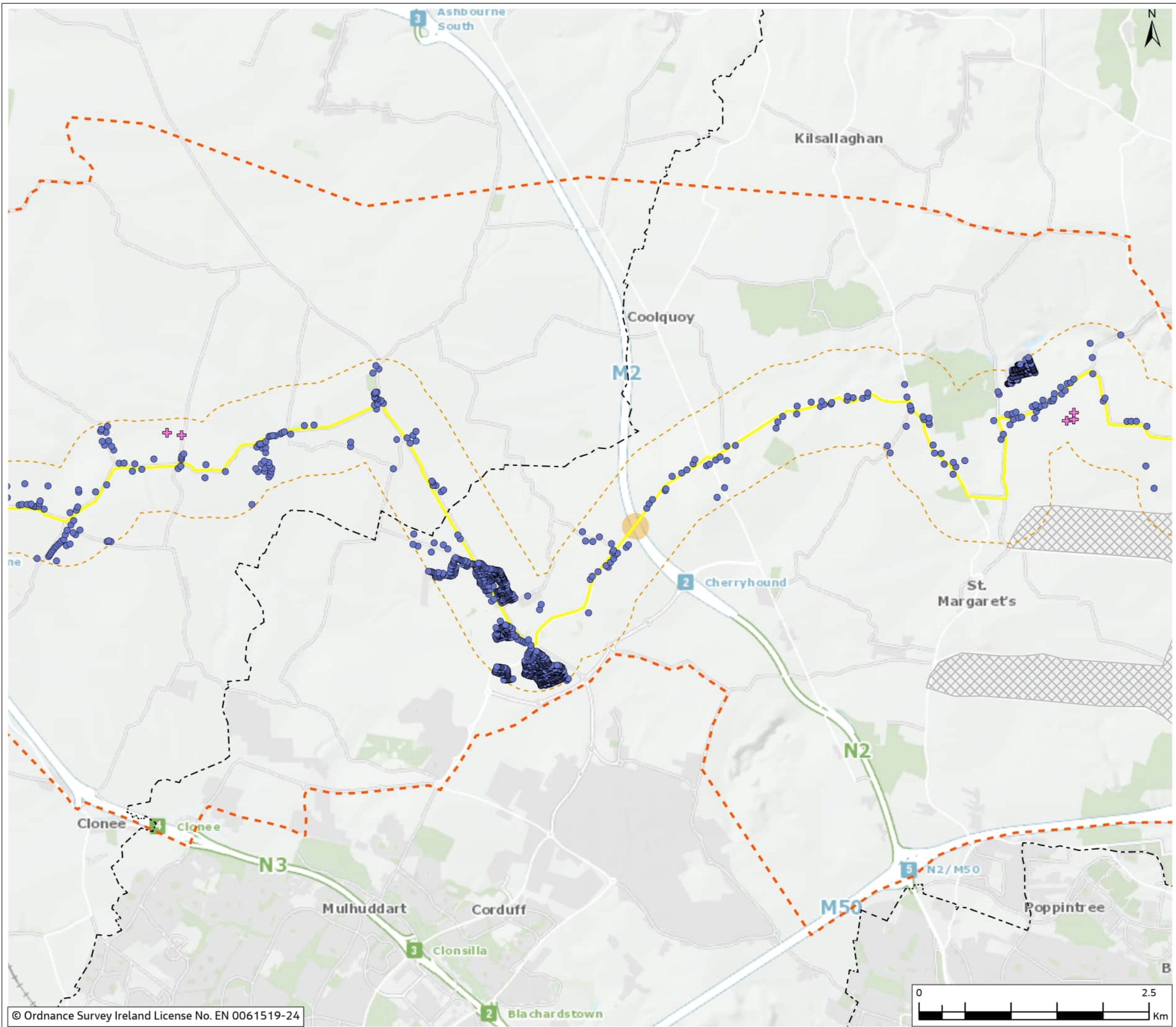
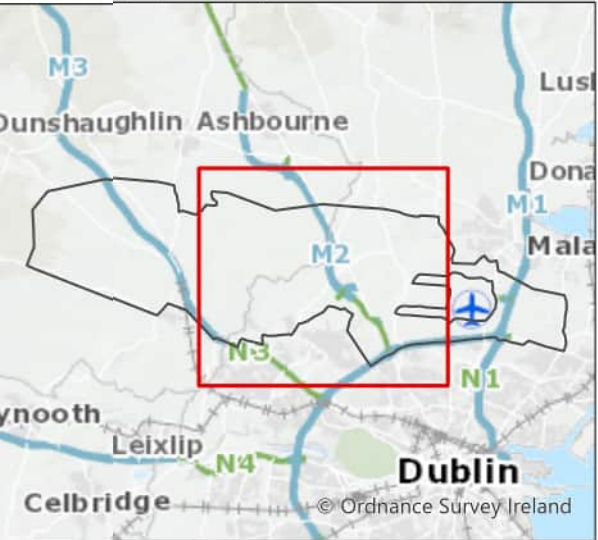


FIGURE C.1.3

- Legend
- Step 4A Study Area
 - Exclusion Zone
 - County Boundary
 - Proposed Cable Route - Option C (Yellow)*
 - Off Road Options Being Explored - Option C*
 - Cable Route Option C 500m Buffer*
 - Commercial/Retail property
 - Residential property

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Drawing Title

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Proposed Cable Route Option C (Yellow)
Sheet 2 of 3

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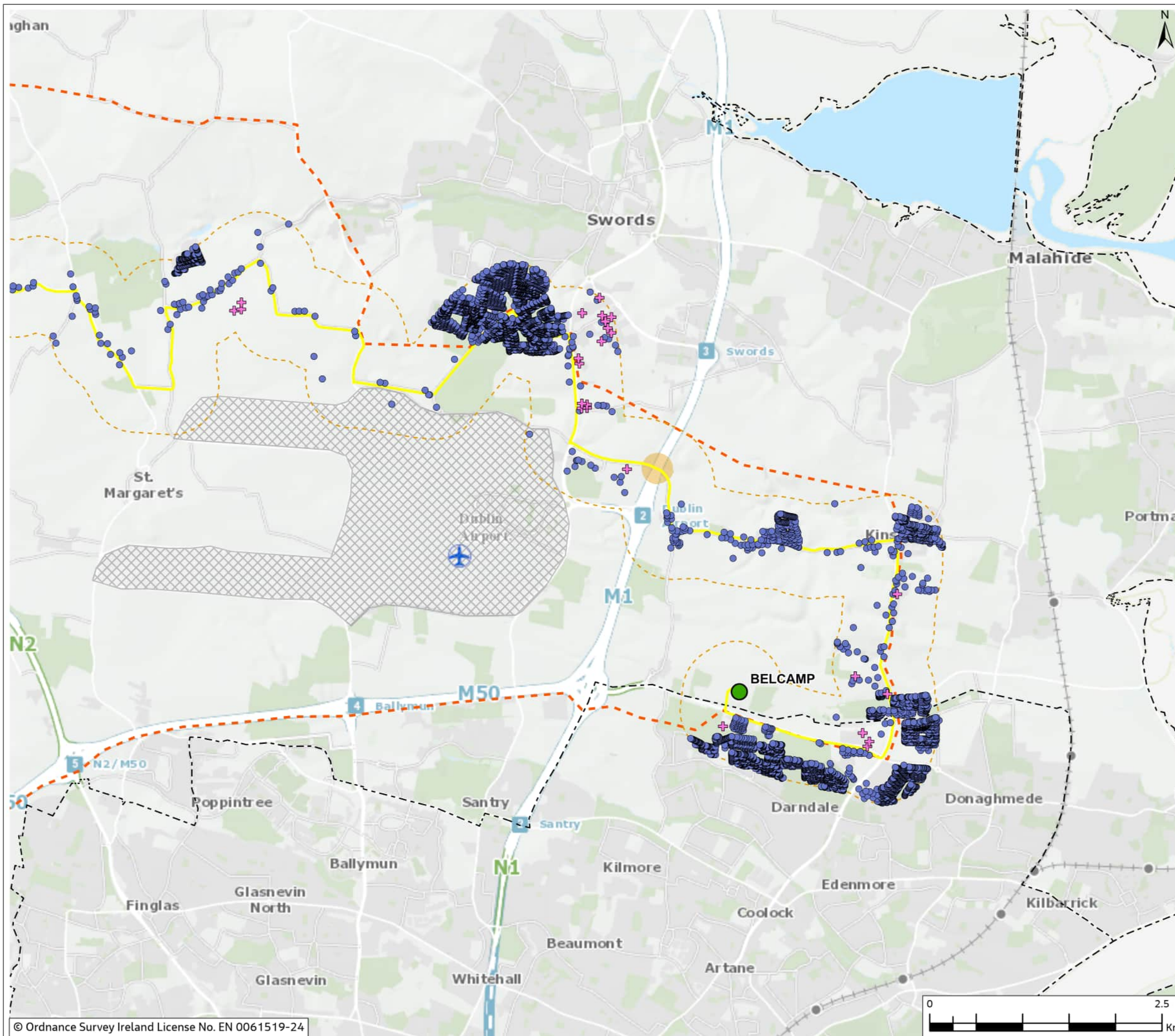
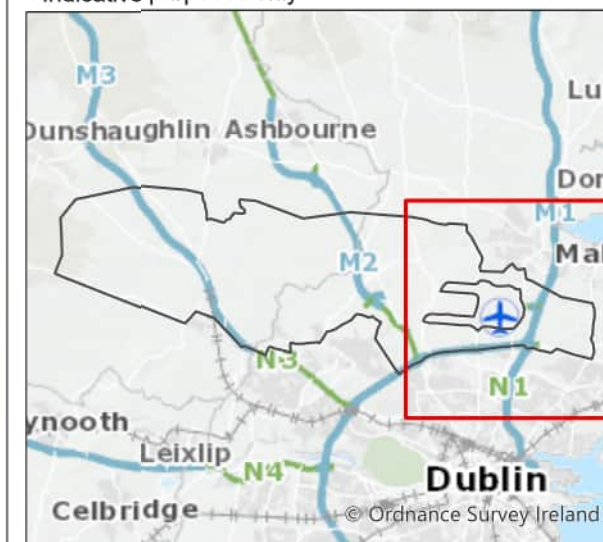


FIGURE C.1.3

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option C (Yellow)*
- Off Road Options Being Explored - Option C*
- Cable Route Option C 500m Buffer*
- Commercial/Retail property
- Residential property

*Indicative purposes only



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

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Client
CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title
Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option C (Yellow)
Sheet 3 of 3

Drawing Status
FINAL

Scale @ A3
1:40,000
DO NOT SCALE

OSI Sheet No.

Jacobs No.
8321084AJ

Drawing No.
321084AJ-MAP-S4A-C.1.3

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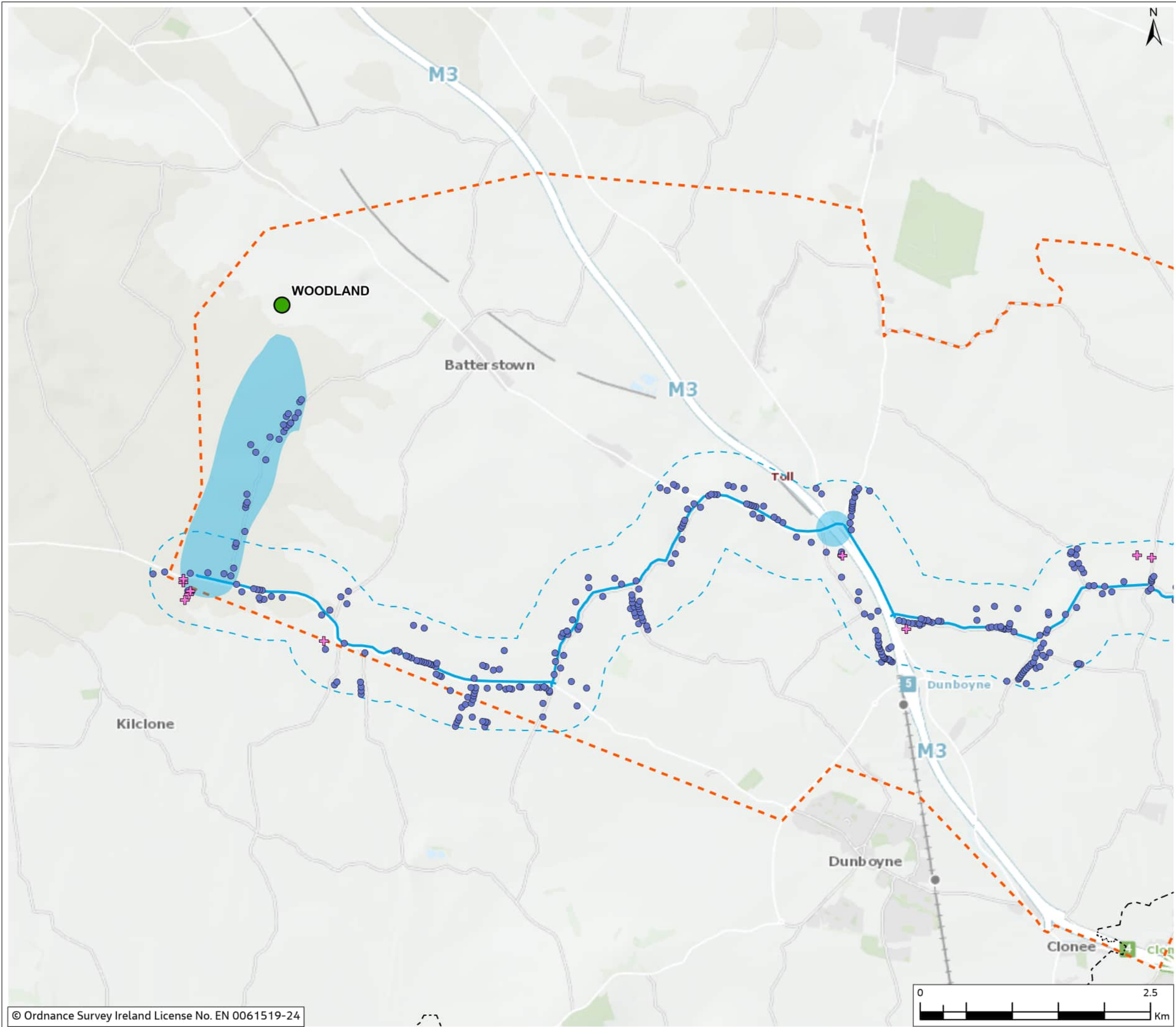


FIGURE C.1.4

- Legend
- Step 4A Study Area
 - Exclusion Zone
 - County Boundary
 - 400kV Substation
 - Proposed Cable Route - Option D (Blue)*
 - Off Road Options Being Explored - Option D*
 - Cable Route Option D 500m Buffer*
 - Commercial/Retail property
 - Residential property



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Drawing Title

Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option D (Blue)
Sheet 1 of 3

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Jacobs No.

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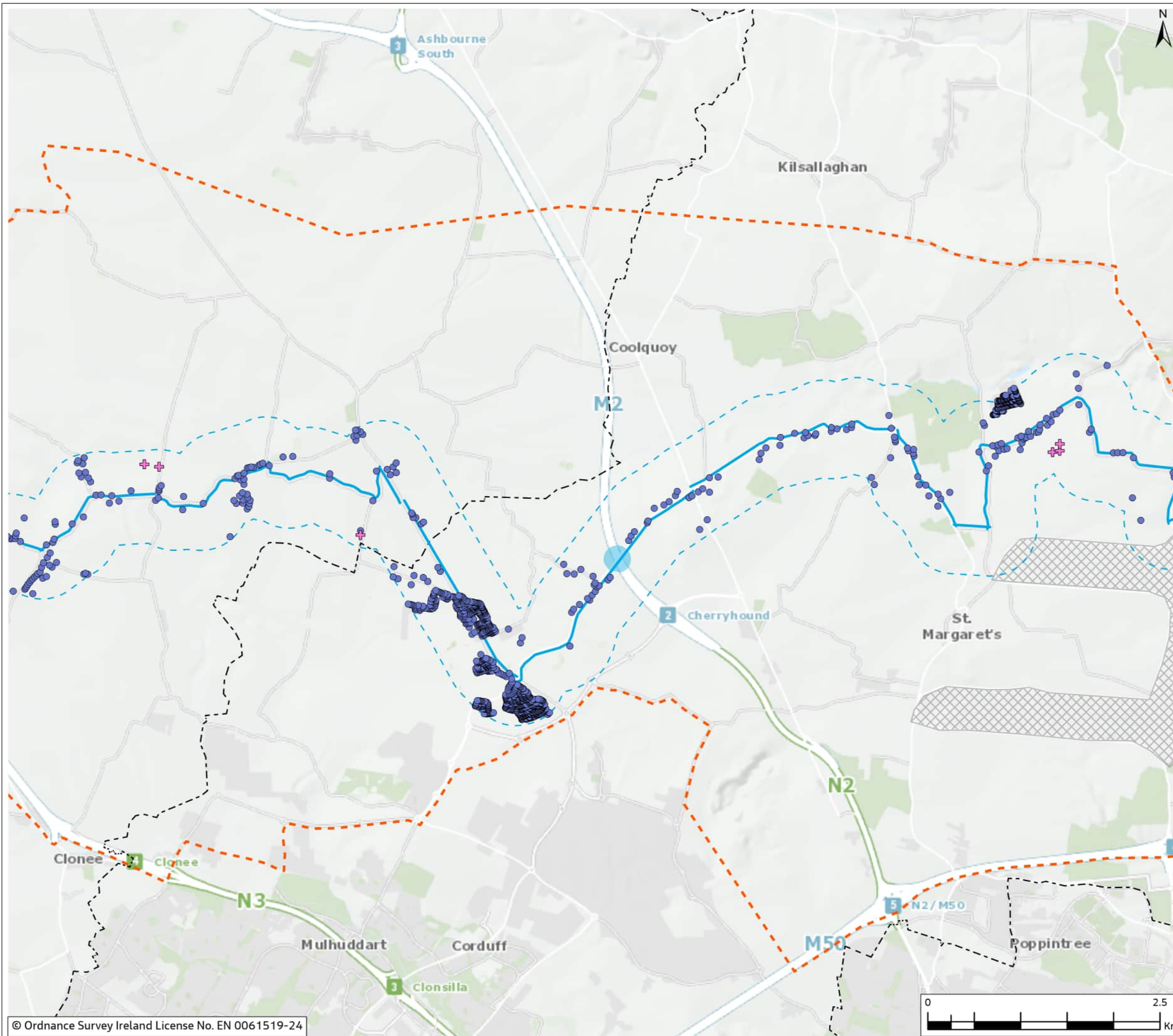
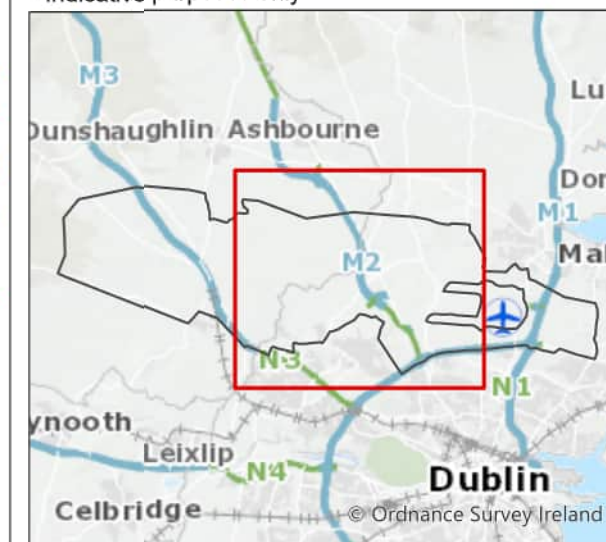


FIGURE C.1.4

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- Proposed Cable Route - Option D (Blue)*
- Off Road Options Being Explored - Option D*
- Cable Route Option D 500m Buffer*
- Commercial/Retail property
- Residential property

*Indicative purposes only



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CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title
Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option D (Blue)
Sheet 2 of 3

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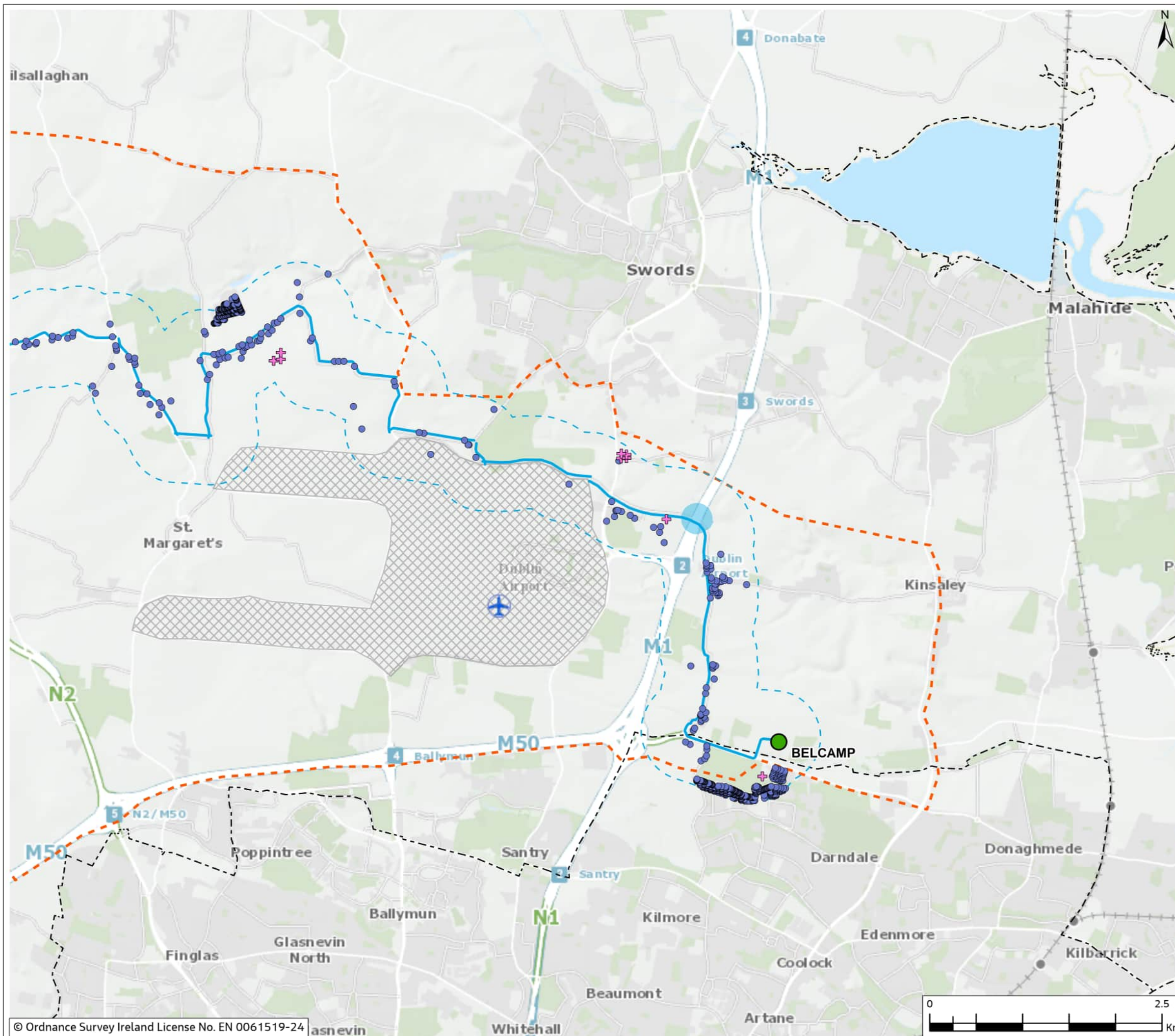
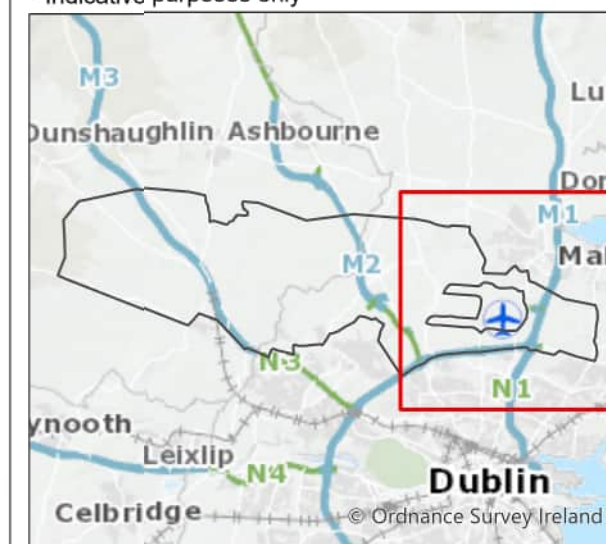


FIGURE C.1.4

Legend

- Step 4A Study Area
- Exclusion Zone
- County Boundary
- 220kV Substation
- Proposed Cable Route - Option D (Blue)*
- Off Road Options Being Explored - Option D*
- Cable Route Option D 500m Buffer*
- Commercial/Retail property
- Residential property

*Indicative purposes only



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CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title
Social Impact Assessment - Residential and Commercial Receptors
Proposed Cable Route Option D (Blue)
Sheet 3 of 3

Drawing Status
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Appendix D – Key Infrastructure

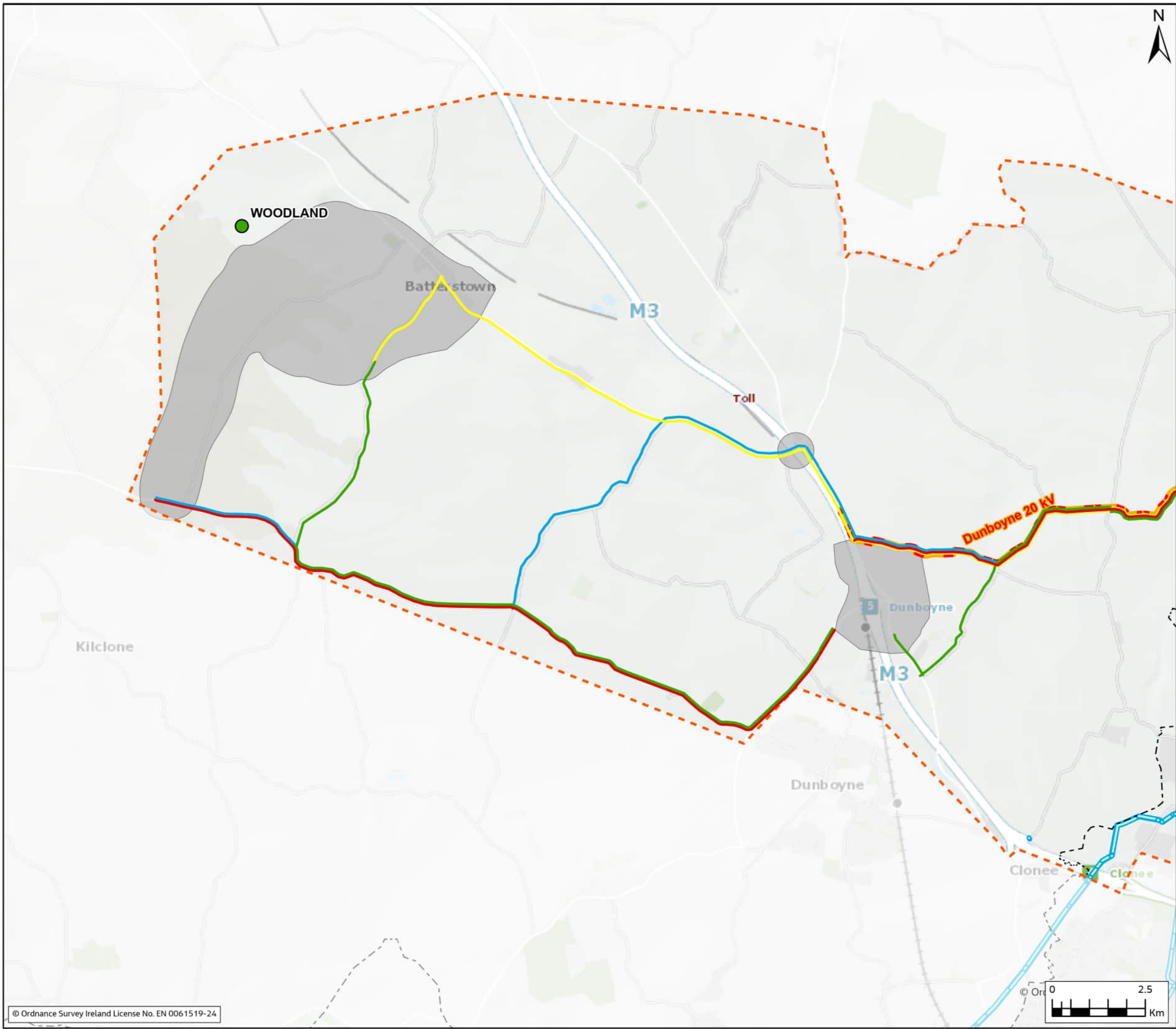


FIGURE D.1.1

- Legend
- Step 4A Study Area
 - Exclusion Zone
 - County Boundary
 - 400kV Substation
 - Proposed Cable Route - Option A (Red)*
 - Proposed Cable Route - Option B (Green)
 - Proposed Cable Route - Option C (Yellow)*
 - Proposed Cable Route - Option D (Blue)*
 - Off-Road Options Being Explored*
 - Proposed MetroLink Cable Routes
 - Dunboyne 20 kV UGC
 - Water mains (>= 600 mm)



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Drawing Title

Key Infrastructure Map
Sheet 1 of 3

Drawing Status

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OSI Sheet No.

Jacobs No.

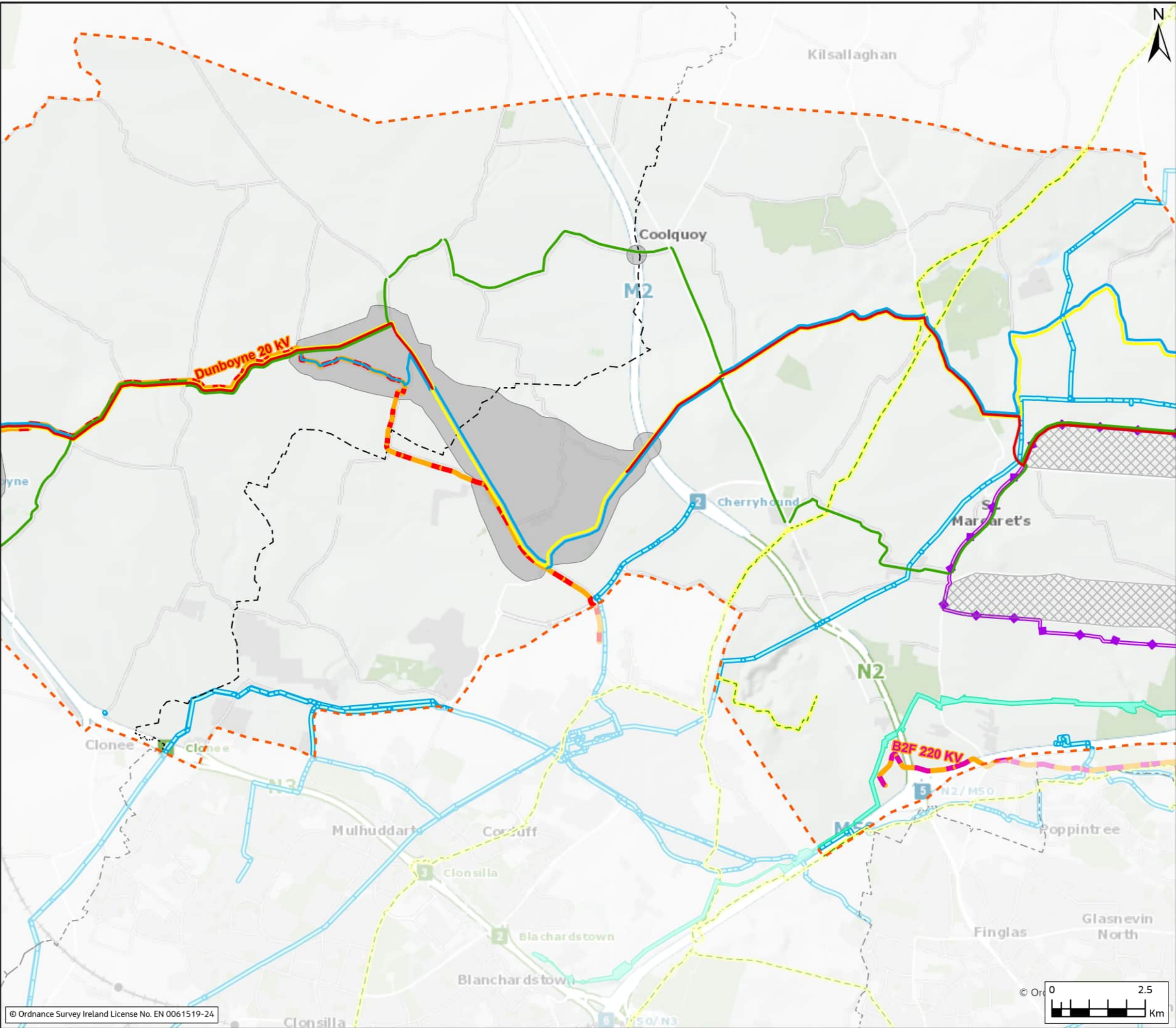
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FIGURE D.1.1



Legend

Step 4A Study Area

Exclusion Zone

County Boundary

Proposed Cable Route - Option A (Red)*

Proposed Cable Route - Option B (Green)

Proposed Cable Route - Option C (Yellow)*

Proposed Cable Route - Option D (Blue)*

Off-Road Options Being Explored*

Greater Dublin Drainage Proposed Project AreaProposed MetroLink Cable RoutesDunboyne 20 kV UGCBelcamp to Finglas (B2F) 220kV UGCHigh Pressure Gas MainsWater mains (>= 600 mm)

*Indicative purposes only



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CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title

Key Infrastructure Map
Sheet 2 of 3

Drawing Status

FINAL

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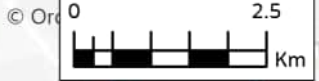
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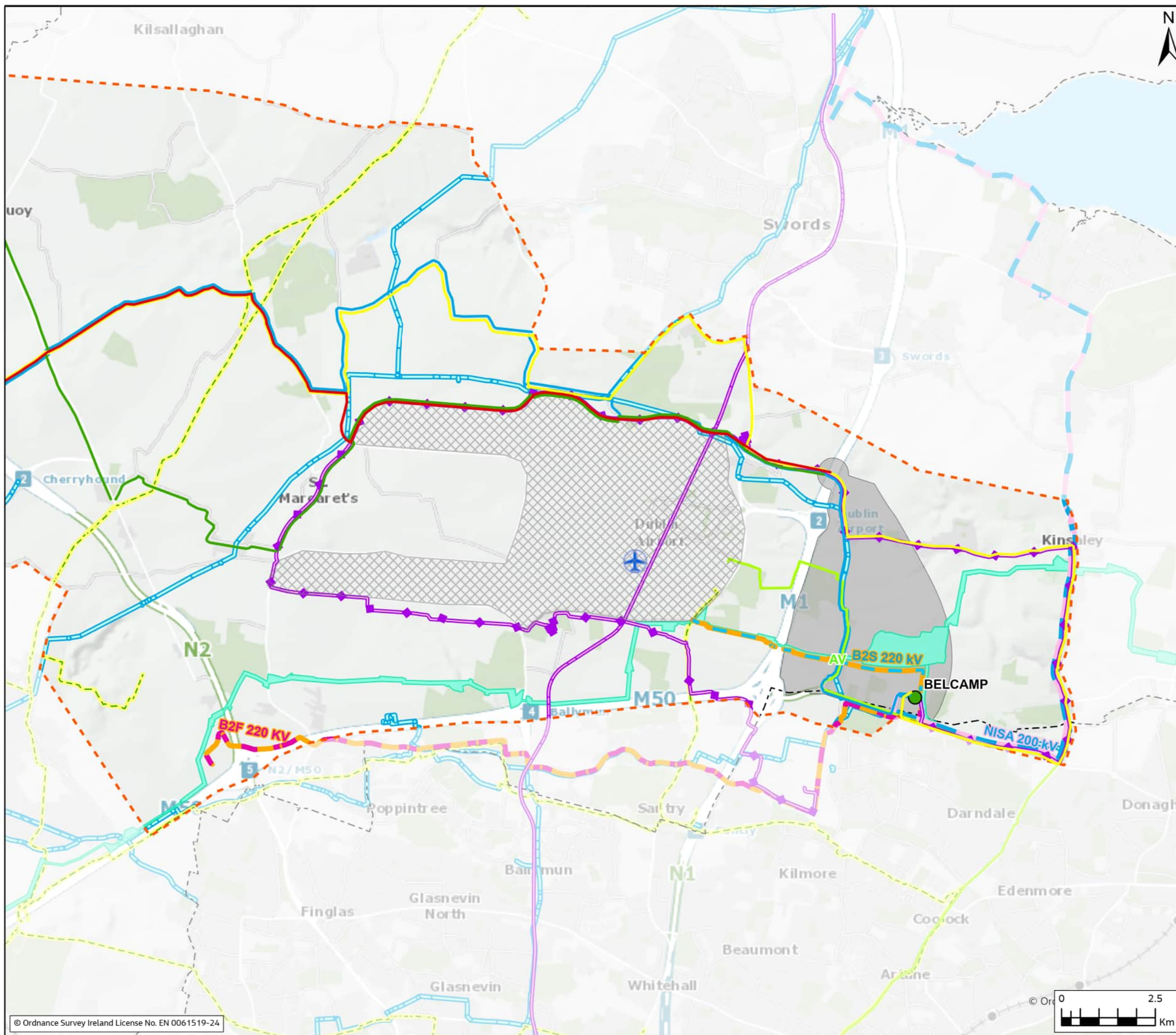


FIGURE D.1.1

Legend

Step 4A Study Area

Exclusion Zone

County Boundary

220kV Substation

Proposed Cable Route - Option A (Red)*

Proposed Cable Route - Option B (Green)*

Proposed Cable Route - Option C (Yellow)*

Proposed Cable Route - Option D (Blue)*

Off-Road Options Being Explored*

Greater Dublin Drainage Proposed Project Area

Proposed MetroLink

Proposed MetroLink Cable Routes

Aviation Fuel Line (AV)

Planned NISA 200kV Cable

Belcamp to Finglas (B2F) 220kV UGC

Belcamp to Shellybanks (B2S) 220kV UGC

High Pressure Gas Mains

Water mains (>= 600 mm)

*Indicative purposes only

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CP1021 – East Meath-North Dublin Grid Upgrade

Drawing Title

Key Infrastructure Map
Sheet 3 of 3

Drawing Status

FINAL

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Appendix E – Route Sections not Progressed

Route Sections	Description	Reason for Not Progressing					
		Environment	Socio-economic	Technical	Deliverability	Economic	Conclusion
NPDDD and NPQ	Crossing of the M3 via the Motorway Junction via the R157	Avoids the Tolka River	Traffic disruption at a busy Motorway junction	Avoids potential lowering of ratings which come with HDD	Does not accord with principle of avoiding motorways Unlikely infrastructure provider and/or highways authority would give permission.	Traffic management costs high but no HDD cost	Traffic disruption and conflict with a key principle of avoiding motorways. Unlikely to be deliverable.
FFF to S	Route via Rowan	Deep ditch alongside the road	Narrow road requires full road closure	No significant risks	Very narrow road	Long section – more expensive than local alternative	No benefits to this link; significant constraints.
TU	Route via Priest Town	Three watercourse crossings – all would have to be off-road. Hedgerows on both sides with potential for impacts on at least one	Likely would require full road closure. Diversions would be lengthy.	No significant risks	Very narrow road. Off-road river crossings required.	Long section – more expensive than local alternative	No benefits to this link; significant constraints.

Route Sections	Description	Reason for Not Progressing					
		Environment	Socio-economic	Technical	Deliverability	Economic	Conclusion
RZ	Route via Corduff and Damastown along Damastown Road and R121.	No significant risks	Significant number of industrial parks and places of employment. Large scale traffic disruption and impacts on businesses.	No significant risks	Significant traffic management measures would be required. Both roads are serving local high tech industries and are already heavily congested with utilities.	Traffic management costs high.	<p>There is the potential for numerous services and underground utilities in this area given the high number of ICT companies (IBM and Facebook for example) and large housing estates.</p> <p>This is also a very congested area for traffic, being a major employment and residential area and close to the motorways.</p> <p>This route does not accord with the routing principles and so will not proceed into the short-list.</p>
ZZAAFF	Route through Hollywoodrath and then northeast across M2 at motorway junction.	No significant risks	Traffic disruption at a busy Motorway junction	Avoids potential lowering of ratings which come with HDD	Does not accord with principle of avoiding motorways Unlikely infrastructure provider and/or highways authority would give permission.	Traffic management costs high but no HDD cost	<p>Traffic disruption and conflict with a key principle of avoiding motorways.</p> <p>Unlikely to be deliverable.</p>
CCDDEE	Route across M2 via Coolquoy	Several watercourse crossings	Impacts the community of Coolquoy in conflict with one of the routing principles. Traffic disruption to communities along the route with lengthy diversions.	No significant risks – M2 still needs to be crossed via HDD	Limited suitable land at M2 crossing for the HDD and stringing of cables. Longer route than local alternatives. . Larger traffic disturbance.	Long section – more expensive than local alternative	No benefits to this link; significant constraints.

Route Sections	Description	Reason for Not Progressing					
		Environment	Socio-economic	Technical	Deliverability	Economic	Conclusion
EEMM	Route via Corrstown Golf Club	Several watercourse crossings	Local road passing through the golf course would need to be closed. Disruption to significant community facility.	No significant risks	Longer than local alternative. Requirement for road closures. Narrow road.	Traffic management costs and potential requirement to compensate golf club. Longer than local alternative.	No benefits to this link; significant constraints.
LLMM		Crosses the Ward_040 which in this location is within a very deep valley, with wide riparian zones on its banks. These are densely vegetated The road bridge may not be suitable for use in a crossing as it is an old stone bridge	public footpath along the river through the valley. Industrial horticulture site; to the south a large, new housing development		There are limited opportunities to HDD the river; the depth of the drilling would need to be substantial at >10m depth, the riparian zone is approximately 200m wide and there is little space either side of the river from which to launch and receive the drill and lay down cables.	Longer section than alternatives; HDD of substantial river cutting.	By removing the EEMM link, the route from LL to PP via MM becomes substantially longer than a route from LL to PP via other nodes. No benefits to this link; significant constraints.
HHII, AAHH and GGHH	Route across M2 via Bay and Kilshane to Kilshane Cross and then to St Margaret's; R135 from Broghan to Kilshane Cross	No significant risks	No significant risks	Existing 220kV in the road between HHII nodes.	Existing HV cables plus likelihood of other utilities makes section HHII unviable.	No significant risks	HHII is unviable, therefore the other links AAHH and GGHH become defunct and are removed.

Appendix F – Route Sections Description

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
AB	2.81	No interactions with roads or buildings. Off-road impacts to hedgerows and trees. Crosses 1 water body. Entirely through fields. Joins R156 at Node B.	Likely interference with cattle and sheep. Equine operation adjacent to the east. Nearby equine operation at road to the east of the route.	<p>Risk of various shallow crossings which may involve both open cut installation and/or bentonite filled ducts to meet the required ratings.</p> <p>Will need to coordinate with Kildare Meath project.</p> <p>One of two potential starting routes. The cable will need to maintain clearance from the existing AC cables. Entirely through fields.</p> <p>Additional costs due to long sector.</p>

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
AC	0.54	Entirely through fields. Minimum of 3 hedgerow crossings with potential requirement for tree removal.	No settlements or buildings. No interaction with roads, water bodies or services. Close to Portan HVDC Station.	<p>Will need to coordinate with Kildare Meath project.</p> <p>Off-road section costs.</p> <p>One of two potential starting routes. The cable will need to maintain clearance from the existing AC cables. Entirely through fields.</p>

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
BI	1.64	Entirely section runs along R156. Road approx. 5 m wide.	Sparse linear developments at both sides of the road (mostly residential).	Phone line along route. Traffic diversion requirement. 1 junction with a smaller road. No water body crossings. Joins L2215 at node I. Water mains line runs along route.
CD	0.73	Begins off-road, joins unnamed road (<5 m wide, insufficient width for two-way traffic), passes one residential property then goes off-road once more, through a field, then onto an internal farm path. Cattle and sheep nearby. 10% AEP flood risk along small, avoidable section of the route. Requires removal of hedgerow.	Passes adjacent to one house.	Road closure requirement. Off-road-related additional costs. No water mains, gas line or sewer.
CE	0.92	Off-road route. Follows Cookstown stream and field boundaries for most part. Off-road impacts to hedgerows and trees. Crosses small road (<5 m wide).	No interactions with buildings.	Off-road-related additional costs. No water mains, gas line or sewer interaction.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
DE	1.03	Entirely off-road route. Hedgerow/tree removal required in minimum of 4 locations. 10% AEP flood risk along small, avoidable section of the route. Meets Cookstown 09 water body at node E.	No nearby buildings.	Off-road-related additional costs. No water mains, gas line or sewer interaction.
EF	1.25	Cookstown 09 water body at node E; Moyleggan water body crossing. Off-road route joining the R154 in Batterstown. Requires removal of trees/hedging in minimum of 4 locations. Cattle and sheep in adjacent fields.	Route passes adjacent to three houses approaching node F. No other adjacent buildings.	Off-road-related additional costs. No water mains, gas line or sewer interaction. Water body crossing HDD costs.
EH	0.47	Off-road route which follows Cookstown small stream/hedgerow and tree line. Crosses hedge twice and tree line once.	No interaction with buildings.	OHL at node H. Off-road-related additional costs. No water mains, gas line or sewer interaction.
FG	0.30	Route follows R154 (~6 m wide, with footpaths and grass verges at both sides) from field exit point to L2215.	Graveyard including national monument adjacent to node G.	No mains water or gas line. Sewer crossing near node G.
GH	1.21	Follows L2215 (~5 m wide) south-west from Batterstown. Crosses Moyleggan River with low wall to one side and grass verge at both sides. Cookstown stream at node H. National monument near node H.	Residential properties along route. Sheep and cattle in adjacent field.	220 kV OHL crossing. Sewer pipe. No water mains or gas line. Traffic diversion likely.
GK	2.95	Route follows R154 (~5 m wide) south-east from Batterstown.	Linear properties, predominantly residential and dense in Batterstown and Moyleggan. Two equine operations adjacent to the north. Sheep and cattle adjacent. Primary school. Graveyard at node G.	No gas line. Water treatment plant indicated on Mapper. No sewer.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
HI	2.37	Route follows L2215 (~5 m wide) to R156. Crosses 2 water bodies. Dunboyne stream crosses under road with no apparent bridging structure. Lustown river bridged with low walls at either side of the road. National monument: church offset from road.	Karlswood Equine facility at node I. Large stud farm to the north of the road. Small equine operation to the south of the road. Sparse residential and non-residential properties along route.	OHL at node H. 10% AEP flood risk at water crossings. Water crossing HDD costs.
IJ	2.65	Entirely along R156 (~5 m wide). Starts at junction with L2215. Junctions with L2214, Harlockstown Road and small local/residential roads.	Staffordstown Stud. Karlswood Equine facility at node I. Frequent linear residential and non-residential properties along both sides of the road. Dog kennels adjacent to route.	110 kV line crosses overhead. 220 kV line crosses overhead at node J. Water mains along route.
JK	2.83	Entirely along unnamed road (<5 m wide) connecting R154 with R156. 4 water body crossings. Road bridges Moyleggan stream with low walls at either side of the road. Lustown stream crosses under road. Road bridges Dunboyne Stream with walls at either side. Road crosses Vesingstown stream with low walls at either side.	Woodpark Stud farm adjacent at two locations. Sparse residential properties along route. Montessori school. Dog kennels adjacent to route.	220 kV line crosses overhead at node J. No mains water or gas line. HDD costs at water crossings.
JM	2.88	Follows the R156 (~5 m wide with a grass verge for a large portion of the route). Water body passes under road at node M.	Ballymacoll Stud. Interaction with major planned project. Frequent linear residential and non-residential properties along both sides of the road. Car park of sports ground adjacent to road. Junctions with smaller roads at both sides. Dog kennels adjacent to road.	220 kV line crosses overhead at node J; 3 other OHLs. Water mains along route. Roundabout at node M. Additional costs for HDD at water crossing.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
KL	1.59	Follows R154 (~7 m wide) with M3 motorway crossing at flyover to roundabout at R147. Tolka River crossing.	Godolphin Woodpark Stud and other equine operation to the south. Horses in field adjacent to road. Show-jumping course offset from road. Another equine operation on the north side of the road. Residential and non-residential properties along route.	Mains water. M3 crossing. Additional costs incurred due to M3 crossing and river crossing HDD requirement.
LO	1.09	Route follows R147 (>12 m wide).	Godolphin Woodpark Stud and other equine operation at opposite side of M3. Industrial facilities on the eastern side of the road, M3 on the western side.	No mains water. Medium pressure gas line at southern end of the route only. Flood risk at small area on road.
MN	1.44	Entirely along R157. 1 water body passes under road.	GDA Cycle Network Plan. Interaction with major planned project.	Water body passes under road at node M, causing cost increase. Roundabout at node M. 110 kV line crosses overhead. Lateral water line crosses road. R157 crosses over Kennedy Road. Roundabout at node N.
NP	0.69	Follows R157 (~10 m wide, with hard shoulders at both sides). Off-road section for M3 crossing. Tolka River crossing.	GDA Cycle Network Plan. Interaction with major planned project.	No mains water or sewer. Medium pressure gas line crossing near node P. Railway crossing. M3 motorway crossing at junction 5. Additional costs due to deviation from road, water body crossing, railway crossing and motorway crossing at a junction, requiring HDD.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
NQ	0.65	Route section deviates from R157 at node N at a roundabout, travelling along the M3 Parkway car park ring road (~5 m wide) for ~200 m. Next, it progresses off road through a field for ~140 m, breaks through a tree line and crosses a private laneway (<5 m wide). The route crosses a railway line, followed by an off-road section (~90 m) including a crossing of the Tolka River (>1 m wide). The route re-joins the road at a slip road (junction 5) of the M3 motorway, where it crosses. The route concludes at the R147, following a short off-road section and passage via a service station.	Interaction with major planned project.	Crosses Tolka River. Crosses residential cul-de-sac. Crosses train track. Crosses M3 motorway. Passes between two outbuildings. Joins R147 at node Q. Additional costs due to deviation from and return to roadways, river crossing, railway crossing and motorway crossing, requiring HDD.
NDDD	0.72	Sheep and equine activity in the field to the north-west of Junction 5. Route deviates from the R157, crossing the Tolka River at a culvert. The route then progresses through a field, crosses a railway line and crosses the M3 to the north of Junction 5, crossing slip roads at both sides, with short off-road sections between the M3 and slip roads. The route concludes at the R147 following an additional ~80 m crossing of a field.	GDA Cycle Network Plan. Interaction with major planned project. Mixed animals including horses.	Crosses the Tolka River. Goes off-road from R157 for approx. 200 m. Crosses railway line. Meets R147 at node DDD. No buildings. Medium pressure gas line crossing. No mains water or sewer. Railway crossing. M3 motorway crossing to the north of Junction 5 across slip roads. Additional costs due to river crossing, railway crossing, motorway crossing and mixed terrain.
ODDD	0.55	Entirely along R147. Roadway approx. 15 m wide.	GDA Cycle Network Plan. Interaction with major planned project. No adjacent buildings.	No additional costs. No water bodies. Gas line along route.
OFFF	1.60	Entirely along L5026 Pace (~5 m wide).	Scattered linear residential properties along the roadside.	Several minor roads to the north but no junctions at the southern side of the road. 220 kV line crosses overhead. Mains water along the road section. 2 hydrants along road section. Narrow road, no road markings. Trees along south side for the most part. Mostly hedgerow on north side. Traffic management costs, diversions.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
PQ	0.39	Entirely based along R147 (~6 m wide with hard shoulders at both sides), moving south from M3 Junction 5 roundabout. Stone building ruin adjacent to road.	Interaction with major planned project.	No mains water or sewer. Medium pressure gas line along route.
PDDD	0.21	Entirely based along R147 (~6 m wide with hard shoulders at both sides), moving north from M3 Junction 5 roundabout.	Interaction with major planned project. GDA Cycle Network Plan route.	Medium pressure gas line along route. No water mains or sewer.
QR	0.56	Entirely along R147. ~6 m wide with >1 m hard shoulder at both sides, footpath and grass verge.	Lies within major planned project area. Very little adjacent residential property impact. Junction to business park at node R.	Water mains for <200 m at node R. Medium pressure gas line. No additional costs.
RAA	9.30	Route follows R147, R156, Damastown Rd, Damastown Close, Damastown Ave and R121. 7 water body crossings, with 10% AEP flood risk at these points.	Interaction with major planned project. Route passes through built up areas of Clonee, Damastown, Macetown South and Tyrrelstown. Route borders dense industrial and residential properties.	Very long route. 2 motorway crossings. Many utility crossings. Many water body crossings. Significant disruption to traffic in urban areas. Crosses the M3 twice – at Junction 4 and at the R147 flyover. A 110 kV OHL crosses at 5 points; a 220 kV OHL crosses at 2 points. Aurora Telecoms line follows route for a long section with later crossing. Medium pressure gas line follows route in places, with multiple crossings along the route. Mains water in parallel and crossing at various stages. Multiple sewer crossings. Significant additional costs.
REEE	1.48	Follows unnamed road (~5 m wide) from Bracetown industrial park to the north.	Interaction with major planned project. GDA Cycle Network Plan route.	Frequent residential properties in the northern end, particularly on the eastern side. Industrial park at the southern end. Footpath for most of approx. 375 m at southern end of the section. 220 kV line crosses overhead. Mains water along road. 8 hydrants. Road crosses stream; wall at both sides at this point. Additional costs for stream crossing and traffic disruption.
ST	1.32	Entirely along local road (~5 m wide). Crossroads at nodes S and T. Some telephone poles listing.	Stud farm to the south. Sparse linear residential properties. Small roadside memorial adjacent to powerline crossing point.	110 kV line crosses overhead. Mains water along route section. Traffic management requirement.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
SEEE	2.11	Follows unnamed road (<5 m wide). Stream crossing with low walls at both sides of the road.	Sparse residential properties. National monuments adjacent to stream crossing. Stud farm nearby to the east.	Mains water for approx. half of route, no gas line or sewer. Additional costs due to stream crossing.
SFFF	1.49	Entirely along an unnamed local road (~5 m wide). Road crosses small streams in 2 places; low walls at both sides at one stream, open ditch at the other stream.	Sparse residential properties; no industrial properties. Cattle on adjacent land.	Water mains along route section. No sewer or gas line. 10% AEP flood risk close to node S. HDD costs for stream crossings.
TU	2.42	Based along unnamed road (<5 m wide, insufficient space for two-way traffic), which joins the L1007/Kilbride Rd (~5 m wide).	Sparse residential properties. Adjacent stud farm at northern part of the route.	Long route. Mains water and sewer for approx. half of route. No gas line. Traffic diversion required.
TV	1.09	Entirely along minor 5 m wide road. Ward River passes under road with low walls at both sides.	Sparse residential properties. Residential cluster at node V.	Mains water along route section. OHL crossing. HDD costs at river crossing.
TW	1.79	Entirely along narrow minor road (<5 m wide).	Road too narrow for two-way traffic. Very sparse residential properties. Factory at eastern end.	Power line passes overhead in two places.
UV	0.49	Route follows Kilbride Road (~6 m wide).	Adjacent sports ground. Residential clusters at both ends of the route section.	Mains water and sewer line along route. Adjacent pump house. No gas line.
UCC	0.75	Route follows Priesttown Rd (~5 m wide).	Residential properties along route.	Mains water along half of the route and sewer line along the route. No gas line.
VW	0.42	Entirely along Kilbride Road (approx. 5 m wide). Ward River crosses under road with low walls at both sides of the road.	Primary school. Residential clusters at nodes V and W. No linear properties.	Water mains and sewer line along route section. No gas line. HDD costs for river crossing.
WX	0.41	Route follows Kilbride Road (~5 m wide).	Residential cluster at node W. No other residential or non-residential properties.	Water mains, sewer line and air control valve along route section. No gas line. No additional costs.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
XY	2.33	Off-road, avoiding Hollystown and avoiding longer route. Connects Kilbride Road and R121. Impacts internal and road-side hedgerows and trees.	Adjacent to possible equine operation.	Crosses 2 internal farm roads. Water mains and sewer at node X but no other utility interaction.
XZ	2.28	Entirely along Kilbride Rd (~5 m wide).	Sparse residential property until route passes through Hollystown (dense development through the village).	Mains water, gas line (medium pressure) and sewer line along route. Disruption through urban area.
YZ	1.48	Entirely along R121 (~5 m wide).	Sparse residential and non-residential properties. Possible equine facility to the north.	Water mains. No gas or sewer.
YBB	1.46	Linear residential and non-residential properties. Route follows R121, which flies over M2 motorway.	GDA Cycle Network Plan. Joins R121 at node Y, crosses M2, meets R135 at a roundabout (The Ward Cross) at node BB. Religious monument (protected structure) on roadside.	Multiple water mains connections and 7 hydrants along route section; water tower adjacent to road. No gas line or sewer. 110 kV line and 38 kV line cross overhead. Additional costs due to motorway crossing.
ZAA	0.66	Road-based route (~5 m wide) adjacent to a housing estate to the west and fields to the east, connection between two roundabouts.	GDA Cycle Network Plan route at node AA.	Water mains. No sewer or gas line. No additional costs.
AAFF	2.41	Follows dual carriageway (>15 m wide), with cycle lanes at both sides, east from a roundabout, through two roundabouts, then crosses the M2 motorway at Junction 2, continuing to the R135 at node FF. 2 water body crossings.	GDA Cycle Network Plan route.	Water mains, medium pressure gas line and sewer along route. 110 kV OHL crossing. M2 motorway crossing at Junction 2. HDD costs at M2 crossing.
AAHH	2.81	Follows dual carriageway with cycle lanes at both sides from node AA, then Bay Ln (<3 m wide) following a roundabout, then the L3120 Kilshane Rd (~5 m wide), crossing the M2 motorway, before finally reaching the R135. 10% AEP flood risk at a point.	GDA Cycle Network Plan. Adjacent quarry. Sparse residential properties.	Water mains, gas line and sewer for sections. 38 kV and 110 kV OHL crossings. Twin high pressure gas line crossing. Aurora Telecoms line follows route approaching node HH. M2 motorway crossing at flyover. HDD costs due to M2 crossing and utilities.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
BBEE	1.47	Entirely along R135 (~7 m wide with >1 m of hard shoulder at each side of the road). Ward River passes under road with low wall at one side.	Sparse residential and non-residential properties.	110 kV OHL crosses road. Water mains, sewer pipe. No gas connection. HDD costs at river crossing.
BBFF	1.29	Entirely along the R135 (~7 m wide with >1 m of hard shoulder at each side of the road) between two roundabouts. Small river (River Shallon) crosses under road with low wall at either side of road.	Sparse linear residential and non-residential properties.	Mains water (2 lines), sewer pipe, no gas line. Minor floor risk at node FF. Water body crossing requires additional HDD costs.
BBLL	2.43	Entirely along R121 (~5 m wide) connecting roundabout with R135 to R122. Stream (Shallon) crosses under road with low walls at both sides of the road.	Overlaps with GDA Cycle Network Plan. Sparse residential and non-residential properties along route. Nursing home adjacent to road.	110 kV OHL crosses over road. High pressure gas line 2021 Q2 crosses road at node LL. Mains water (2 lines), sewer pipe.
CCDD	2.57	Follows unnamed road (~5 m wide). Crosses M2 motorway at flyover. Crosses a stream with no apparent bridging infrastructure. 10% AEP flood risk at stream crossing.	Residential properties along route. Nearby equine operation to the north. Cattle in adjacent fields.	Indirect route. Motorway crossing. Mains water and sewer along approx. half of route. Lateral water line for a further section of the route. No gas line. 110 kV OHL crossing. HDD costs for crossings.
CCEE	3.14	Entirely along an unnamed residential road (<5 m wide). No road markings.	Linear residential properties along the route. Cattle on adjacent farm to the north.	110 kV OHL and 38 kV OHL cross road. Crosses over M2 motorway via flyover. Mains water, no gas, no sewer. HDD costs at motorway crossing.
DDEE	1.29	Entirely along the R135 (~6 m wide with hard shoulders at both sides). Enters Coolquay at node EE. Stream passes under road with no visible infrastructure. Road crosses a second stream with walls at both sides of the road and 10% AEP flood risk.	GDA Cycle Network Plan route. Other planned project adjacent to route. Residential properties along route.	Mains water. Sewer for approx. half of route. No gas line. 38 kV OHL crossing. Additional costs at stream crossings.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
EEMM	3.64	Follows R130, minor road (<5 m wide) and R122. Water body crossing with wall at one side of the road and 10% AEP flood risk. Water body crossing with no visible infrastructure. Water body crossing with fence at one side.	Corrstown Golf Club. Residential properties along eastern part of the route.	Mains water for less than half the route. 110 kV OHL crossing. Additional costs for water body crossings.
FFGG	0.44	Entirely along the R135 (~7 m wide with hard shoulders (>1 m) at both sides).	GDA Cycle Network Plan. Mixture of residential and industrial properties along roadside. Pitch & putt course on eastern side of the road.	Mains water, sewer pipe, no gas line. Minor flood risk around node FF.
GGHH	0.90	Follows R135 (~7 m wide with hard shoulders).	GDA Cycle Network Plan route. Residential and non-residential properties along route.	Mains water and sewer along route. Twin high pressure gas line crossing.
GGII	2.44	Entirely along Broughan Lane/Newtown Cottages (<5 m wide).	Cultural heritage site to the west of sharp bend in the road – equine operation on this farm. Sparse linear residential properties along most of the route, predominantly on northern side of the road. Dense residential development (Newtown Cottages) towards eastern end of route section, mostly on southern side of the road. Pitch and putt course at node GG.	Huntstown River (very small) crosses under the road – low walls at both sides of the road at this point. 110 kV OHL crosses. High pressure gas twin line crosses. No sewer. Water mains for small portion.
HHII	1.55	Follows unnamed road (~5 m wide) from R135 to R108/R122. Minor flood risk near node II. Water body crosses under road with steel fence at one side.	GDA Cycle Network Plan route. Borders Dublin Airport exclusion zone at node II.	Mains water crossing but not along route until final ~100 m. 110 kV OHL crossing. 110 kV UGC follows route. Aurora Telecoms line follows the route. Proposed 220 kV cable for Finglas Cable Route shares the route.
IJJJ	0.99	Entirely based along R122. Road approx. 7 m wide. Mature hedging and trees along most of the roadside.	GDA Cycle Network Plan. Avoids St. Margaret's (built up area) including national school and bus route. Passes a recycling centre. Only 1 residential property and 1 commercial property along route.	No mains water, except at node II. MetroLink cable route shares route. No other utilities. No additional costs.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
JJKK	1.14	Route follows R122 (~5 m wide). 2 water body crossings – no visible infrastructure at one, low walls at both sides of the road and 10% AEP flood risk at the other.	GDA Cycle Network Plan route at nodes JJ and KK. Adjacent sports ground. Nearby equine operation to the west. Sparse residential properties. Adjacent graveyard with national monuments.	Mains water shares route. No other utilities. Additional costs for HDD at water crossings.
JJNN	0.43	Entirely along L3132 until it meets R108 at node NN.	No residential or non-residential properties along route. GDA Cycle Network Plan route. Borders airport land at node NN.	Mains water does not run through road, it runs parallel. >1 m of grass along both sides of the road. Wide road, approx. 9 m wide. MetroLink cable route shares route. No additional costs.
KKLL	1.25	Follows the R122 (~5 m wide) from Kilreesk Ln to the R121.	Sparse residential properties. Playschool, sports grounds and golf course entrance on route. Cattle on farm on eastern side.	Mains water along route. High pressure gas line 2021 Q2 crosses the road. No sewer.
KKOO	0.39	Route follows Kilreesk Ln (~6 m wide). Stream crosses under road with no apparent infrastructure.	Overlaps with GDA Cycle Network Plan. No buildings along route.	No mains water, only a crossing at node KK. No other utilities. Additional costs for stream crossing.
LLMM	1.01	Route follows the R122 (~5 m wide). Water body crossing (Ward River) with low walls at both sides and 10% AEP flood risk.	GDA Cycle Network Plan route at node LL. Route passes from Corrstown Golf Course to St Margaret's Golf Course. Graveyard offset from road containing national monuments. Farm with national monuments at node LL. Sparse buildings.	Water mains shares the route. High pressure gas line shares route for almost half the section. 110 kV OHL crossing. No sewer.
MMPP	5.65	Route follows R108 (~5 m wide). Bridges the Ward River with low walls at both sides, 10% AEP flood risk and protected structures at both sides.	GDA Cycle Network Plan route overlap for a section. Overlap with other major planned project (polyline). Equestrian centre at node PP, two other adjacent and additional nearby equestrian centres. Residential and non-residential properties along route including Knocksedan Demesne (large housing estate).	Long, indirect route. Mains water shares route and has crossings. High pressure gas twin line crossing. Medium pressure gas line shares route for a section. Sewer shares route for a short section. 110 kV OHL crossing. HDD costs for river crossing.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
NN00	0.57	Road is approx. 8 m wide with >1 m of grass space at either side and no roadside trees.	Entirely along Kilreesk Rd. No buildings at either side of the road. GDA Cycle Network Plan.	Water mains crosses road at 2 points but does not run along route section. Dunbro and Millhead streams pass under the road (3 points), incurring additional costs.
NNRR	2.28	Road is approx. 8 m wide with >1 m of grass space at either side and no roadside trees.	Runs along border with Dublin Airport. GDA Cycle Network Plan.	Crosses water mains in 2 places but no mains along road. 2 minor streams pass under road. 10% AEP flood risk at node RR. MetroLink cable route shares route. Costs relating to stream crossings.
OOPP	3.69	Route is entirely road-based, following the Kilreesk Rd (~6 m wide), Killeek Ln (~5 m wide) and a local road (~5 m wide), none of which have road markings. Small water body (Barberstown) crosses under road.	GDA Cycle Network Plan shares route along Kilreesk Rd and Killeek Ln. Equestrian centre at node PP and a second equestrian facility adjacent to the route. Route runs along Keelings fruit farm road. Sparse residential properties on the route.	Water mains along majority of route (no connection along Kilreesk Rd section). Gas line crosses route at one point. No sewer.
PPQQ	0.59	Entirely along R108 (~6 m wide).	Equestrian centre at node PP. 2 residential properties at node PP. Polytunnels adjacent to road. Helipad in field adjacent to road.	Mains water along route. No other utility interactions.
QQRR	0.11	No roadside trees. 10% AEP flood risk at node RR.	Runs along R108, approx. 9 m wide with space at roadside. No roadside buildings. Node RR is adjacent to Dublin Airport exclusion zone.	Very short section. 1 mains crossing and roadside mains at end of section near node QQ. 10% AEP flood risk at node RR. No additional costs.
QQSS	0.90	Entirely along Cooks Rd (approx. 5 m wide) with <1 m of grass space along roadsides.	Sparse residential and non-residential properties along route.	No water mains for most part, only for short distance at node SS. Golf club at node SS. Possible cultural heritage site at middle of route. Narrow road may add difficulty to delivery.
RRTT	0.99	No roadside buildings or trees. Road approx. 8 m wide with space at roadside.	Runs along border with Dublin Airport (Naul Rd). No roadside buildings.	No mains water through road. 10% AEP flood risk at node RR. MetroLink cable route shares route. No additional costs.
SSTT	0.27	Entirely along Forest Rd. Road approx. 6 m wide with trees on roadside. Small water body alongside/under road for part of the section.	Forrest Little Golf Club at node SS with course along the east of the route. Sparse residential and farm buildings along route.	No mains line in road. Possible additional costs due to traffic management and water body crossing.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
SSVV	3.21	Route follows Forest Road into Swords town, joins the L2300, then joins the R132, exiting the town.	Forrest Little Golf Club runs adjacent for first ~700 m from node SS. Interaction with major planned project. Route enters Swords town with dense residential and non-residential development for 1.4 km of the route. Cycle lane in the urban section. MetroLink train route crosses the road.	Mains water, gas line for more than half the route. Road approx. 6 m wide on approach to Swords, widening to >12 m in the town. Additional costs due to significant disruption in Swords town and length of cable.
TTUU	1.21	Follows Naul Rd (~6 m wide with >1 m grass verge adjacent to road).	Borders Forrest Little Golf Club and borders Dublin Airport land (Naul Rd). Crosses major planned project. Cultural Heritage zone of notification adjacent to road at non-residential site. No residential properties along route.	No water mains through road but mains crosses in 2 places. No residential properties, industrial property at 1 location. Road approx. 7 m wide with some adjacent grass space. MetroLink cable route shares route. No additional costs.
UUVV	0.28	No roadside trees for the most part; trees offset from road by >1 m for a section.	Borders Dublin Airport (Naul Rd).	No water mains or adjacent buildings. Short section. Road approx. 7 m wide with wide adjacent grass space. Connects Castlemoat Rd junction with Naul Rd at node UU and Cloghran Roundabout at node VV. No additional costs.
UUCCC	4.41	Long off-road section. Requires significant tree felling and hedgerow removal in places. Cuckoo Stream crossing.	Crosses major planned project. Some major interactions with residential and non-residential properties. Infrequent minor interactions with properties. Route runs adjacent to sports grounds. Route runs adjacent to a cemetery.	Cuts through a private garden, Parfit non-residential property, fields, M1 motorway (north of Junction 2 at the slip roads), thick hedgerow/woodland, across Clonsaugh Rd, across a private road, across Cuckoo Stream (in a field). Runs parallel to the M1 for a section. Passes under 38 kV OHL. Additional costs relating to crossing multiple roads, including the M1, clearance of large trees, thick hedges

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
UUXX	2.27	Mixed road and off-road route section. Requires removal of hedges and trees (crosses tree line in at least 3 places).	Adjacent to National Show Centre site but does not interfere with operations. Roadside section is along a wide road (approx. 7 m) with >1 m of grass area at roadsides. Moves off-road following the M1 flyover. Crosses a private property.	Must cross Cloghran Roundabout. Crosses M1 motorway via a flyover (which has a footpath at both sides and wide road). Crosses road (Baskin Lane, approx. 5 m wide) at node XX. HDD costs.
VVWW	1.72	Entirely along Stockhole Lane, from Cloghran Roundabout to junction with Baskin Lane.	MetroLink cable route along entire route section. Nursing home adjacent to road.	Crosses M1 motorway via flyover. Wide road (approx. 7 m) with >1 m path/grass area at both sides of the road. Mains water, gas line and residential properties only present for final 280 m approaching node WW. No sewer. Route follows MetroLink cable route. HDD costs at M1 crossing.
WWXX	0.34	Entirely road-based (along Baskin Lane). Trees along one side of the road.	Short route section with some residential properties. MetroLink Cable route along road.	Mains water, medium pressure gas pipeline and MetroLink cable route share route. No additional costs.
WWZZ	1.40	Entirely along Clonsaugh Road/Stockhole Lane. Cuckoo Stream passes under the road with low walls at both sides of the road.	Overlap with major planned project. Sports grounds adjacent to road. Sparse residential and non-residential properties scattered along route.	Mains water, sewer pipe, gas pipeline. 38 kV OHL crosses over. Road approx. 6 m wide and tree lined. HDD costs for stream crossing.
XXYY	2.12	Route is entirely along Baskin Lane.	Adjacent to sports ground (Baskin Lane). MetroLink cable route runs along route. Linear residential properties along route, sparse for the most part.	Medium pressure gas line along route, 2 lines in a section of the route. Mains water along route. Road is approx. 6 m wide with a footpath along one side.
XXCC	2.05	Off-road route section. Multiple tree/hedge crossings. Crosses Cuckoo Stream between fields.	Crosses major planned project. Passes adjacent to a track. Crosses private laneway.	38 kV line crosses overhead. Requires tree and hedge removal in several locations. Stream crossing between fields, resulting in additional costs. Arrives at Belcamp substation at node CCC.
YYBB	2.39	Entirely along R107 (Malahide Road). Cuckoo stream crosses under road.	Adjacent to cemetery. Crosses major planned project. Passes primary school. Linear residential and non-residential properties on both sides of the road. National monument at roadside (stone cross) outside St. Doulagh's Church.	MetroLink cable route runs along the route. Road width varies significantly (approx. 6 m upwards). Mains water, sewer pipe. Additional costs for stream crossing.

Route Section	Approx. Length (km)	Environmental	Socio-Economic	Technical, Economic & Deliverability
ZZAAA	0.36	Route is entirely along Clonshaugh Road/Stockhole Lane.	Linear residential and non-residential properties along both sides of road for majority of the route section.	Encounters 2 roundabouts. Road width varies, with some usable space adjacent to the road for the majority of the route. Mains water, medium pressure gas line and sewer line along route.
ZZCCC	0.84	Off-road route connecting Clonshaugh Rd to Belcamp Substation. Entry point to field via gate. Hedging & tree removal may not be required.	Route crosses Major Planned Project at node ZZ.	Mains water, sewer and medium pressure gas line at node ZZ. No utilities for rest of route.
AAACCC	1.15	Off-road section, running adjacent to R139, moving off-road at node AAA. Requires some removal of trees and hedging.	Route concludes at Belcamp substation. Cable follows access road to substation for final section of route.	Mayne 09 stream passes (possibly underground). 10% AEP flood risk for prolonged section of route. Mains water, gas line and sewer pipe all present along part of the route.
BBBCCC	2.04	Predominantly road based (R139) section. Wide (6 lane) road at node BBB. >1 m grass strip/footpath for most of the route. Final section connecting R139 to substation follows off-road path with potential tree/wall crossings.	Route concludes at Belcamp substation. Residential and non-residential properties present.	38 kV UGC for a section of the route. 110 kV UGC for a section of the route, which crosses the road. Mains water.
EEEEFF	0.06	Trees on west side of road, hedgerow along east. Entirely along minor road.	Connects junction at west and junction at east. No roadside buildings.	Mains water along section. No other utilities.