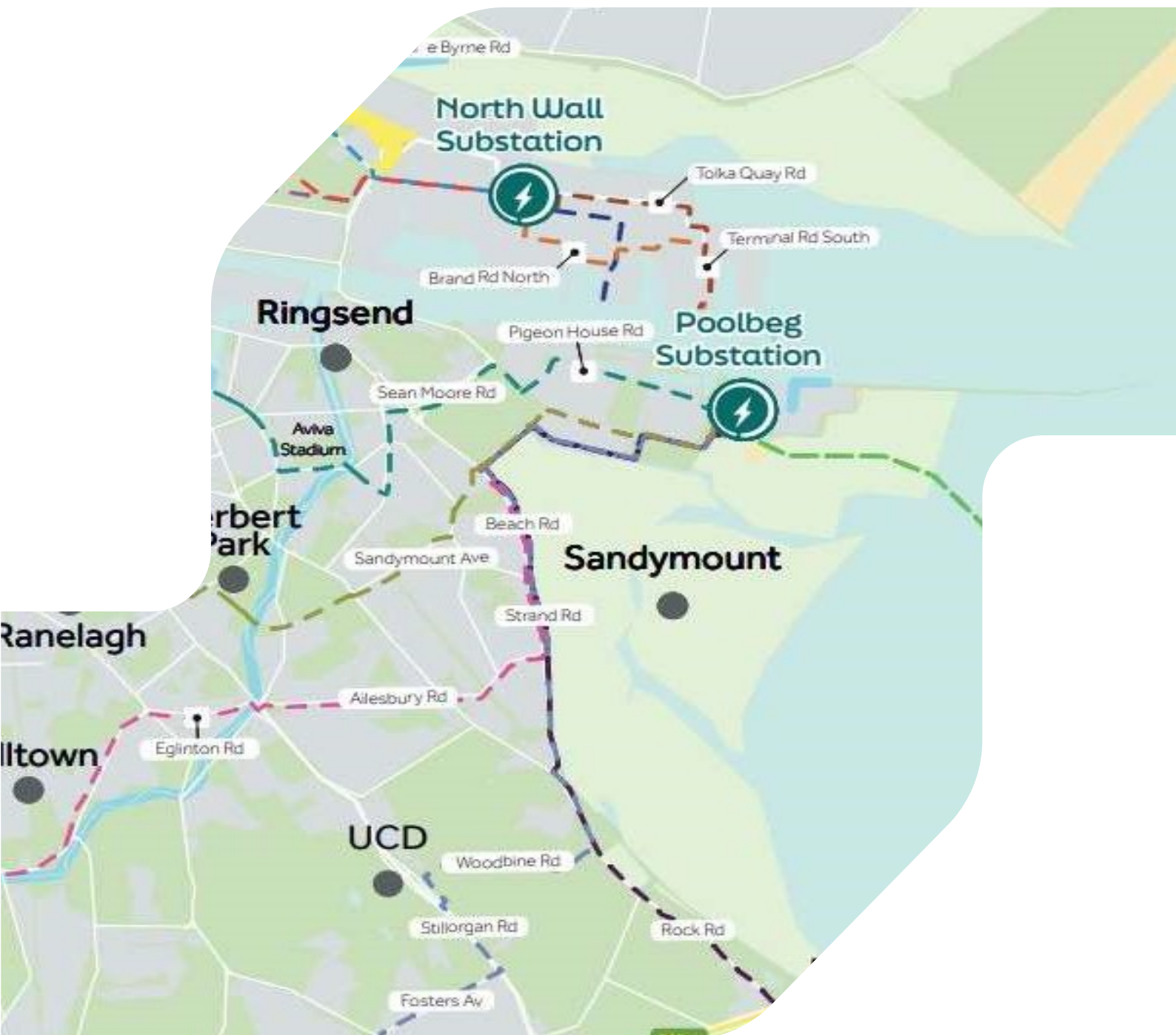


DUBLIN REPLACEMENT UNDERGROUND CABLE PROGRAMME

Best Performing Option - CP1100 Finglas to North Wall Cable Replacement



Context

This report presents an independent review and analysis of submissions received to the public consultation on the EirGrid “Powering Up Dublin Project”.

This report has been prepared for EirGrid by RPS Consulting Engineers Ltd.



Disclaimer

Although every effort has been made to ensure the accuracy of the material contained in this report, complete accuracy cannot be guaranteed. Neither EirGrid, nor the authors accept any responsibility whatsoever for loss or damage occasioned or claimed to have been occasioned, in part or in full, as a consequence of any person acting or refraining from acting, as a result of a matter contained in this report.

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EXECUTIVE SUMMARY

What is the Powering Up Dublin - Replacement Underground Cable programme?

Powering Up Dublin is a critical programme that will strengthen key electricity infrastructure in Dublin and the surrounding areas, making the city ‘renewable ready’. Dublin’s demand for electricity has grown and will continue to grow in the years ahead as we move to using electricity for heat and transport. These works allow us to meet our energy demands now and in the future.

In this first phase of the project, approximately 50km of cables will be installed across the city. Upgrades will also take place in a number of substations to support Dublin’s electricity network. Due to the city landscape of Dublin, these new cables are proposed to be placed underground and they will connect electricity substations located in and around Dublin.

Studies have been carried out to identify new underground cable routes that will link the following 220kV electricity substations to each other.

- Carrickmines and Poolbeg
- North Wall and Poolbeg
- Finglas and North Wall
- Inchicore and Poolbeg (dual circuits)

This report identifies the Best Performing Option to replace the existing Finglas to North Wall 220kV circuit.

Purpose of this Report

The Dublin Replacement Underground Cable Programme follows EirGrid’s Framework for Grid Development, which is an end-to-end process for all EirGrid’s grid development projects. The framework takes projects from their conception - the identification of a need to develop the electricity transmission grid - to their eventual construction and subsequent energisation. The framework is explained in EirGrid’s “Have your Say” document and is illustrated in Figure 0-1.

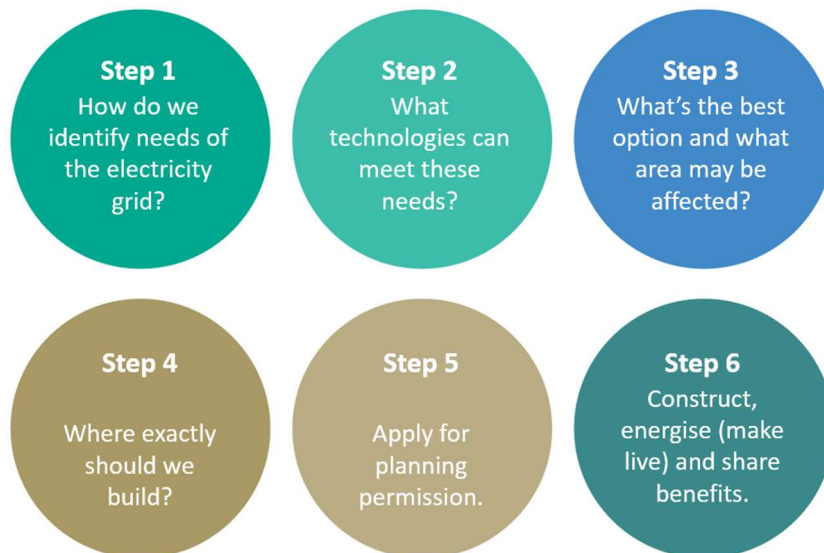


Figure 0-1: EirGrid's Six-Step Framework for Grid Development

This approach facilitates engagement and consultation with stakeholders and the public which helps to explore options fully and make more informed decisions.

The project is currently in Step 4. The objective of Step 4 is to determine the best performing option and the precise route where the project will be built. This step is characterised by two main outputs:

- Route Options Assessment (Step 4A), followed by,
- Best Performing Option Assessment (Step 4B).

The Route Options Assessment identifies all possible route options to replace the existing Finglas to North Wall 220kV circuit, analyses these route options and identifies the Emerging Best Options. The Route Options Assessment was completed (March 2023), and the report was subsequently published for public consultation. The public consultation period closed eight weeks later in May 2023. Section 3 provides a summary and results of the assessment process.

The second phase of Step 4, the Best Performing Option Assessment, develops the Route Options Assessment, taking account of feedback obtained during the public consultation phase and additional technical information (from initial surveys and route walks) to arrive at the Best Performing Option. The Best Performing Option is based on the information currently available and further refinement of the option may be informed by site investigations performed as the detailed design phase progresses. This second phase was progressed between May and December 2023. The assessment process is explained in more detail in Section 4.

Summary of Route Options Assessment (Step 4A)

All the potential route options for the Finglas to North Wall circuit were identified, broken down into unique sections and each section was assessed using a Multicriteria Analysis (MCA) comprising EirGrid's five multicriteria assessment categories: Technical, Deliverability, Economic, Socio-Economic, and Environmental, shown in Figure 0-2.



Figure 0-2: EirGrid's Five Multi-Criteria Assessment Categories

From the MCA results, using the best possible ranked sections, three optimised routes, Option A, Option B and Option C were progressed as Emerging Best Options (EBOs) for further consideration. These routes are shown in Figure 0-3.

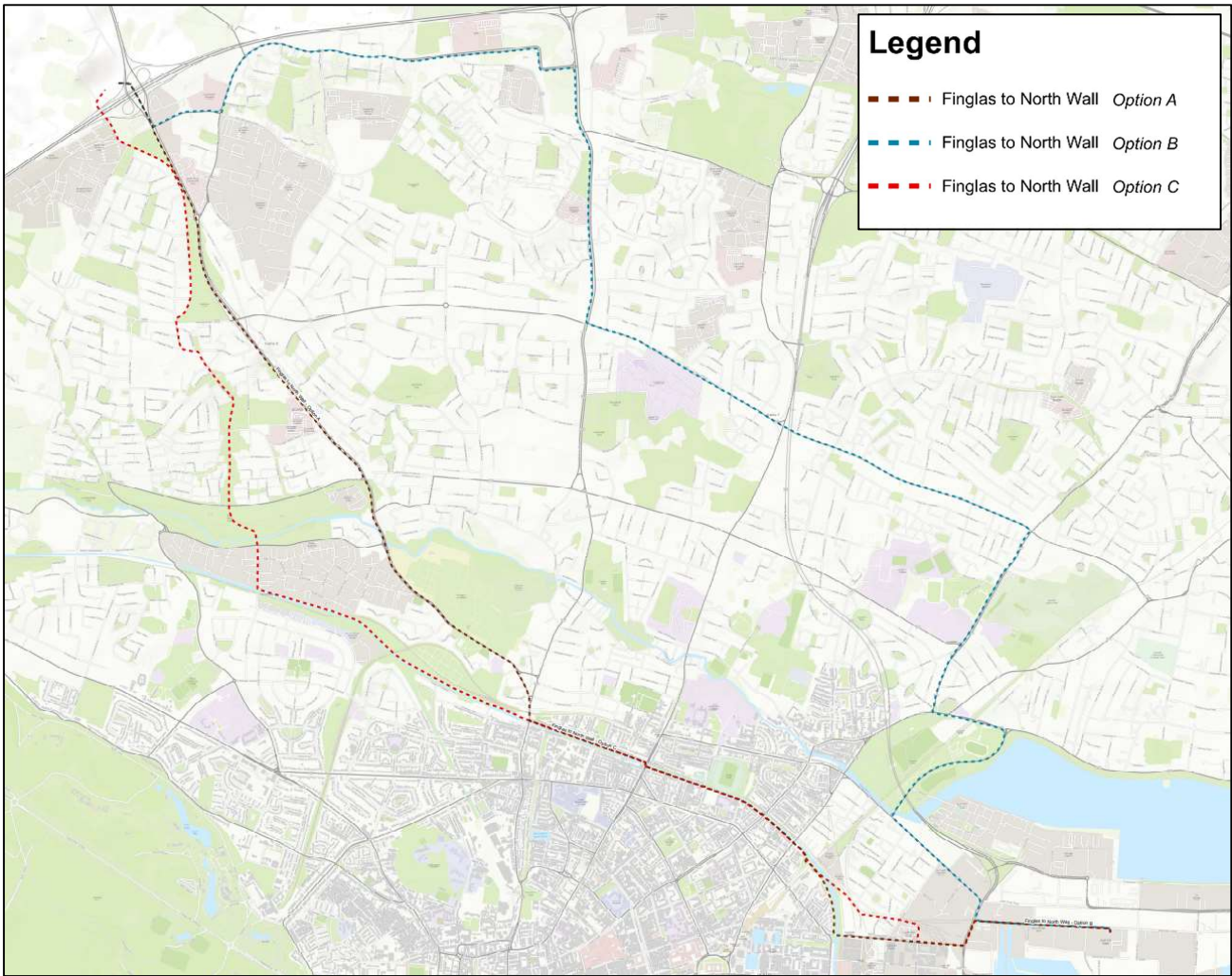


Figure 0-3: Map of Option A, Option B and Option C

Each EBO had a number of outstanding challenges that were identified in the Route Options Assessment Report (Step 4A). These challenges were investigated in more detail in the Best Performing Option Assessment.

The EBOs were published for public consultation in March 2023 and the consultation ran for eight weeks. Various consultation materials were provided, including brochures, leaflets, maps, and an online survey. In-person events and Community Liaison Officers facilitated communication with the public.

The feedback received from this consultation was included in the Best Performing Option Assessment. While the majority of respondents understood the need for this project, some concerns were raised about local environmental issues, cumulative impacts, business impacts, and traffic disruption during construction. A strong preference for collaboration between utility companies and local authorities to minimize disruption was highlighted in the responses.

Best Performing Option Assessment (Step 4B)

The Best Performing Option Assessment for the Finglas to North Wall circuit replacement involved detailed examination of the three Emerging Best Options (EBOs) through route surveys, stakeholder engagement, and route design. The iterative process considered environmental, social, and technical factors, incorporating input from landowners and stakeholders.

Option A

Option A overall ranking	Mid-level/moderate
--------------------------	--------------------

In the Best Performing Option (BPO) assessment of Option A, public feedback highlighted concerns such as flooding, congestion, and accessibility issues. The route underwent adjustments, including a revised M50 crossing, Finglas Road alternative, Tolka River crossing location in the east of Tolka Valley Park, alternate Cross Guns Bridge crossing methodology, and an alternative route on Seville Place and North Wall Quay. The overall BPO ranking remained at mid-level/moderate, with increased technical complexity but improved deliverability due to route changes and discussions with private landowners.

Option B

Option B overall ranking	Moderate-high
--------------------------	---------------

For Option B, public concerns focused on potential impacts, traffic disruptions, and specific locations like the Clontarf cycle lane. The technical assessment revealed challenges in the M50 trenchless crossing, ongoing construction projects in Marino and Fairview, and limitations in the Tolka River crossing. Due to these challenges, the BPO assessment for Option B reflected an overall increase in ranking to moderate-high.

Option C

Option C overall ranking	Moderate-high
--------------------------	---------------

Public feedback for Option C was generally positive, with respondents appreciating its avoidance of main roads and minimized construction impact. Technical challenges for Option C included the Tolka River crossing, and interfacing with proposed projects at Cross Guns Bridge, and Sheriff Street Upper. The assessment highlighted the technical complexity of a trenchless crossing of the Tolka River and the need for additional ducting along the Royal Canal Greenway Phase 3 to Phase 4. Due to these challenges, the BPO assessment for Option C increased in ranking to moderate-high.

Best Performing Option

The Best Performing Option (BPO) identified through the work undertaken at this phase of the project, is the evolution of Option A. This BPO is shown in Figure 0-4. There are a number of improvements made to this route that were identified during the Best Performing Option assessment, due to feedback from landowners; public engagement; route surveys; and detailed design assessments. These changes are outlined in Section 5.3. Of note was the opportunity to use the advanced ducting installed along the Royal Canal Greenway, the collaboration and opportunity offered by Dublin Port, and the constraints posed by current and proposed rail infrastructure.

Additional work will be undertaken as this project moves into Step 5 to further validate the solution being taken forward from this report which may result in further refinements and alterations to the route. This work includes site investigation (both non-invasive and limited invasive site investigation) and further engagement with planning authorities, landowners, and stakeholders.

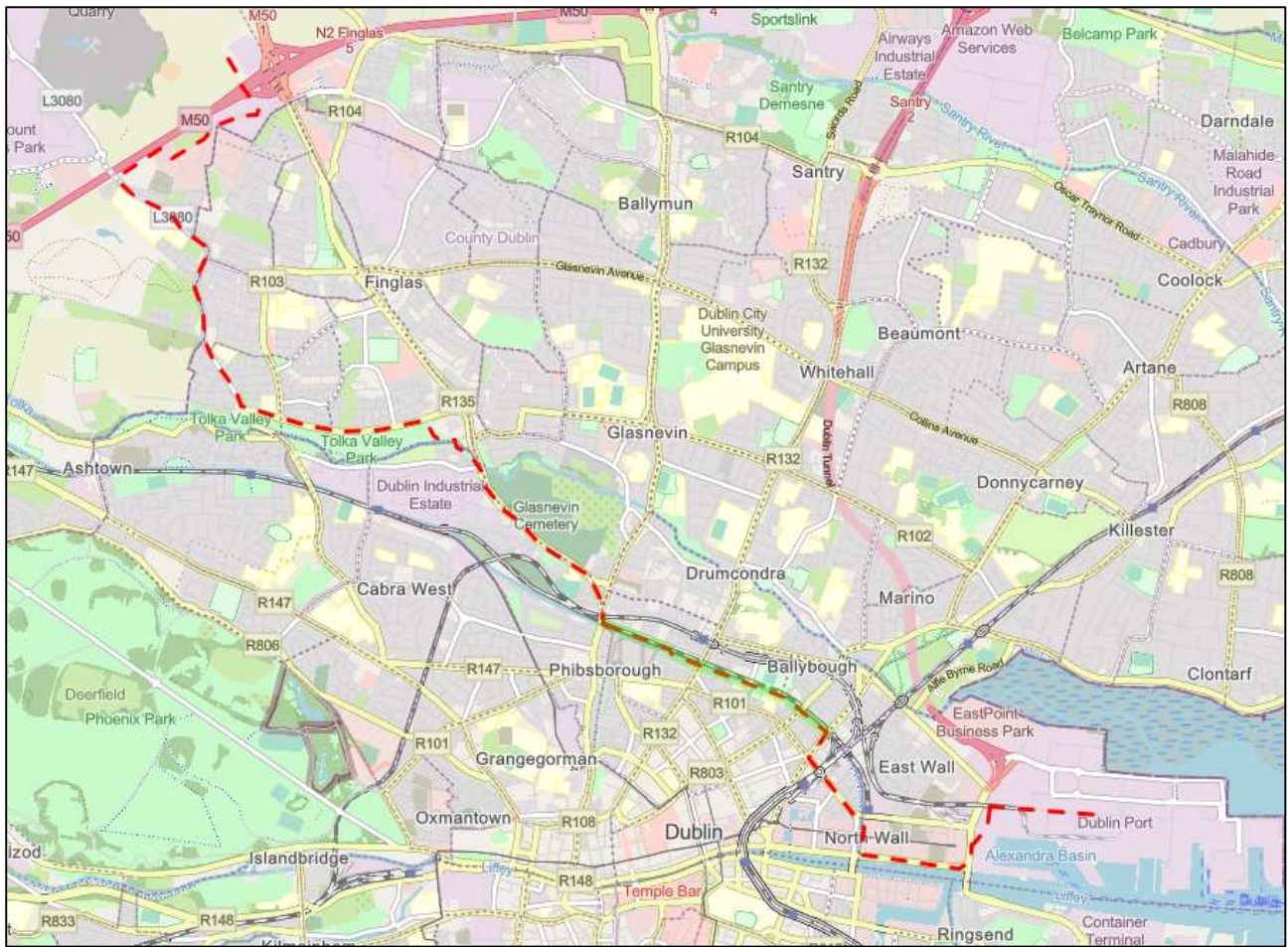


Figure 0-4: Finglas to North Wall Best Performing Route

Project updates will be available on EirGrid's project website here: [Powering Up Dublin](https://www.eirgrid.ie/powering-up-dublin).

1 INTRODUCTION

1.1 Who is EirGrid?

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

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

This critical infrastructure supports the current development of our society and economy. But just as importantly, work carried out now to improve the grid will help to create a more sustainable future for future generations.

1.2 What is the Powering Up Dublin - Replacement Underground Cable programme?

Dublin's electricity infrastructure is ageing and reaching its end of life. Work must be done to transform and modernise the city's electricity infrastructure, so Dublin can continue to develop and thrive, while increasingly using power from renewable sources.

Powering Up Dublin is a critical programme that will strengthen key electricity infrastructure in Dublin and the surrounding areas, making the city 'renewable ready'. Dublin's demand for electricity has grown and will continue to grow in the years ahead as we move to using electricity for heat and transport. These works allow us to meet our energy demands now and in the future.

While this work will be disruptive at times, EirGrid seeks to minimise any potential disruption during construction by working with local communities, local authorities and businesses in Dublin.

Ireland's energy future lies in our ability to continue to harness and grow the potential of renewable energy. Ireland has made good progress to date achieving on average 40% of our electricity coming from renewable sources annually. By 2030, we must strive to reach 80% of electricity demand being supplied by renewable resources.

Powering Up Dublin is key to meeting this target, which is set out in Ireland's Climate Action Plan.

In this first phase of the project, over 50km of cables will be installed across the city. Upgrades will also take place in a number of substations to support Dublin's electricity network. These new cables will all be underground and they will connect electricity substations located around Dublin.

Studies have been carried out to identify new underground cable routes that will link the following electricity substations to each other.

- North Wall and Poolbeg
- Finglas and North Wall
- Carrickmines and Poolbeg
- Two cables linking Inchicore and Poolbeg

The 220kV circuits which are to be replaced are detailed in Figure 1-1 and Table 1-1.

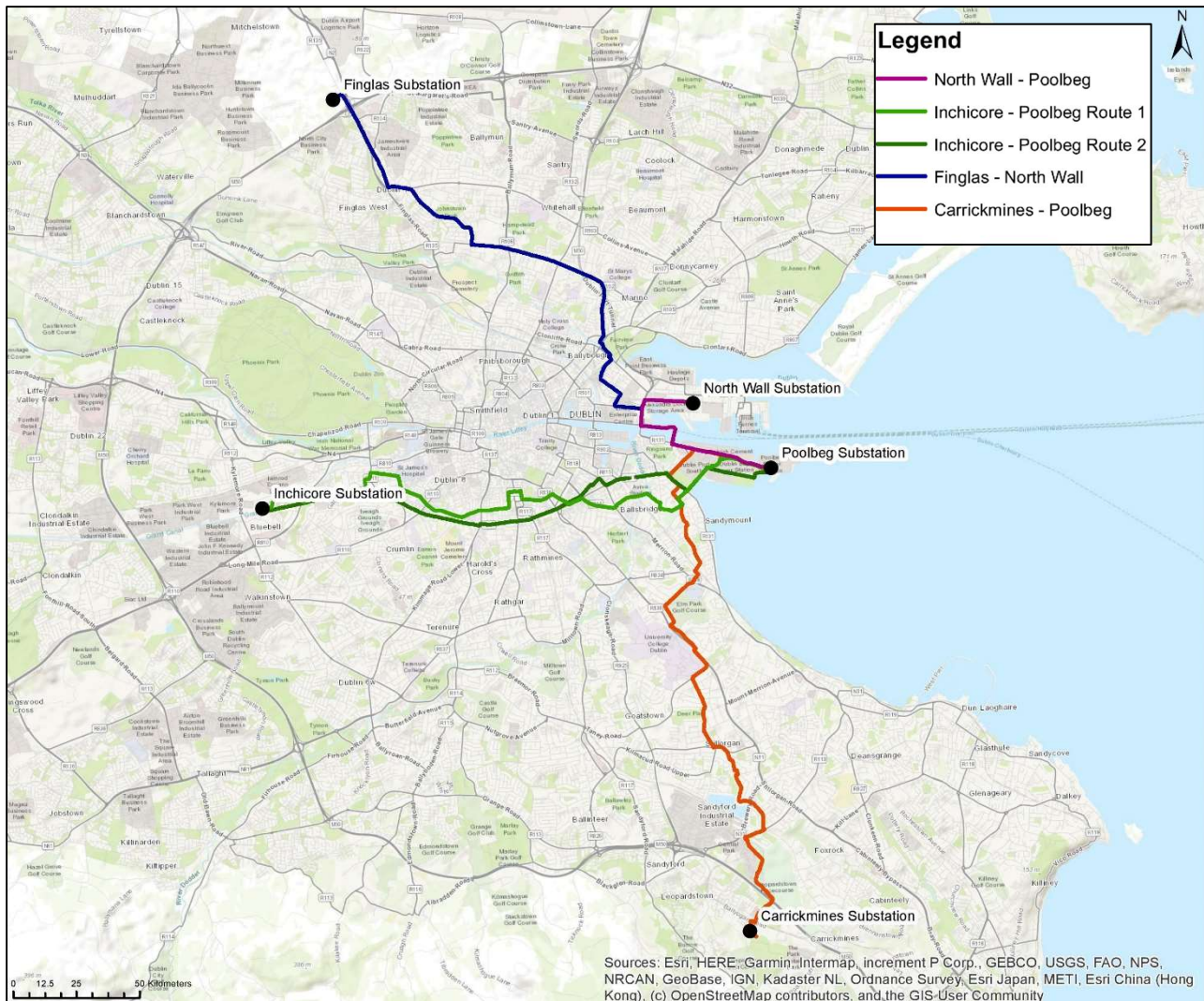


Figure 1-1: Existing 220kV to be replaced as part of the Powering Up Dublin

Table 1-1: Dublin Replacement Cable Projects in the Dublin Area

Project Name	Existing Circuit Route Length
CP1146 Carrickmines - Poolbeg	11.9 km
CP1150 Inchicore - Poolbeg	14.5 km
CP1157 Inchicore - Poolbeg	14.5 km
CP1216 North Wall - Poolbeg	4.6 km
CP1100 Finglas - North Wall	11.3 km

EirGrid proposes to replace all the existing circuits with cross-linked polyethylene (XLPE) cable primarily on an offline route, to minimize power outages on the existing circuits. These XLPE cables are more efficient and robust, which will enable the grid to carry more power.

Replacing the existing circuits in an offline route means the new circuit follows a separate route to the existing circuit. The advantage of this is that there are minimal disruptions to the existing circuit and no, or very few, planned outages would be needed during construction.

The alternative to this is online replacement where the new circuit follows the existing circuit route. The old circuit is decommissioned as the new circuit is laid. For this method, a circuit outage of the existing circuit would be required for the entire construction period.

Due to the requirement to maintain the electricity supplies to Dublin, the option to remove and replace the existing cables (known as an online replacement) is not feasible. For this reason, offline installation will be necessary for the replacement of this circuit. That is a new supply will be installed, tested and commissioned before the existing supply is decommissioned.

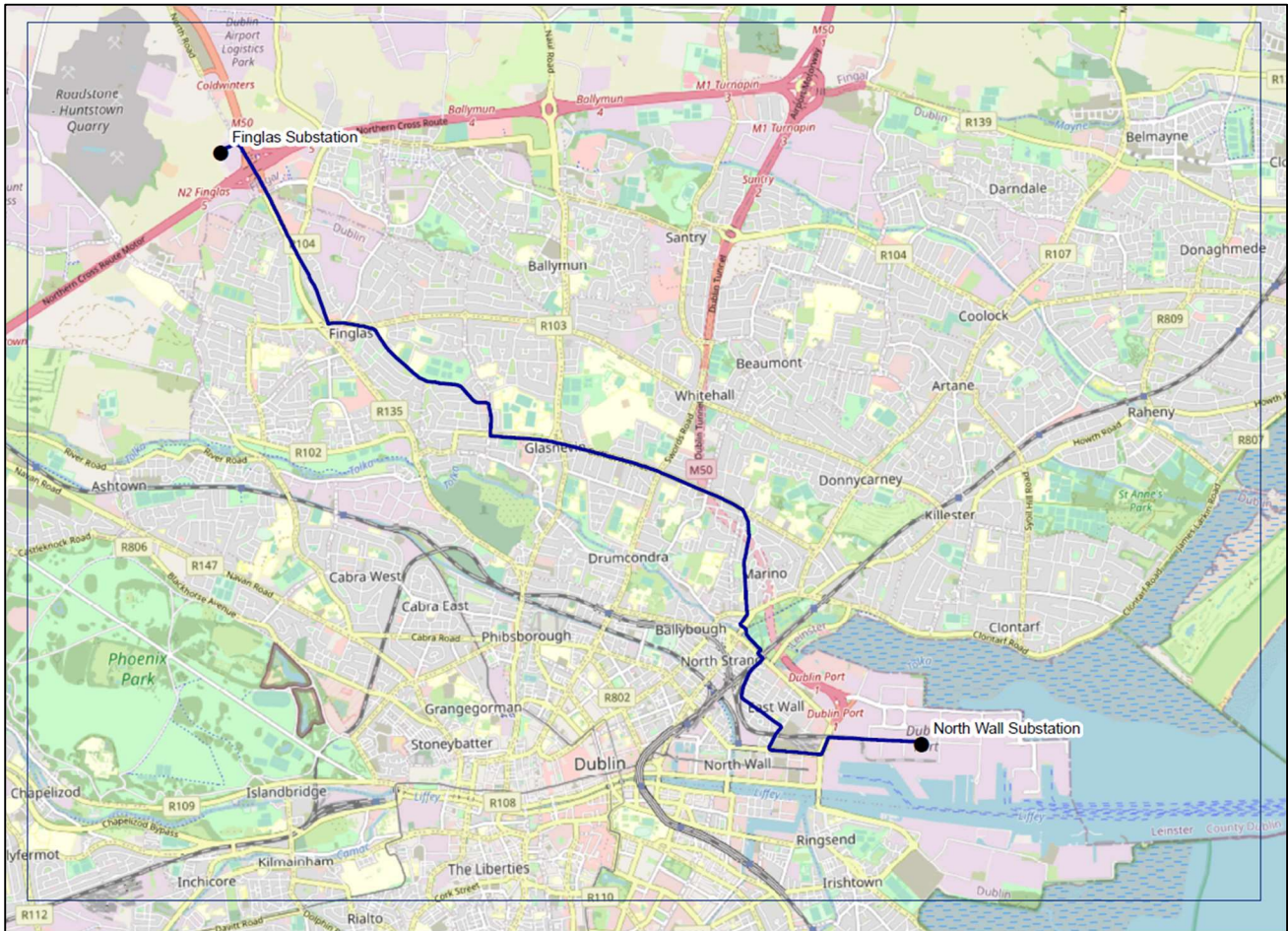


Figure 1-2: The existing Finglas - North Wall 220kV circuit within the study area for this project

1.3 Purpose of this Report

The Dublin Replacement Underground Cable Programme is following EirGrid’s Framework for Grid Development, which is an end-to-end process for all EirGrid’s grid development projects. The framework takes projects from their conception - the identification of a need to develop the electricity transmission grid - to their eventual construction and subsequent energisation. The framework is explained in EirGrid’s “Have your Say” document and is illustrated in Figure 1-3.

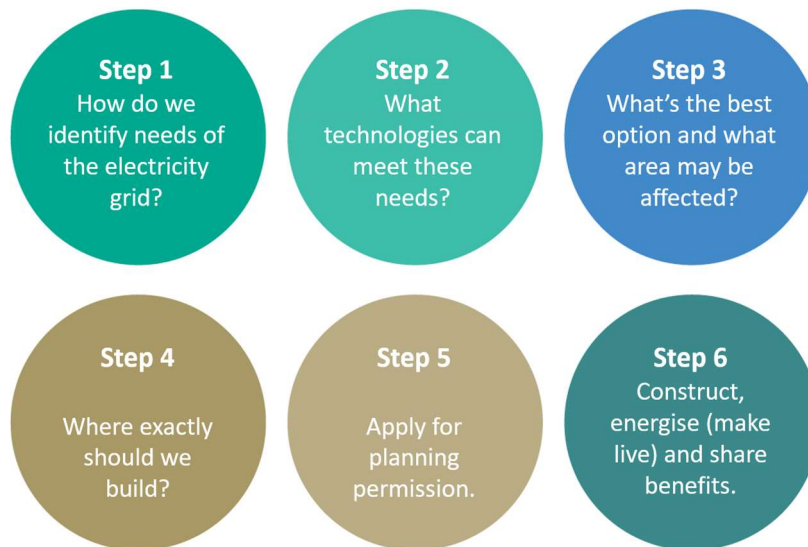


Figure 1-3: EirGrid's Six-Step Framework for Grid Development

This approach facilitates engagement and consultation with stakeholders and the public which helps to explore options fully and make more informed decisions. The project has recently moved into Step 5. The timeline for this step is shown in Figure 1-4.



Figure 1-4: The timeline of EirGrid's Six-Step process for this project

In Step 1, EirGrid identified the need for this project.

In Step 2, EirGrid assessed and confirmed the technology required to achieve the need; namely the required ratings to support the capacity of (renewable) energy to be transmitted. The cable technology selected is XLPE 220kV cable.

In Step 3, EirGrid assessed the feasibility of the Dublin Replacement Underground Cable Programme in December 2022. This Step looked at the key constraints, considerations, and opportunities in the Finglas and North Wall areas as well the proposed technology options. The report confirmed the need for the replacement of the existing 220kV circuits, in a mostly offline replacement to limit the outages required.

Step 4 determines where we will build. The initial Route Options Assessment (Step 4A) Report was published in March 2023. This report fully described and analysed the route options within the Finglas to North Wall study area. Each route option was assessed, and the Emerging Best Options were identified.

This report is the second stage of Step 4, where the project team, in consultation with Community and Business stakeholders, identified exactly where the underground cables will be built.

As the project progresses through to Step 5, the project team will identify specific requirements and prepare the necessary statutory applications and consents. This work may include planning and environmental reports, which will describe the final design of the project, outline the potential impacts, and identify the mitigation measures that will be put into place to avoid or reduce any impacts.

1.4 Accompanying Reports

This Best Performing Options report is supplemented by the following other publicised reports:

- Route Options Assessment Finglas to North Wall
- Powering Up Dublin project brochure
- Constraints Report Finglas to North Wall
- EirGrid Dublin Fluid Filled Cables Replacement Feasibility Study
- Powering Up Dublin Strategic Framework for Planning & Environment
- Public Consultation Feedback Report

These reports as well as further information on the Powering Up Dublin project can be found here: [Powering Up Dublin](#).

2 SUMMARY OF STEP 4

In EirGrid’s Six-Step Framework, the objective of Step 4 is to determine the best performing option and the precise route where the project will be built. This step is characterised by two main outputs:

- Route Options Assessment, and
- Best Performing Option Assessment.

Figure 2-1 outlines the design process followed in Step 4, showing the process used for Route Options Assessment and how that is developed to identify the Best Performing Option.

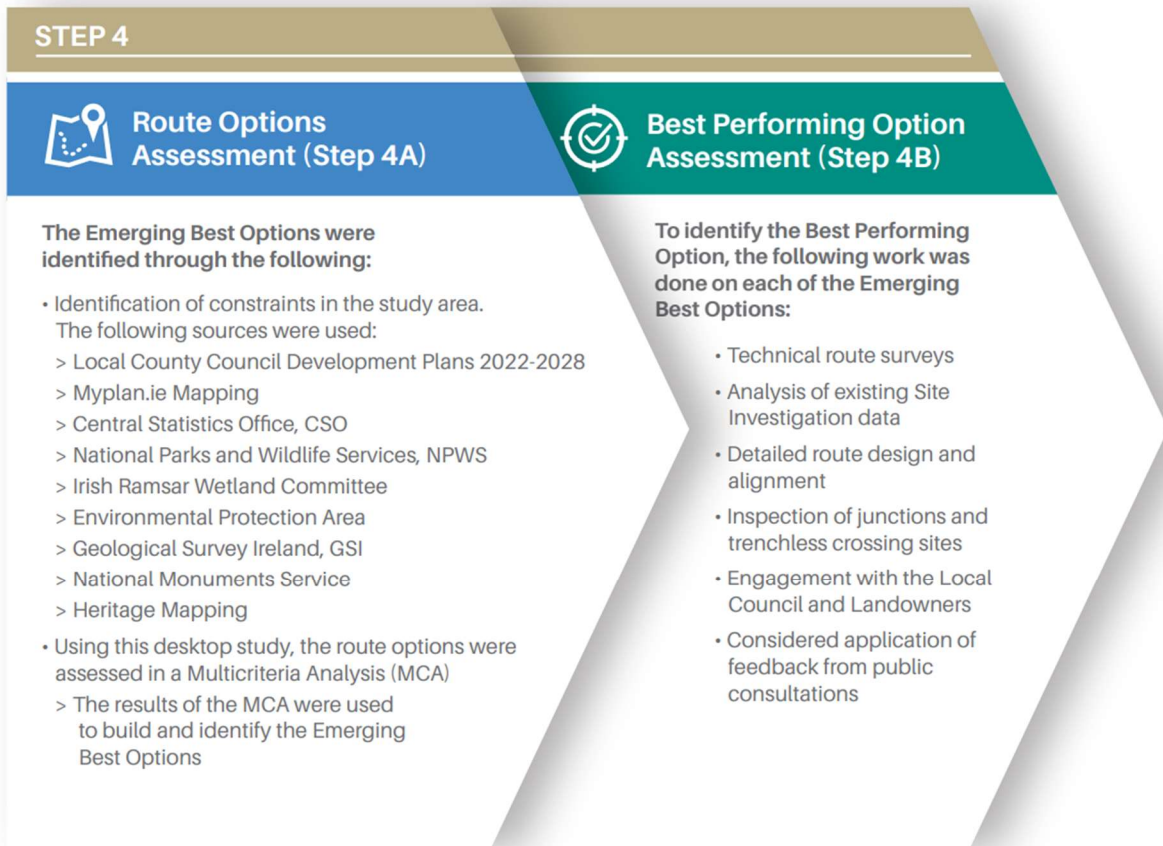


Figure 2-1: Step 4 design process

The Route Options Assessment identifies all possible route options to replace the existing Finglas to North Wall 220kV circuit, analyses these route options and identifies the Emerging Best Options. The Route Options Assessment was complete (March 2023), and the report was subsequently published for public consultation. The public consultation period closed eight weeks later in May 2023. Section 3 provides a summary and results of the assessment process.

The second phase of Step 4, the Best Performing Option Assessment, develops the Route Options Assessment, taking account of feedback obtained during the public consultation phase and additional technical information (from initial surveys and route walks) to arrive at the Best Performing Option. The Best Performing Option is based on the information currently available and further refinement of the option may be triggered by site investigations performed as the detailed design phase progresses. This second phase was progressed between May and December 2023. The assessment process is explained in more detail in Section 4.

3 SUMMARY OF ROUTE OPTIONS ASSESSMENT (STEP 4A)

The study area for this project was carried through from Step 3. We completed the first step in Step 4 identifying the constraints in the study area in December 2022. We then established all possible route options to replace the existing Finglas to North Wall 220kV circuit. These options were then assessed with the results of the assessment included in the Route Options Assessment Report. The Emerging Best Options (EBOs) were identified for further investigation in March 2023. This Route Options Assessment design process is shown in Figure 3-1 and the report can be found [here](#).

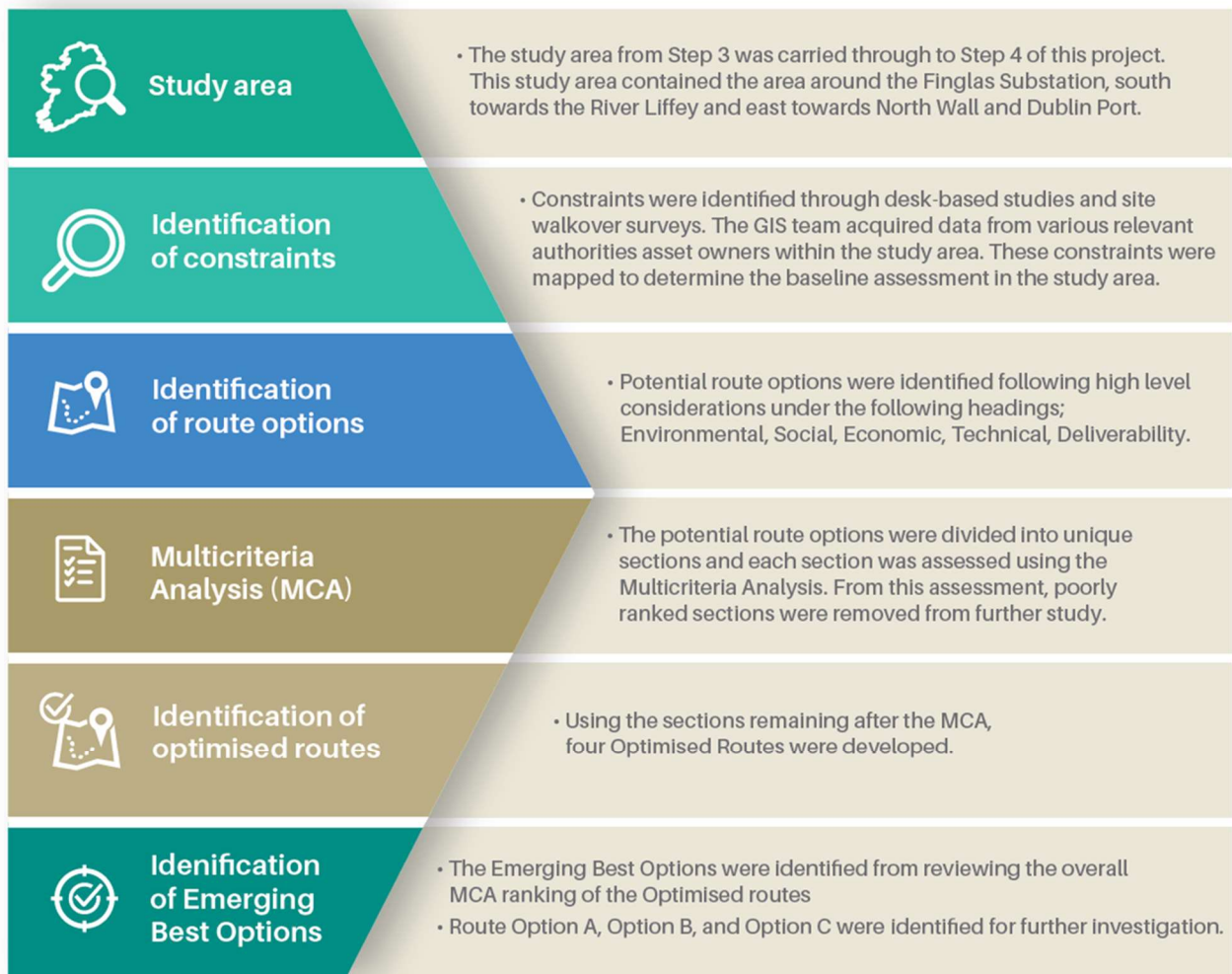


Figure 3-1: Route Options Assessment (Step 4A) Design Process

This section summarises the Route Options Assessment process from the identification of the route options, through to the identification of the Emerging Best Options.

All the potential route options for the Finglas to North Wall circuit were identified, broken down into unique sections with each section assessed using a Multicriteria Analysis (MCA) comprising EirGrid’s five multicriteria assessment categories, shown in Figure 3-2.



Figure 3-2: EirGrid’s Five Multi-Criteria Assessment Categories

The categories were further split into the subcategories shown in Table 3-1.

Table 3-1: Categories and subcategories in the Multi-Criteria Analysis

Category	Subcategories
Technical	<ul style="list-style-type: none"> Technical Operating Risk Compliance with EirGrid Functional Specification for 220kV Expansion/Extendibility Geotechnical conditions
Deliverability	<ul style="list-style-type: none"> Road Access Outage Impact Route Geometry Land Availability Planning and other statutory requirements Material Assets Utility Congestion Working Time Constraints Reinstatement Requirements Dependence on other projects
Economic	<ul style="list-style-type: none"> Number of complex crossings Reinstatement Costs Utility Diversion Requirements Bespoke Circuit Trench Requirements
Socio-Economic	<ul style="list-style-type: none"> Cultural heritage Proximity to critical services Duration of the works Settlements and Communities Amenity Traffic and Transport Emergency services
Environmental	<ul style="list-style-type: none"> Planning policy and land use Biodiversity, Flora and Fauna Landscape and Visual Contaminated land Flood risk Water Impact

The map of all route sections between nodes that were assessed as part of this MCA are shown in Figure 3-3. The colour of each section shows the overall MCA ranking of that section.

The colour coding is outlined in Table 3-2.

Table 3-2: Colour coding of Risk / Significance / Sensitivity levels

Colour Key	Level of Risk / Significance / Sensitivity
Yellow	Low
Green	Low-Moderate
Dark Green	Mid-Level / Moderate
Blue	Moderate-High
Dark Blue	High

From the MCA results, using the best possible ranked sections, three optimised routes, Option A, Option B and Option C were progressed as Emerging Best Options for further consideration. These routes are shown in Section 3.1.

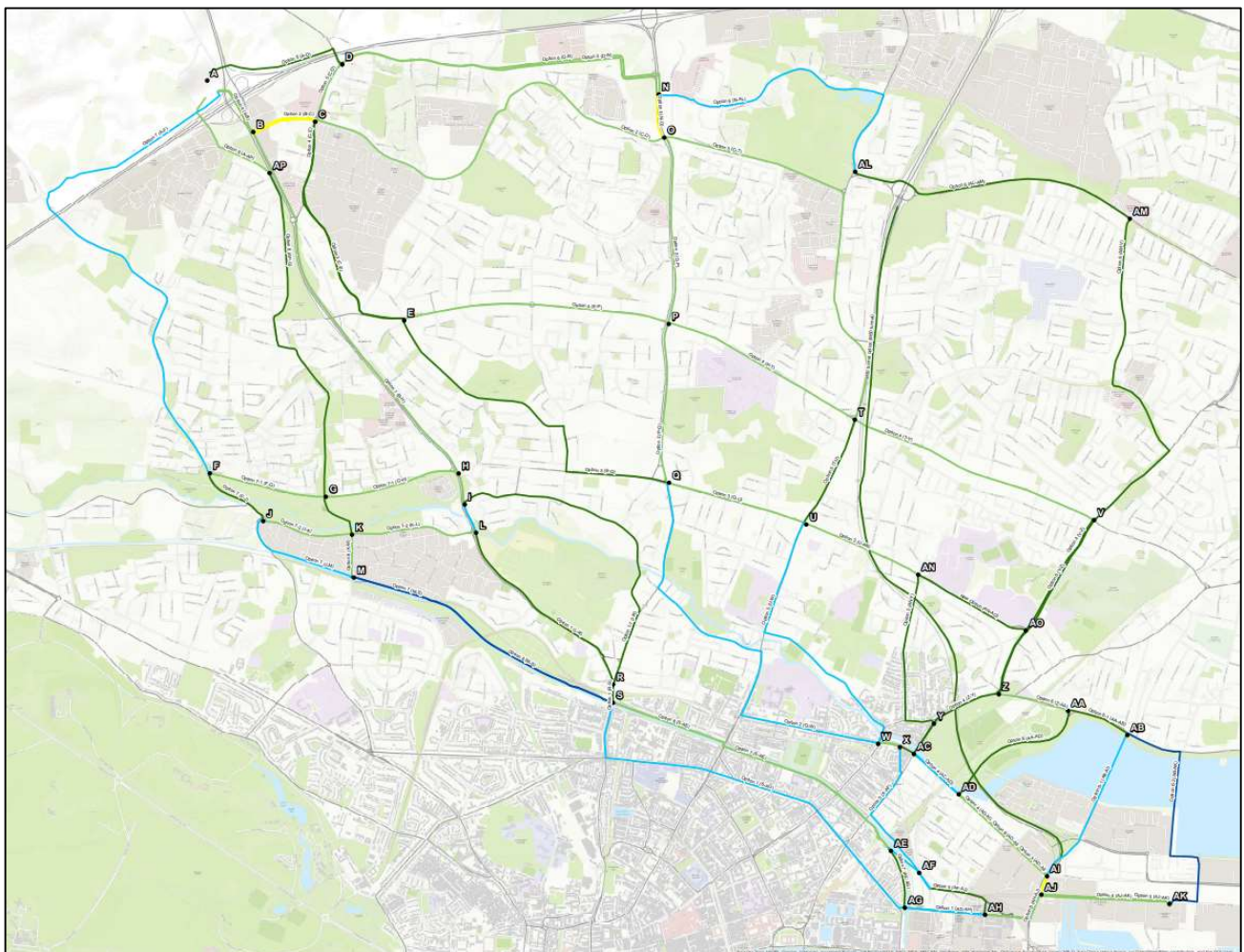


Figure 3-3: Route section and node map for Finglas to North Wall route options

3.1 Step 4A Emerging Best Options

Option A, Option B and Option C were identified as the Emerging Best Options for further consideration in this report. This section outlines the overall MCA ranking of each Option and the outstanding challenges that were identified at this stage for each route. Figure 3-4 shows a map of these EBOs.

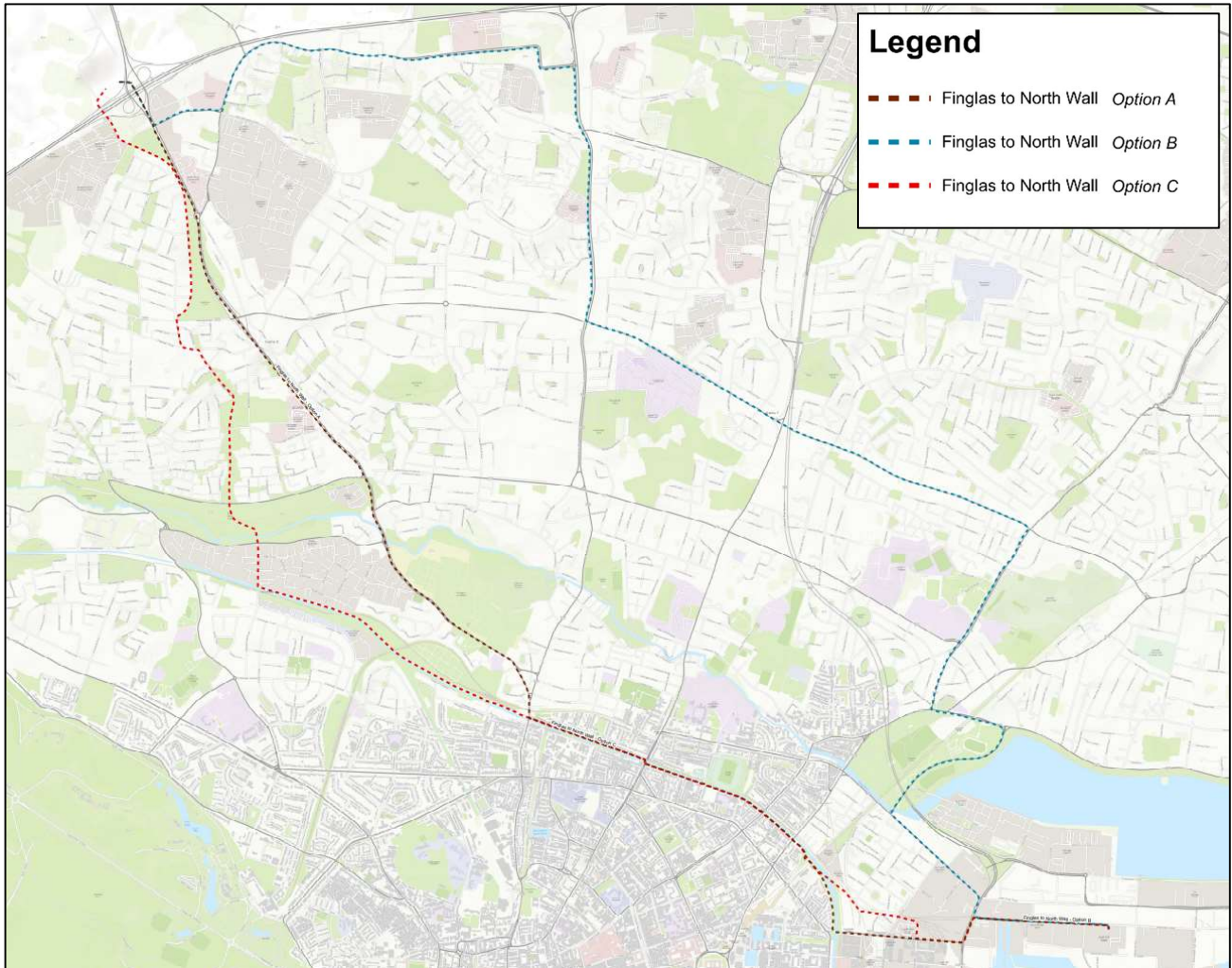


Figure 3-4: Map of Option A, Option B and Option C

Each route has outstanding challenges associated, which were further assessed in the Best Performing Options assessment and are addressed in Chapter 4.3.

Option A

Option A utilises a section of advanced ducting along the Royal Canal as part of a new cycleway for Dublin City Council which will greatly assist the deliverability of this route whilst reducing disruption and costs to the public. The factors driving up the ranking of the deliverability and economic sections are the utility congestion and thus the potential utility diversion requirements. Mitigations of both of these sub-criteria will be reduced by site investigation works to inform the cable routing through areas of high congestion.

The technical and environmental criteria are ranked as low-moderate. The socio-economic higher ranking of mid-level/moderate is being driven by the duration of the works and traffic and transport effects, mainly on Finglas Road which Road is mostly dual carriageway, with two to three lanes in each direction. Well-designed traffic management during construction can mitigate this risk impact.



Figure 3-5: Map of Option A

Option B

The deliverability and socio-economic criteria for Option B are rated higher as mid-level/moderate. The main challenges of this route option are the congestion on Malahide Road, with some areas of high utility congestion as well as the Tolka River crossing. With site investigations, this can be managed. The driver of the higher socio-economic criteria is the duration of the works and traffic and transport. As with Route Option A, with well-designed traffic management during construction, part of this risk can be minimised.

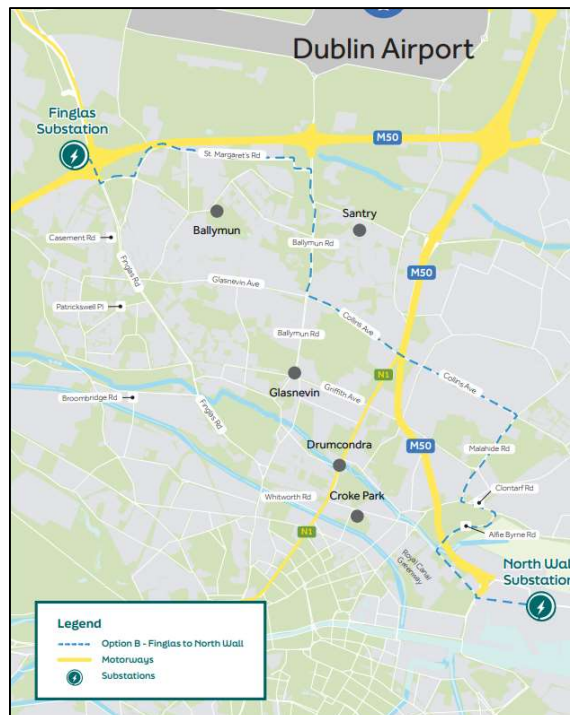


Figure 3-6: Map of Option B

Option C

The main challenges of this route are the uncertainty of the timing of the next phase of the Royal Canal Greenway upgrades (between Broombridge and Ashtown), and the proposed development of the MetroLink and Dart + west stations at Glasnevin which conflicts with the proposed ducting along the Greenway. The advantage of this route is the large sections of off-road routing which travels through open spaces in Finglas. This will reduce the impact of construction on traffic and transport.

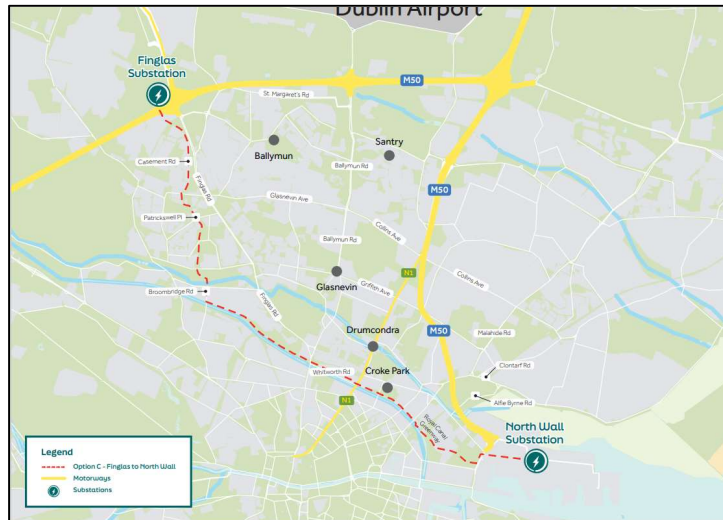


Figure 3-7: Map of Option C

3.2 Emerging Best Options Public Consultation

The public consultation period commenced on Tuesday, 28 March 2023 and ran for an eight-week period ending on Tuesday 23 May 2023. All relevant consultation material was available on the EirGrid Powering Up Dublin (PUD) website [here](#). This included:

- Project Summary Brochure
- Distribution of 130,000+ leaflets and feedback forms into homes in the Dublin area
- Route Maps including an Interactive Map Tool
- Link to Online Consultation Survey
- Link to Submission Portal
- Supporting Information

The consultation was promoted by EirGrid through advertising, social media and generating local / national news reports and interviews.

For up to three weeks before the consultation phase began, advertising was placed in newspapers, bus shelters, online and on radio. Advertising to promote the consultation continued throughout the eight-week consultation period on radio and social media.

Several in-person consultation events were conducted at relevant locations in the greater study area. Dedicated Community Liaison Officers (CLOs) have been in place since the start of the project. Community Liaison Officer drop-in clinics were undertaken throughout the public consultation period (i.e., March to May 2023). Briefings were offered and delivered to elected representatives, schools, businesses, and community groups, where requested.

Powering Up Dublin

8-Week Public Consultation: 28 March - 23 May 2023

"Building a More Resilient and Reliable Electricity Grid"

135,638
560

Leaflets Distributed
Stakeholder Emails Sent

11 Public Information Events

189 Attendees

2 Online Webinars
20 Attendees

Briefings

32 Community

9 Business

2 Public Reps

1 Oireachtas Briefing
25 Attendees

Forums

2 Business
32 Attendees

2 Community
24 Attendees

15

Technical Briefings
18 Attendees

86 Virtual Room Visits

60 Local / National News Reports

350 Radio Ads

148 Outdoor Ads

21 Newspaper Ads

5 Community Liaison Clinics
22 Attendees

2 School Outreach Events
90 Attendees

Social Media Campaign



554 Participated

463 People Met

91 Submissions Received



Figure 3-8: Consultation Activity Summary

3.3 Emerging Best Options Public Consultation Feedback

The *PUD Consultation Findings Report* summarises feedback, responses and comments received relating to the first non-statutory public consultation on the first phase of the Powering Up Dublin (PUD) Project.

Overall, most people understood the need for the project and there was widespread acceptance of the PUD programme. Notwithstanding this, submissions received included valuable feedback on the concerns related to the project.

The most frequently emerging themes raised included local environmental issues, cumulative impacts, business impacts and traffic disruption. Concerns regarding the potential traffic impact on schools and the disruption to businesses in the area were also raised.

However, there were concerns regarding the potential impacts of the required works when the project reaches the final route selections and subsequent construction stage. The area of primary concern and most frequently recurring issue was that of traffic disruption (general, business and traffic specific) and congestion resulting from construction stage. A high volume of respondents referenced the need for robust traffic management measures, routing preferences and retention of public transport/pedestrian routes throughout construction.

Respondents also voiced concerns in relation to the potential for cumulative impacts in the communities in which several of the potential routes pass through, where multiple utilities projects programmed, in progress and recently completed.

Individual respondents expressed strong preferences for collaboration between utilities companies and local authorities where possible and this sentiment was echoed by several utilities' companies and local authorities (e.g.: ESB Networks, Uisce Éireann and Dublin City Council) themselves in their submissions. Those utility companies and local authorities called for continued dialogue and engagement regarding the project, route development and collaborative opportunities. The overarching sentiment of responses referring to collaborative opportunities was that they may reduce disruption potentially experienced by communities, such as through reducing the need for ongoing or repeated carriageway excavations.

The Consultation Findings Report can be found [here](#) and all consultation submissions can be found [here](#).

The feedback and findings from the consultation were used within the Best Performing Options Assessment (Step 4B) to support route selection and optimisation.

4 BEST PERFORMING OPTION ASSESSMENT (STEP 4B)

4.1 Introduction

To determine the Best Performing Option, the three Emerging Best Options (EBOs) identified in the Route Options Assessment Report were examined in greater detail. This process included route surveys, stakeholder and landowner engagement, and detailed route design, focusing on areas of particular difficulty such as motorway, water courses and rail crossings.

The design process to determine the Best Performing Option is shown in Figure 4-1. It is noted that the assessment process is iterative. This means, for example, that information found at the information gathering stage could be used to inform the technical route surveys and stakeholder engagement, which feeds back into the information gathering and route assessment.

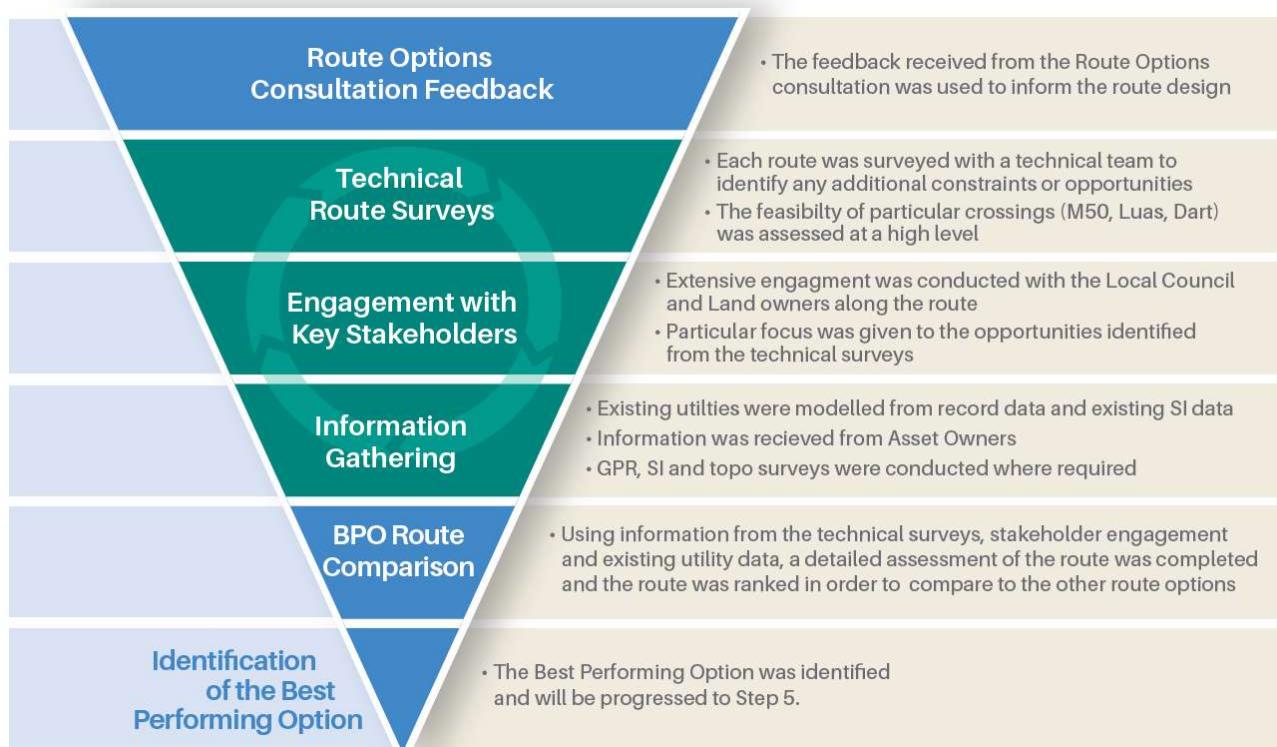


Figure 4-1: Best Performing Option Assessment Design Process

Any changes made to Emerging Best Option identified as the Best Performing Option during this assessment are highlighted in Chapter 5.3.

4.2 Information Gathering and Route Assessment

The first step was to perform surveys with a technical team of all three route options identified. The team identified any constraints that may affect the constructability of the circuit in this location, as well as potential opportunities that may benefit the construction of the circuit in a particular location.

As far as possible, the routes were kept the same as presented in the Route Options Assessment Report, however there were some changes identified to the routes as a result of the constraints identified during the Best Performing Option assessment. The changes identified resulted in an improved route from the original EBO.

Multidisciplinary assessments were undertaken on each EBO route. This included engineering, archaeological, environmental and ecological assessments. These assessments were primarily desktop based, with targeted walkover surveys of particular areas of sensitivity or importance.

EirGrid also carried out considerable engagement with stakeholders that would potentially be affected along the cable route. This engagement has allowed the landowners and stakeholders to inform the route option based off their preference, current or future land use and any land conditions they have knowledge of. It also enabled Site Investigations to confirm the desk-based design work.

Detailed assessments were conducted along the route to identify the best crossing locations of important features such as the M50, Tolka River, DART railway, amongst others. The suitability of each crossing was assessed considering the crossing methodology, crossing location including space for works areas and existing factors such as utility congestion in the area. Existing bridges were assessed to determine the availability of space for routing the circuit in the bridge deck. This included considering if the bridge depth was of suitable depth as well as space required to achieve minimum separation from existing utilities.

This process allowed for the careful examination and comparison of the EBOs, including environmental, social, and technical considerations as well as input from landowners, stakeholders and the community.

The Best Performing Option for the Finglas to North Wall circuit was selected from this process and is discussed in detail in Section 5.

4.3 BPO Route Assessment

The three EBOs were analysed using the process outlined in the previous section, Section 4.2. This section summarises the findings for each route option.

4.3.1 BPO Assessment of Option A

The following sections summarise the findings from the Best Performing Option Assessment on Option A.



Figure 4-2: Map of Option A

4.3.1.1. Route Options Consultation Feedback

The following public engagement feedback was received on Option A:

-
- Feedback highlighted the tendency for flooding on the Finglas Road near the Tolka Valley Road and Park.
 - A number of respondents expressed concerns noting existing congestion, the route uses a primary link to the M50, and the volume of impacted intercounty traffic daily would therefore be significant.
 - Concerns were raised regarding the frequency of funerals in Glasnevin and the associated traffic issues and the possible accessibility issues for the elderly residents in Claremont Estate, Glasnevin.
 - Tesco Ireland outlined the impact on several of their stores including Tesco Clearwater, Glasnevin, Phibsborough and Dorset Street Lower located on or adjacent to Route Option A with Tesco stating that accessibility for all users is likely to be impacted by construction.

4.3.1.2. BPO Route Assessment

Technical surveys, key stakeholder engagement and information gathering all formed part of the route assessment. Information gathering included assessment of available existing utility record data, information from asset owners and feedback from key stakeholders. In some critical areas, detailed design was completed to assess the feasibility of the route through these areas.

The critical areas identified through this process, which provide major constraints to the deliverability of this project, are as follows:

- M50 Crossing

Option A travels under the M50 using the existing utility tunnels. From the technical surveys and detailed assessment, it was determined there is insufficient space for the proposed 220kV circuit in these utility tunnels.

A preferred alternative is a trenchless crossing to the west of these utility tunnels, crossing from adjacent to the Finglas substation to the business park on the southern side of the M50. Feasibility assessment of a horizontal directional drill crossing in this location was completed to confirm the feasibility of the trenchless crossing in this location.

- Finglas Road/Ratoath Road

From the technical surveys and detailed route assessment, a preferred alternative to the Finglas Bypass and the northern section of the Finglas Road was identified which has a lower impact on commuter traffic within the area. The alternative route travels through the business park, then in a westerly direction adjacent to the M50 to Cappagh Road. The route follows Cappagh Road, Ratoath Road and then into Tolka Valley park where it crosses the Tolka River and re-joins Option A on Finglas Road.

This route change reduces the length travelled on Finglas Road by 3.4km. Finglas Road has a Traffic Impact Number (TIN) of 4 and was identified during the public consultation as a vital route for commuting from outside Dublin into the city. Ratoath Road has a TIN of 3 and is not a link from the M50 into the city.

Ratoath Road was analysed in the MCA as part of the Route Options Assessment. At that time, Ratoath Road was part of the larger section which travelled out of the Finglas Substation in a westerly direction on the northern side of the M50 (Section A-F in Figure 3-3). The M50 crossing location was in the bridge deck on Cappagh Road. Due to the uncertainty around the suitability of the bridge deck, as well as traversing private land north of the M50, this route option was discounted from the route builder.

With the alternative crossing location of the M50 as discussed in the previous section, and the route now on the southern side of the M50, the revised MCA ranking of this section is reduced from moderate/high to mid-level/moderate. This route is a preferred alternative to the northern section of Finglas Road with reduced traffic and socio-economic impact. The detailed design of this section proved the route to be feasible and deliverable.

- Tolka River crossing

Coupled with the alternative route option of Cappagh Road and Ratoath Road identified above, a preferred crossing location of the Tolka River was identified. The crossing location uses the footpaths in Tolka Valley Park and crosses the Tolka River in the east of Tolka Valley Park, further details are provided in Section 5.3.

This crossing location minimises the traffic impact compared to the crossing location of Tolka River in Finglas Road as shown in Option A.

A design feasibility assessment of a trenchless crossing was completed at this location to determine the deliverability and feasibility of this crossing option. A more detailed crossing design will be completed at Stage 5 of the project; however, at this stage the crossing location is considered feasible and constructable.

- Cross Guns Bridge

There are two railway corridors which the circuit must cross to get from Prospect Road to the Royal Canal Greenway Phase 3 at Cross Guns Bridge. It is proposed as part of the BusConnects Ballymun/Finglas to City Centre Core Bus Corridor Scheme that the existing bridge crossings of both railway corridors be complemented with new footpath/cycle route bridges to include an active travel corridor. The new structures were identified as an opportunity for this project to provide a crossing methodology of the railway corridors.

A detailed design of this crossing methodology, which included an assessment of the suitability of the pedestrian bridges to accommodate the ducting within the bridge deck was completed.

- Royal Canal Greenway Phase 1/Seville Place

The circuit route on Royal Canal Greenway Phase 1 crosses one railway line at a level crossing and passes under one elevated railway bridge. The Irish Rail crossing standards were received from stakeholder engagement with Irish Rail. In keeping with these standards, a detailed crossing assessment was completed for the level crossing of the railway. Due to the limited space in the area, a crossing which complied with Irish Rail standards was challenging to identify and was considered to be very difficult to deliver.

The route along the Royal Canal Greenway Phase 1 would also have necessitated a partial closure of the greenway to facilitate construction as well as a limited amount of excavation and reinstatement of the greenway.

An alternative to the Royal Canal Greenway Phase 1 was identified. This preferred alternative route travels south down North Strand Road, east onto Seville Place to the western bank of the Royal Canal off Guild Street. At this stage of the project, no trenchless crossings are envisaged on this portion of the route. The route passes under one elevated railway bridge.

A detailed route design was completed on this preferred alternative route option. The route is considered to be constructable.

- Sheriff Street Upper/North Wall Quay

Through engagement with key stakeholders in the area around Sheriff Street Upper, and due to planned projects along this street, placement of the circuit in this road was considered to be very technically challenging.

A preferred alternative was assessed through technical surveys and detailed route design. This alternative crosses the Royal Canal via a trenchless crossing south of Sheriff Street Upper and runs south along the east side of Spencer Dock. The route then joins North Wall Quay and runs east to the planned upgraded footpath on East Wall Road which is proposed to be upgraded as part of the Liffey-Tolka Greenway. The Liffey-Tolka Greenway is expanding the footpath to include a cycle and pedestrian pathway. This provides space for the circuit to be located outside the congested roadway. The detailed design and assessment of this route is underway with Dublin Port to confirm the route feasibility.

4.3.1.3. BPO Route Comparison

Using all the information gathered throughout this BPO Assessment, the route was assessed using EirGrid’s five assessment categories to compare the ranking of this route at the current BPO phase with the ranking of the route after the Route Options Assessment phase. Table 4-1 shows the major constraints identified at this phase under each criterion for this route.

Table 4-1: BPO Route Assessment of Option A

Criteria	Step 4A Ranking	Comment	BPO Ranking
Technical		<p>The technical ranking of this route during the Route Options Assessment was low-moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • Non-standard trenchless crossings envisaged. <ul style="list-style-type: none"> ▪ Detailed review of the crossing of the Tolka River and Royal Canal identify there is limited space available, and as a result would require trefoil formation (in a single conduit) which is not a standard crossing formation. <p>As a result of this item, the ranking has been increased to mid-level/moderate in this assessment.</p>	
Deliverability		<p>The deliverability ranking of this route during the Route Options Assessment was mid-level/moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • The use of Ratoath Road improves the deliverability of this route option. This road is relatively uncongested and has a lower TIN than Finglas Road. This means construction will be less restricted on this route. • The use of the pedestrian bridges to cross the railway corridors at Cross Guns Bridge improves the deliverability and constructability of this route. This crossing methodology is more feasible than a trenchless crossing or crossing in the existing bridges as was originally suggested. <p>As a result of these items, the ranking has been decreased to low-moderate in this assessment.</p>	
Economic		<p>No additional economic issues have been identified during the BPO route assessment phase. The economic ranking of this route remains at mid-level/moderate as it was during the Route Options Assessment.</p>	
Socio-Economic		<p>The socio-economic ranking of this route during the Route Options Assessment was mid-level/moderate.</p> <p>The following critical points identified during the BPO route assessment phase have influenced, both positively and negatively this ranking:</p> <ul style="list-style-type: none"> • Route change to reduce the length of Finglas Road impacted by this project by 3.4km. Finglas Road is a vital transport link into the city, reducing the impact on this road has a positive socio-economic impact. • The route will still impact Glasnevin Cemetery, however careful consideration will be given to access of this site during construction. • The route will impact North Quay which is a vital transport route into the city. Approximately 875m of this road will be affected. <p>As a result of these items, the socio-economic ranking of this route remains at mid-level/moderate.</p>	
Environmental		<p>No additional environmental issues have been identified during the BPO route assessment phase. The environmental assessment of this route remains at low-moderate ranking.</p>	
Overall		<p>The overall assessment ranking remains at mid-level/moderate as during the Route Options Assessment.</p>	

4.3.2 BPO Assessment of Option B

The following sections summarise the findings from the Best Performing Option Assessment on Option B.

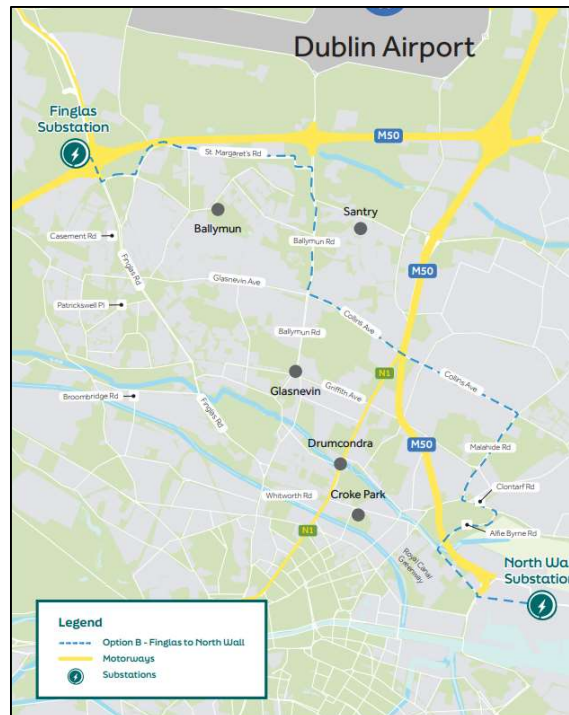


Figure 4-3: Map of Option B

4.3.2.1. Route Options Consultation Feedback

The following public engagement feedback was received on Option B:

- Multiple sources highlighted extensive electrical infrastructure within East Wall Road with little to no spare space for a new cable.
- Concerns were raised regarding potential impacts on wildlife and communities in the vicinity.
- Local Events that may be disrupted include the 100-year anniversary of Marino in 2024.
- A few respondents indicated a preference for alternatives to Route Option B noting it as the most traffic heavy compared with the other two options.
- Concerns were raised about the “Clontarf cycle lane” and potential impacts.
- A few respondents raised concerns about “continuing levels of disruption” in the Marino and Fairview areas, referring the Port Tunnel works, ongoing utility works and disruption to the road network.
- Templeville Developments expressed concern regarding access to a fitness club adjacent to Fairview Park. Templeville developments also referenced the impact of lockdowns through 2020 and 2021 on revenue followed by traffic disruption due to the Clontarf to City Centre Cycle and Bus Priority Project due to continue through 2024.
- Potential for the route to add to existing congestion on the Alfie Byrne and Clontarf Roads was highlighted along with the issue of existing congestion on Collins Avenue and the Malahide Road.
- In their submission Tesco Ireland requested that Route Option B be avoided due to its potential impacts on their distribution centre which services stores nationwide. Tesco stated that the roads surrounding the distribution centre already has BusConnects and Metrolink plans that could potentially disrupt their operations.

4.3.2.2. BPO Route Assessment

Technical surveys, key stakeholder engagement and information gathering all formed part of the route assessment. Information gathering included assessment of available existing utility record data, information from asset owners and feedback from key stakeholders. In some critical areas, detailed design was completed to assess the feasibility of the route.

The critical areas identified through this process, which provide major constraints to the deliverability of this project, are as follow:

- M50 Trenchless Crossing

Option B travels under the M50 using the existing utility tunnels. From the technical surveys and detailed assessment, it was determined there is insufficient space for the proposed 220kV circuit in these utility tunnels.

A preferred alternative is a trenchless crossing to the west of these utility tunnels, crossing from adjacent to the Finglas substation to the business park on the southern side of the M50. Detailed design of a horizontal directional drill crossing in this location was completed to confirm the feasibility of the trenchless crossing in this location.

- Marino and Fairview current projects

From the technical surveys, a high number of ongoing construction projects were observed around Marino and Fairview. Due to the observed works in this area, the impact on the public of additional work in this area is of concern, as well as the reinstatement costs and requirements along this section. The high existing utility congestion on Malahide Road is also challenging for this route, especially with the ongoing projects envisioned to add to this congestion.

These projects include, but are not limited to:

- City Centre Cycle & Bus Priority Project (C2CC Project)
- Aviation fuel pipeline from Dublin Port to Dublin Airport
- BusConnects

- Tolka River Crossing

There is limited space in the bridge deck to accommodate a 220kV circuit on Alfie Byrne Road over the Tolka River. The crossing location is very challenging for a trenchless crossing due to the bedrock in the area and the depth of the crossing required. This was confirmed with technical surveys and route assessment.

- East Wall Road congestion

There is high utility congestion on East Wall Road. Using this route will constrain the future development within this area and has the potential to impact many projects in this area, in particular the Central Bulk Supply project.

4.3.2.3. BPO Route Comparison

Using all the information gathered throughout this BPO Assessment, the route was assessed using EirGrid's five assessment categories to compare the ranking of this route at the current BPO phase with the ranking of the route after the Route Options Assessment phase. Table 4-2 shows the major constraints identified at this phase under each criterion for this route.

Table 4-2: BPO Route Assessment of Option B

Criteria	Step 4B Ranking	Comment	BPO Ranking
Technical		<p>The technical ranking of this route during the Route Options Assessment was low-moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • Non-standard trenchless crossings envisaged. <ul style="list-style-type: none"> ▪ Detailed review of the crossing of the Tolka River identify there is limited space available, and as a result would require trefoil formation (in a single conduit) which is not a standard crossing formation. <p>As a result of these items, the ranking has been increased to mid-level/moderate in this assessment.</p>	
Deliverability		<p>The deliverability ranking of this route during the Route Options Assessment was mid-level/moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • The crossing of the Tolka River on Alfie Byrne Road has increased this ranking as it has been assessed as a very technically challenging crossing location with limited space for a trenchless crossing. <p>As a result of these items, this has been increased to moderate-high in this assessment.</p>	
Economic		<p>No additional economic issues have been identified during the BPO route assessment phase. The economic assessment of this route remains at mid-level/moderate ranking.</p>	
Socio-Economic		<p>The socio-economic ranking of this route during the Route Options Assessment was mid-level/moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • Feedback received during the public consultation. This feedback is highlighted in Section 4.3.2.1. • High number of ongoing construction projects in the Marino and Fairview area. Further construction works on this route will negatively impact the public in these areas. <p>As a result of these items, this has been increased to moderate-high in this assessment.</p>	
Environmental		<p>No additional environmental issues have been identified during the BPO route assessment phase. The environmental assessment of this route remains at low-moderate ranking.</p>	
Overall		<p>The overall assessment ranking is moderate-high.</p> <p>This has increased from low-moderate during the Route Options Assessment.</p>	

4.3.3 BPO Assessment of Option C

The following sections summarise the findings from the Best Performing Option Assessment on Option C.

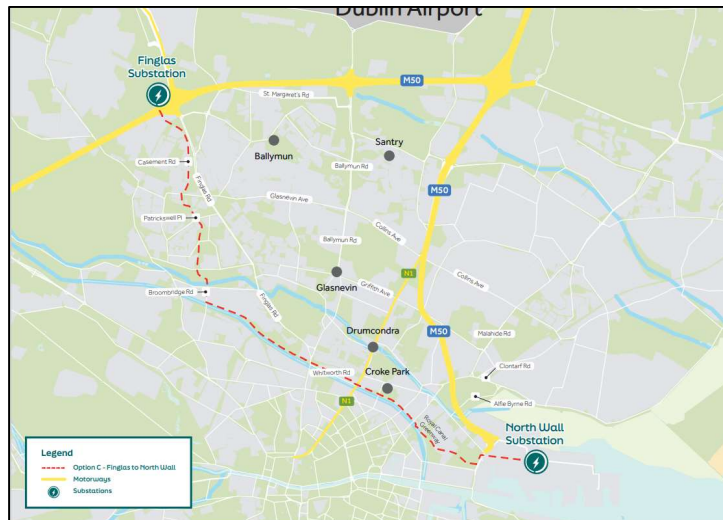


Figure 4-4: Map of Option C

4.3.3.1. Route Options Consultation Feedback

The following public engagement feedback was received on Option C:

- A few respondents indicated a preference for Route Option C, citing its avoidance of main roads.
- In their submission Tesco Ireland stated that Route Option C is preferred as it “minimises likely construction impact”.
- Concerns were raised by a few respondents about proximity to houses on Casement Road.
- The Patrickswell area has historical significance associated with the site and well.

4.3.3.2. BPO Route Assessment

Technical surveys, key stakeholder engagement and information gathering all formed part of the route assessment. Information gathering included assessment of available existing utility record data, information from asset owners and feedback from key stakeholders. In some critical areas, detailed design was completed to assess the feasibility of the route.

The critical areas identified through this process, which provide major constraints to the deliverability of this project, are as follow:

- Tolka River crossing

Publicly available topographic information¹ was used to complete a detailed design assessment of a trenchless crossing of the Tolka River in the location indicated by Option C. This detailed design showed the trenchless crossing would be technically very challenging due to the steep gradient on either side of the river in this location. The crossing would need to be over 250m in length to reach the depth required of 16m below the launch site. This is a very challenging horizontal directional drill and would not be a preferred crossing location.

¹ Available here: <https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b7c4b0e763964070ad69bf8c1572c9f5>

-
- Cross Guns Bridge joining Royal Canal Greenway Phase 3 to Royal Canal Greenway Phase 4

Advanced ducting for electrical circuits is proposed to be installed along the lengths of the Royal Canal Greenway Phase 3 and the Royal Canal Greenway Phase 4 projects. There is however a gap between these sections of advanced ducting at Cross Guns Bridge. This section of ducting would need to be installed as part of this project, as it will not be delivered as part of the greenway upgrades.

This small area has a number of significant and complex projects planned in this area, including:

- MetroLink Glasnevin Station
- Dart + west
- BusConnects Ballymun/Finglas to City Centre Core Bus Corridor Scheme project

A detailed review was completed of the planned projects in this area and how they will affect the cable route linking Phase 3 and Phase 4 of the Royal Canal Greenway. A number of cable routes were considered, linking the two phases together directly, via trenchless crossing, routing to the north along Prospect Road and re-joining Phase 4 where possible and routing to the south along Leinster Street North and re-joining Phase 4 advanced ducting. Consideration was also given to installation of temporary circuits to be rerouted once all other planned projects on the site had been completed, however these was not considered to be a preferred option.

All options identified above are considered technically challenging and would be very challenging to construct. The route option in Option A following Prospect Road and not re-joining Phase 4 of the greenway upgrades is considered preferable in terms of technical difficulty and constructability.

- Irish Rail lands and Sheriff Street Upper

Through engagement with key stakeholders in the area around Sheriff Street Upper and Irish Rail's Dockland Station and North Wall Freight Depot, it was identified that a number of significant projects have the potential to disrupt any circuit installed in the area. The eastern end of Sheriff Street Upper is also considered to be highly congested with utilities and the placement of the circuit in this area was considered to be very technically challenging.

A preferred alternative was assessed through technical surveys and detailed route design. This alternative runs in North Quay Road and the planned sidewalk on East Wall Road that will be upgraded as part of the Liffey-Tolka Greenway. The Liffey-Tolka Greenway is expanding the sidewalk to include a cycle and pedestrian pathway. This provides space for the circuit to be located outside the congested roadway. The detailed design and assessment of this route has been completed to determine the route is feasible.

4.3.3.3. BPO Route Comparison

Using all the information gathered throughout this BPO Assessment, the route was assessed using EirGrid's five assessment categories to compare the ranking of this route at the current BPO phase with the ranking of the route after the Route Options Assessment phase. Table 4-3 shows the major constraints identified at this phase under each criterion for this route.

Table 4-3: BPO Route Assessment of Option C

Criteria	Step 4A Ranking	Comment	BPO Ranking
Technical		<p>The technical ranking of this route during the Route Options Assessment was low-moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • Non-standard trenchless crossings envisaged. <ul style="list-style-type: none"> ▪ Detailed review of the crossing of the Tolka River and Royal Canal identify there is limited space available, and as a result would require trefoil formation (in a single conduit) which is not a standard crossing formation. <p>As a result of these items, the ranking has been increased to mid-level/moderate in this assessment.</p>	
Deliverability		<p>The deliverability ranking of this route during the Route Options Assessment was mid-level/moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • All route alternatives identified to link Royal Canal Greenway Phase 3 and Royal Canal Greenway Phase 4 advanced ducting would be very challenging to construct. • The route along the eastern end of Sheriff Street Upper was found to be highly congested, a number of large diameter services exist in this area some of which were installed using trenchless means, the large chambers associated with these installations decrease the space available to install the circuits. <p>As a result of these items, the ranking has been increased to high in this assessment.</p>	
Economic		<p>No additional economic issues have been identified during the BPO route assessment phase. The economic assessment of this route remains at mid-level/moderate ranking.</p>	
Socio-Economic		<p>The socio-economic ranking of this route during the Route Options Assessment was low-moderate.</p> <p>The following has been identified during the BPO route assessment phase:</p> <ul style="list-style-type: none"> • The route passes through areas of cultural significance in Patrickswell Road. The potential impact, as highlighted too by public engagement feedback, increases the socio-economic ranking of this route. <p>As a result of these items, the ranking has been increased to mid-level/moderate in this assessment.</p>	
Environmental		<p>No additional environmental issues have been identified during the BPO route assessment phase. The environmental assessment of this route remains at mid-level/moderate ranking.</p>	
Overall		<p>The overall assessment ranking is moderate-high.</p> <p>This has increased from mid-level/moderate during the Route Options Assessment.</p>	

4.4 Identification of Best Performing Option

Table 4-4 shows a summary of the BPO Route Assessment, using EirGrid’s five multicriteria assessment categories. This assessment has been used to identify the Best Performing Option.

Table 4-4: Identification of Best Performing Option

Route	Length	Technical	Deliverability	Economic	Socio-Economic	Environmental	Overall
Option A	13.5	Non-standard trenchless crossings envisaged.	The use of Ratoath Road and the pedestrian bridges crossing over the railway corridors at Cross Guns Bridge improves the deliverability of this route option.	The economic ranking of this route remains at mid-level/moderate.	The socio-economic ranking of this route remains at mid-level/moderate. The changes identified at this phase reduce the impact on Finglas Road, however Glasnevin Cemetery is still passed, and North Quay will be impacted.	The environmental ranking of this route remains at low-moderate.	
Option B	13.8	Non-standard trenchless crossings envisaged.	The crossing of the Tolka River on Alfie Byrne Road has been assessed as a very technically challenging crossing location with limited space for a trenchless crossing.	The economic ranking of this route remains at mid-level/moderate.	There are a high number of ongoing construction projects in the Marino and Fairview area. Further construction works on this route will negatively impact the public in these areas.	The environmental ranking of this route remains at low-moderate.	
Option C	11.3	Non-standard trenchless crossings envisaged.	All routes identified to link Phase 3 and Phase 4 advanced ducting would be very challenging to construct and are not preferable route options.	The economic ranking of this route remains at mid-level/moderate.	The route passes through areas of cultural significance in Patrickswell Road. The potential impact, as highlighted too by public engagement feedback, increases the socio-economic ranking of this route.	The environmental ranking of this route remains at mid-level/moderate.	

The Best Performing Option identified through the work undertaken at this phase of the project is Option A. There are a number of changes to this route from the published Option A that were established during the Best Performing Options assessment, with particular focus on the feedback from landowners, stakeholders and the community and detailed design assessments. These route changes are discussed in Section 5.3.

5 DESCRIPTION OF THE BEST PERFORMING OPTION

5.1 Introduction

The Best Performing Option identified through the work undertaken at this step of the project is a development of the route previously identified as Option A during the public engagement. There are a number of changes to this route from Option A that were established during the Best Performing Options assessment, with particular focus on the feedback from landowners, stakeholders and the community. These changes are outlined in Section 5.3.

Additional work will be undertaken as this project moves through Steps 5 and 6 which will further refine the route. This work includes invasive site investigation and further engagement with landowners and local stakeholders. Changes to the route through steps 5 & 6 are not anticipated to cause any significant route alternations from that contained in this section.

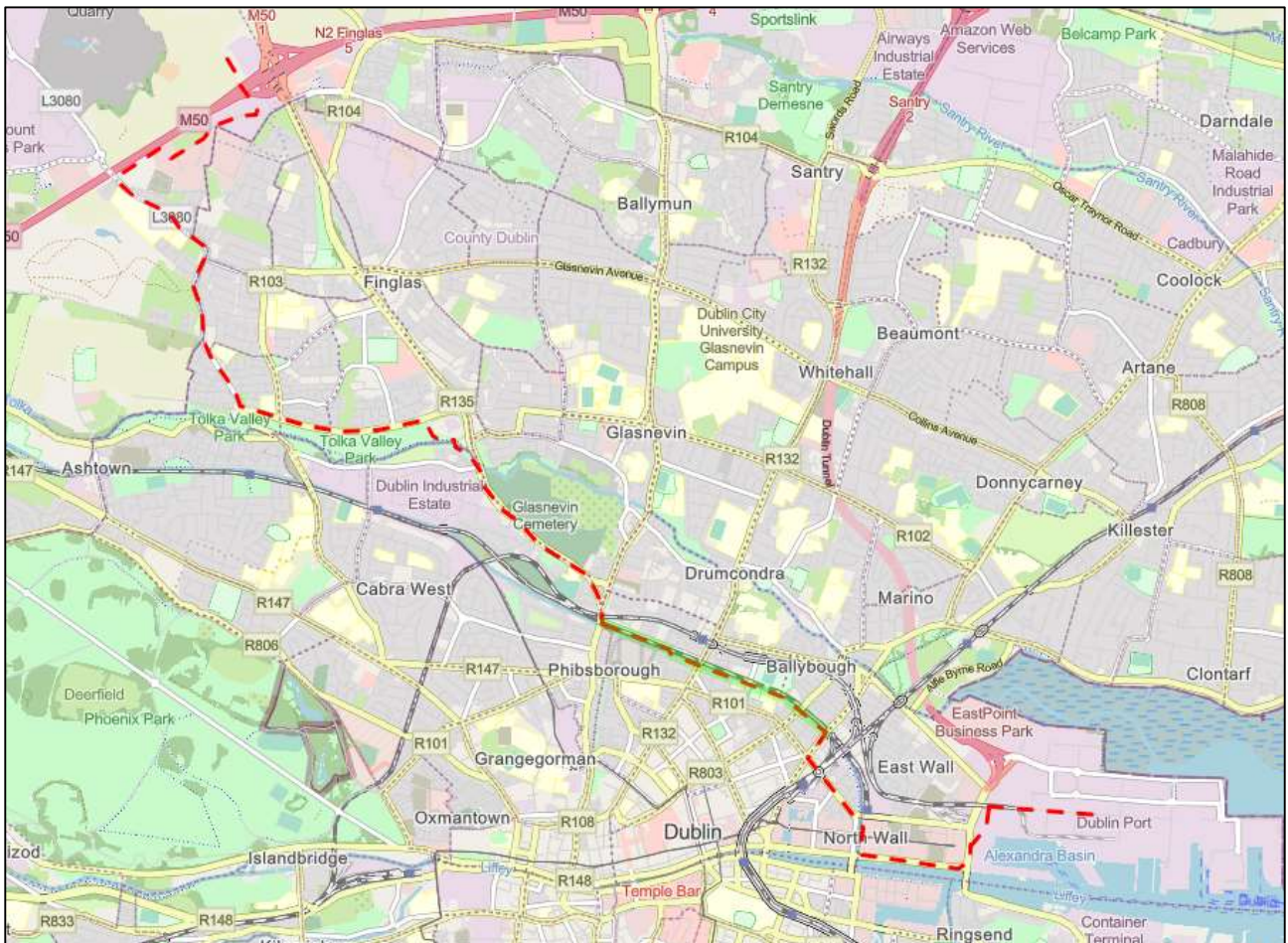


Figure 5-1: Finglas to North Wall Best Performing Option

In Figure 5-1, the section of the route highlighted in green will be delivered as part of the Royal Canal Greenway upgrades, Phase 3.

5.2 Route Corridor

The route corridor considered at this phase is the width of the public roadway (including pathways) or 20m wide where the route not located within public lands. This allows for the adjustments to the exact positioning of the circuit trench within this corridor depending on existing services to minimise the impact on the existing services and ensure ideal placement of the circuit within this corridor.

Within this route corridor, the circuit will be installed in a trench 1100mm wide. This follows the EirGrid standard for 220kV circuits in flat formation. Where required due to space constraints, the trench can be narrowed to 700mm, and the circuit can be laid in trefoil formation according to the EirGrid standard for 220kV circuits in trefoil formation. The exact location of this trench within the Best Performing Option route corridor is subject to site investigation and landowner agreement along the route.

The majority of the Best Performing Option is located within public roads. A traffic management plan will be established to ensure the minimal impact on road users. Depending on the location of the works, temporary single lane closures, temporary road closures, or night works may be required. The works will take place along small sections of the route, in approximately 50-100m long stretches at a time. This means that only small sections of the roads along the route will be disrupted at one time. This disruption is also temporary in nature, as once the road or section has been reinstated, normal activity can resume above the cables installed.


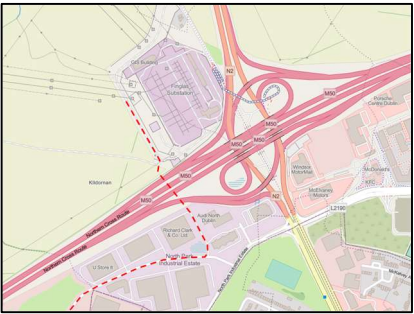
Approximately every 500-700m along the circuit route, a joint bay will be required to joint up the separate cable sections. These joint bays are 8x2.5m and will also require a temporary works area to facilitate construction. During the detailed design of the circuit route, careful consideration is given to the joint bay location to minimise the traffic impact of the works. Where it is necessary to locate a joint bay in the roadway, careful traffic management plans will be established to facilitate the flow of traffic around the works area and reduce the need for road closures.

The route crosses watercourses, utilities, the M50 motorway, and the railway. Trenchless techniques such as horizontal directional drill will be used to cross these major obstacles.

5.3 Route Changes from the Route Options Assessment Report

From the work undertaken to identify the Best Performing Option, including technical walkovers, stakeholder, landowner, and community engagement, changes were identified to EBO Option A. These changes have been defined in Table 5-1.

Table 5-1: Changes to Emerging Best Option

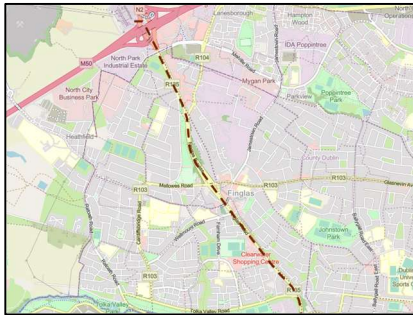
Option A / Emerging Best Option	Reason for Change	Best Performing Option
<p>M50 Crossing</p> 	<p>From the technical surveys and detailed assessment, it was determined there is insufficient space for the proposed 220kV circuit in the utility tunnels under the M50. A preferred alternative is a trenchless crossing to the west of these utility tunnels. Detailed design of a horizontal directional drill crossing in this location was completed to confirm the feasibility of the trenchless crossing in this location.</p>	

Option A / Emerging Best Option

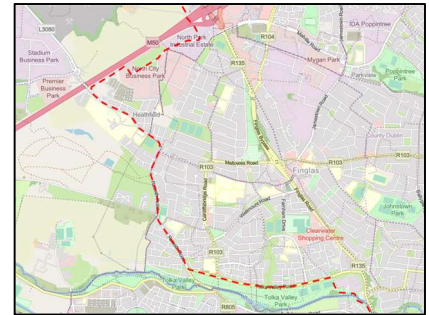
Reason for Change

Best Performing Option

Finglas Bypass to Finglas Road



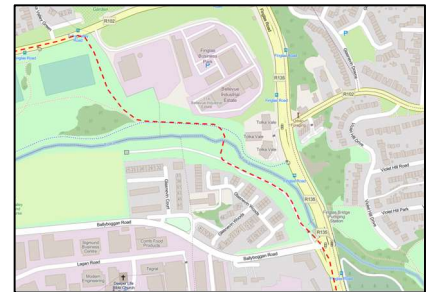
From the technical surveys and detailed route assessment, a preferred alternative to Finglas Bypass and the northern section of Finglas Road was identified. The preferred alternative on Ratoath Road reduces the traffic impact, expected construction time and socio-economic impacts of the route.



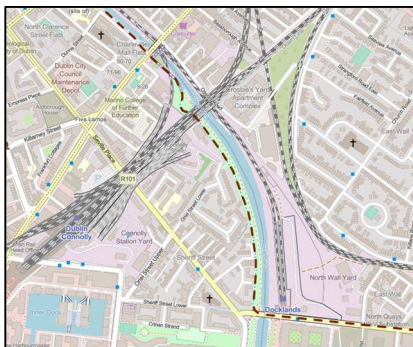
Tolka River Crossing



With the alternative route option of Ratoath Road identified above, a preferred crossing location of the Tolka River was identified. The crossing location uses the footpaths in Tolka Valley Park and crosses the Tolka River in the east of Tolka Valley Park. This crossing location minimises the traffic impact compared to the crossing location of Tolka River in Finglas Road as shown in Option A.



Royal Canal Greenway Phase 1



The route on Royal Canal Greenway Phase 1 crosses one railway line at a level crossing. A detailed crossing assessment was completed for this crossing, and it was determined to be very technically challenging.

A preferred alternative which travels on North Strand Road and Seville Place was identified. Through detailed design, this option has been confirmed as feasible and constructable.

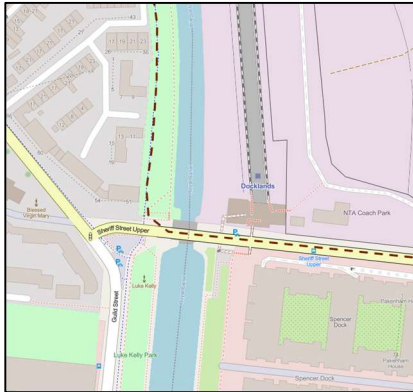


Option A / Emerging Best Option

Reason for Change

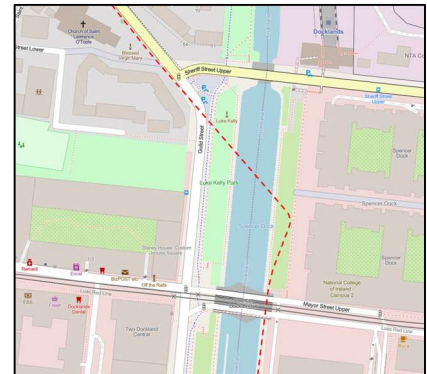
Best Performing Option

Royal Canal Crossing

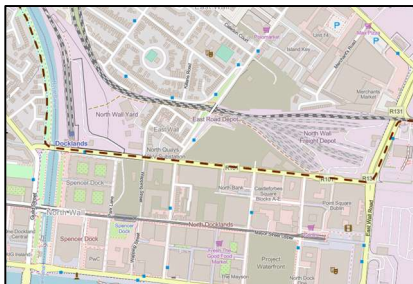


From technical surveys and assessments, the original crossing location is technically challenging. The lifting bridge is a historically protected structure and there is insufficient space on either side for a trenchless crossing.

A preferred crossing location to the south of this point was identified. There is green space available on either side of the Royal Canal in this location in which trenchless crossing works can be located.



Sheriff Street Upper



Through engagement with key stakeholders in the area around Sheriff Street Upper, and due to planned projects along this street, placement of the circuit in this road was very technically challenging.

A preferred alternative on North Quay was assessed through technical surveys and detailed route design and is feasible and constructable. This route option complements the change in crossing location of the Royal Canal, identified above.



5.4 Summary of the Route

This section contains a detailed description of the Best Performing Option route. The description has been split into subsections based on major features to be crossed or other logical blocks within the route.

5.4.1 Finglas Substation to M50

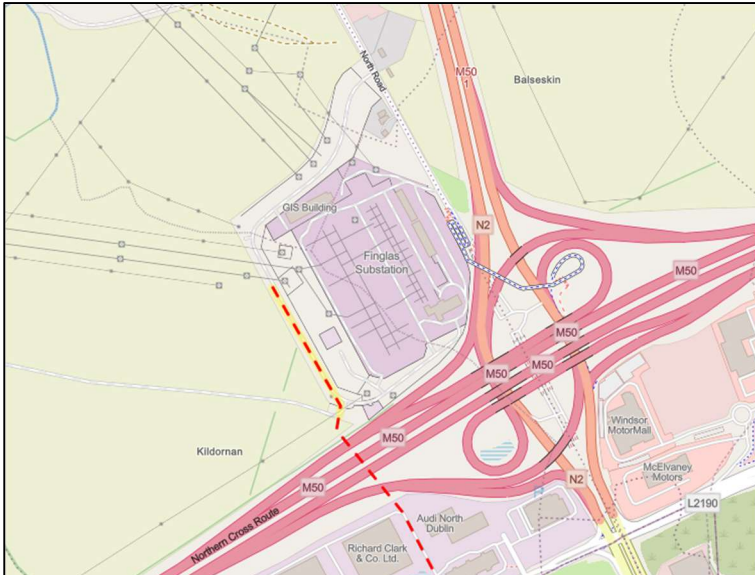


Figure 5-2: Best Performing Option: Finglas Substation to M50

The route commences at the boundary fence of Finglas substation and runs within a paved access road for 250m until it enters farmlands for approx. 90m. At this point a trenchless crossing of the M50 is required.

5.4.2 Trenchless Crossing of M50 Motorway

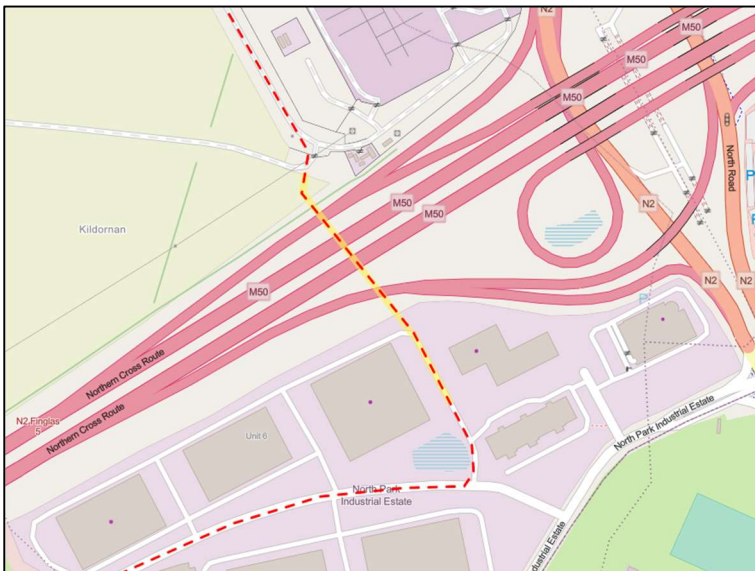


Figure 5-3: Best Performing Option: Trenchless Crossing of M50 Motorway

A trenchless crossing of the M50 Motorway will be completed at the location shown in Figure 18. The crossing will be approximately 125m in length and will most likely be completed via horizontal directional drill (HDD), however another trenchless method may be required dependant on the outcome of site investigation. The crossing methodology and detailed design will take place in Step 5 of this project.

5.4.3 M50 to Cappagh Road

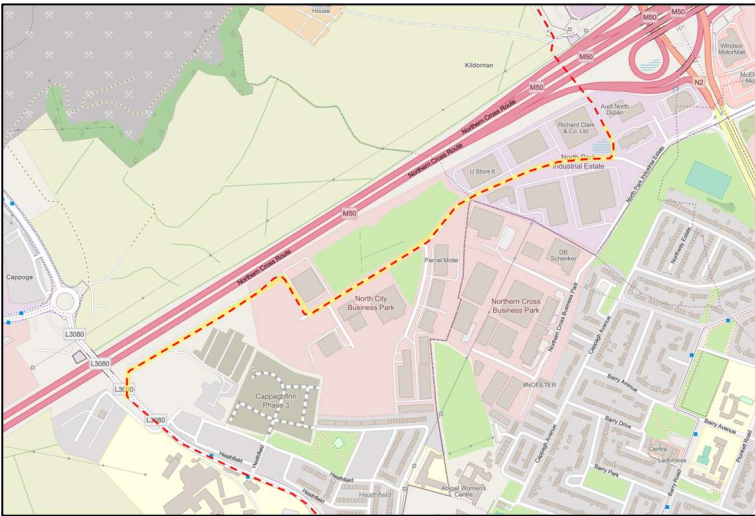


Figure 5-4: Best Performing Option: M50 to Cappagh Road

From the M50 crossing the proposed route will run within the paved areas and internal access roads of the North Park Industrial Estate and North City Business Park for approx. 985m.

At this point the route turns northwest onto open ground towards the M50 for 100m and then runs parallel to the M50 alongside existing utilities in open ground for 400m then turning south for 75m to meet Cappagh Rd.

5.4.4 Cappagh Road to Tolka Valley Park

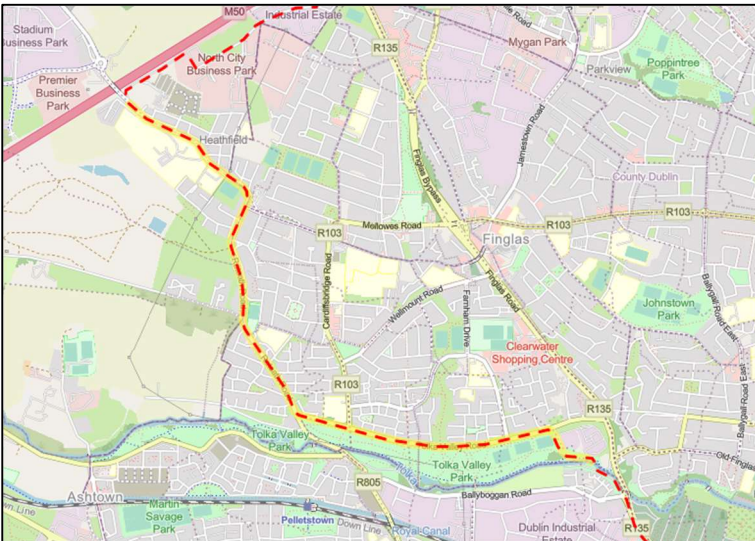


Figure 5-5: Best Performing Option: Cappagh Road to Tolka Valley Park

The route follows Cappagh Rd within the existing road verge on its southern side for 965m, to facilitate the construction of joint bays the route will extent into verges and green spaces adjacent the road in a number of locations for approximately 25m.

Cappagh Rd transitions into Ratoath Rd and the route follows this road for 1325m which includes a narrower section of road approx. 450m in length where either a road closure or night-time works may be required to facilitate construction.

The route then turns to the east and runs along the southern side of the Tolka Valley Rd for 1490m before the route turns south and into the Tolka Valley Park. The route runs adjacent to the eastern edge of the park for 200m and joins the footpath adjacent to the Tolka River. The route follows this footpath for 130m and at this point transitions to a trenchless crossing of the Tolka River.

5.4.5 Trenchless Crossing of Tolka River

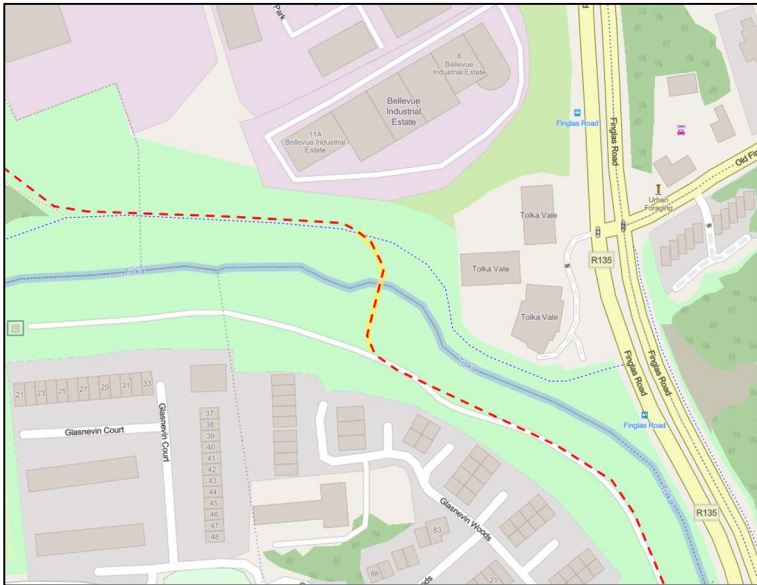


Figure 5-6: Best Performing Option: Trenchless Crossing of Tolka River

A trenchless crossing of the Tolka River will be completed at the location shown in Figure 21. The crossing will be approximately 60m in length and will most likely be completed via horizontal directional drill (HDD), however another trenchless method may be required dependant on the outcome of site investigation. The crossing methodology and detailed design will take place in Step 5 of this project.

5.4.6 Finglas Road to Cross Guns Bridge

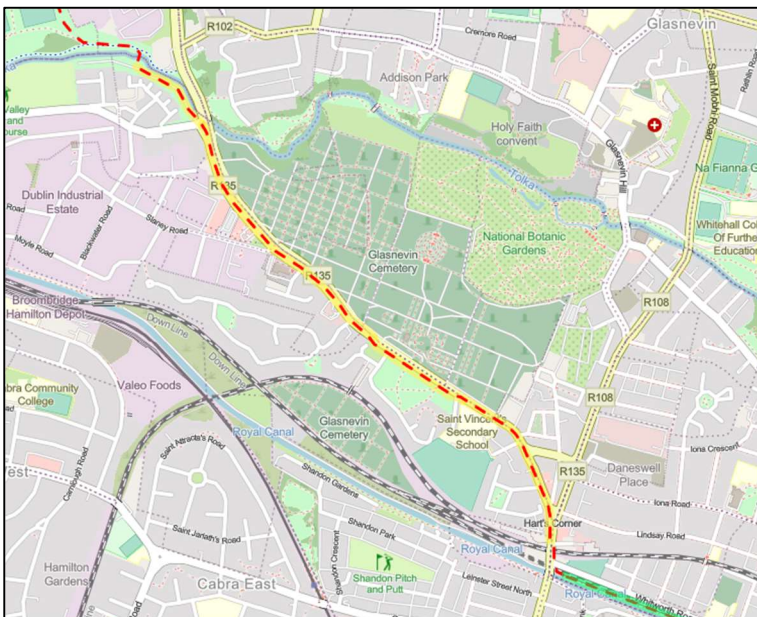


Figure 5-7: Best Performing Option: Finglas Road to Cross Guns Bridge

From the Tolka River crossing, the proposed route follows the southern footpath out of Tolka Valley Park for 245m and onto Finglas Road. The route runs within Finglas Road and Prospect Road for 1650m where it comes to the bridges over the railway lines.

5.4.7 Cross Guns Bridge (Prospect Road to Royal Canal Greenway)

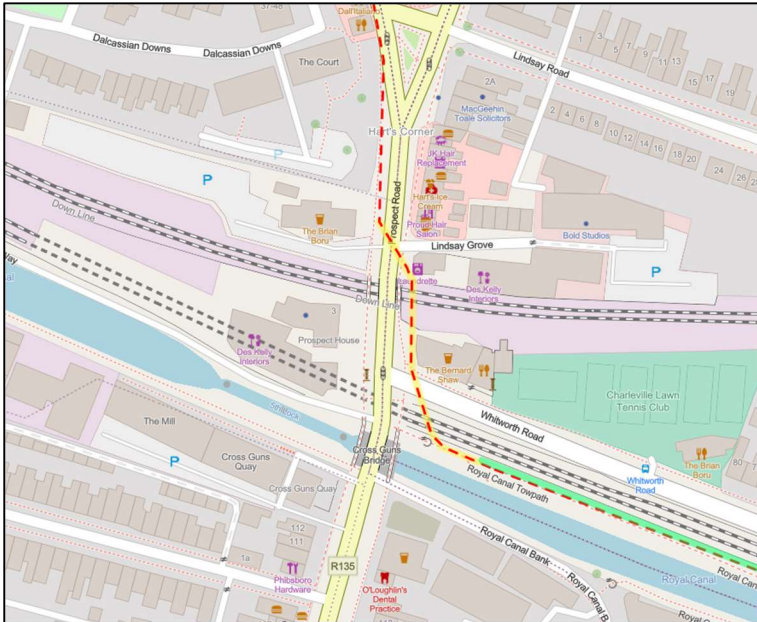


Figure 5-8: Best Performing Option: Cross Guns Bridge (Prospect Road to Royal Canal Greenway)

At Cross Guns Bridge, the route crosses over the Western Commuter and the Southwestern Commuter railway lines which are in cut and joins onto the Royal Canal Greenway. The circuit will likely be placed within the new pedestrian bridges that will be built as part of the BusConnects Ballymun/Finglas to City Centre Core Bus Corridor Scheme project. The crossing methodology and detailed design will take place in Step 5 of this project.

5.4.8 Royal Canal Greenway Phase 3

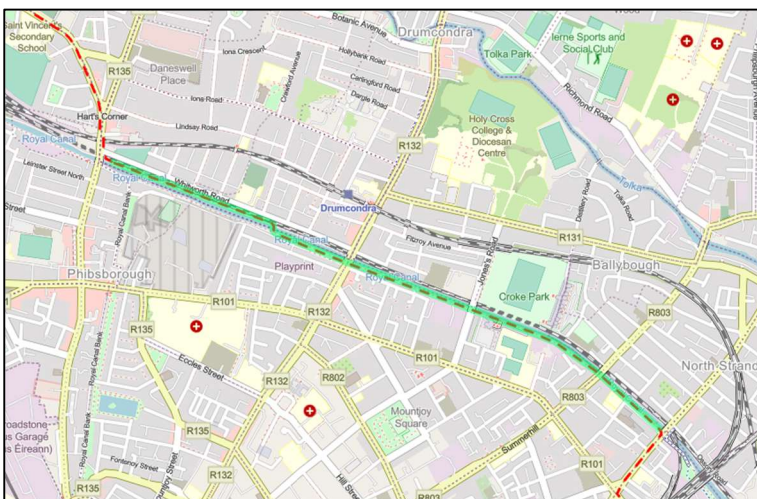


Figure 5-9: Best Performing Option: Royal Canal Greenway Phase 3

Advanced ducting to facilitate the Powering Up Dublin project is being installed as part of the Royal Canal Greenway Phase 3 along this section of the route. This includes installation of ducting, joint bays and inspection chambers.

5.4.9 Royal Canal Greenway Phase 3 to Royal Canal crossing - Seville Place

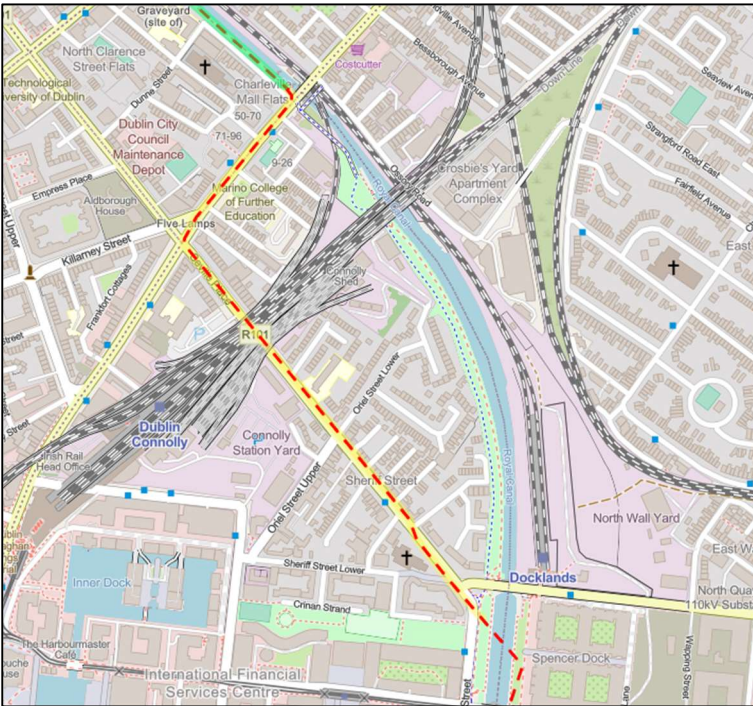


Figure 5-10: Best Performing Option: Royal Canal Greenway Phase 3 to Royal Canal crossing - Seville Place

At the end of the Royal Canal Greenway Phase 3 upgrades advanced ducting section, the route turns south and runs in North Strand Road. At the intersection with Seville Place, the route turns onto Seville Place and runs south-east as it becomes Guild Street. The route follows Guild Street to the trenchless crossing of the Royal Canal.

5.4.10 Trenchless Crossing of Royal Canal

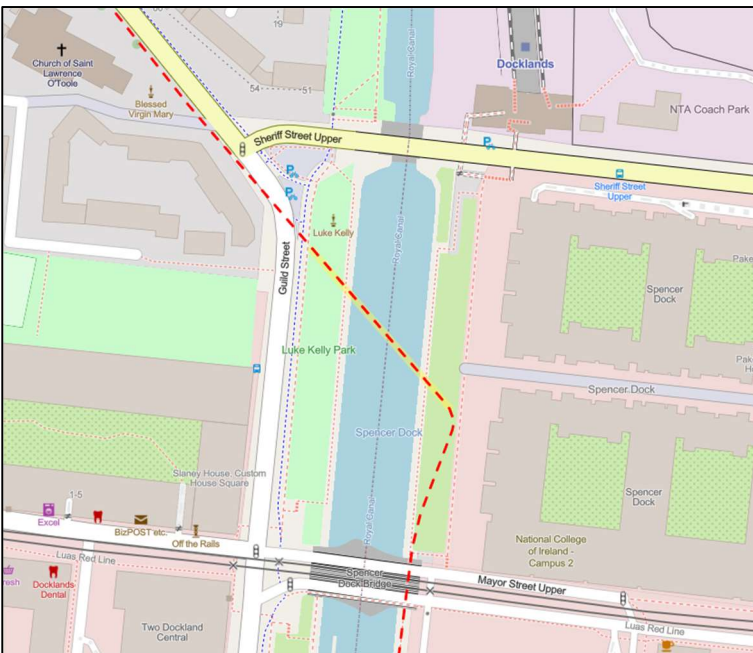


Figure 5-11: Best Performing Option: Trenchless Crossing of Royal Canal

A trenchless crossing of the Royal Canal will be completed at the location shown in Figure 26. The crossing will be approximately 55m in length. The crossing methodology and detailed design will take place in Step 5 of this project.

5.4.11 Crossing of Luas Red line

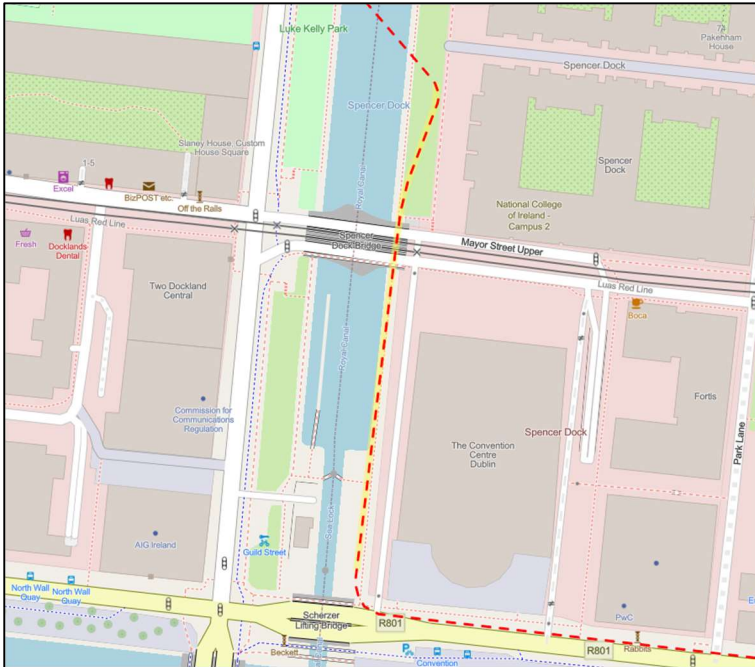


Figure 5-12: Best Performing Option: Crossing of Luas Red line

On the eastern side of the Royal Canal, the route travels south on the footpath adjacent to the Canal. The footpath crosses under Spencer Bridge and under the Luas Red line.

5.4.12 Royal Canal to Alexandra Road



Figure 5-13: Best Performing Option: Royal Canal to Alexandra Road

From the eastern side of the Royal Canal, the proposed route will run in North Wall Quay to the intersection with East Wall Road. The route runs in the footpath on the eastern side of East Wall Road, which will be developed as part of the Liffey-Tolka Greenway, onto Precinct Road and joins Alexandra Road.

5.4.13 Alexandra Road to North Wall Substation



Figure 5-14: Best Performing Option: Alexandra Road to North Wall Substation

The route is expected to travel on the southern side of Alexandra Road to avoid the railway lines on the northern side however this will be subject to detailed design. The route follows this road for approximately 980m where it reaches the North Wall Substation.

6 CONCLUSION

Following publishing of the Route Options Assessment Report and the public consultation, work has continued to develop and refine the Emerging Best Option through design, assessment, and surveys of the routes. EirGrid has also engaged with key stakeholders, such as local authorities, asset owners and landowners and considered feedback from the consultation stage. This has allowed the refinement of the Emerging Best Options and identification of the Best Performing Option.

On the basis of the assessments complete, a refined version of the Option A route as shown in this report is the Best Performing Option.

The route refinements have increased the circuit length from 10.8 km to 13.5 km. This increase in length is mainly due to the route using Cappagh Road and Ratoath Road, improving the deliverability and socio-economic impacts of the route.

Further minor route refinements may be needed at Step 5, after the completion of additional design, surveys, engagement, and assessment. Feedback will be sought privately on the developing design from affected landowners, local communities, and prescribed bodies. Details will be provided to the public on EirGrid's website. Additional design features may be incorporated at Step 5, but these will generally be within the area of the route described, a final decision will be made at Step 5.

7 NEXT STEPS

The following actions will be completed on the Finglas to North Wall project as part of the wider Powering up Dublin Replacement Underground Cable programme:

- EirGrid will publish this Best Performing Option Report (Step 4B Report). Where appropriate the route will be refined, on the basis of feedback, additional information or other engagement;
- EirGrid will continue to engage with affected landowners, local communities, local councillors, the Community Forum, and other relevant stakeholders to discuss the Finglas to North Wall project as part of the wider Powering up Dublin programme;
- EirGrid will continue to engage with bodies such as Fingal County Council and Dublin City Council, Transport Infrastructure Ireland, the National Transport Authority, Inland Fisheries Ireland, Irish Rail, and utility providers such as Uisce Éireann and Gas Networks Ireland. Initial meetings have taken place with some of these organisations and subsequent meetings will be facilitated to examine further details of the proposed route design;
- EirGrid will engage with environmental stakeholders such as the EPA, Local Authorities, Inland Fisheries Ireland, the National Parks and Wildlife Service, and local authority heritage officers. Matters to be discussed will include the agreement of watercourse crossing mitigation and reinstatement principles. EirGrid will incorporate biodiversity enhancement into the design where possible. Natural recolonisation will be adopted, in lieu of sowing commercial wildflower seed in the reinstatement of semi-natural habitats. All biodiversity enhancement methods will be discussed in consultation with relevant stakeholders;
- EirGrid will determine the requirement for statutory applications such as planning permission and foreshore licences in accordance with the statutory requirements. Appropriate Assessment screening and EIA screening may be undertaken as part of this process;
- EirGrid will complete a range of studies, investigations, and surveys to confirm the route design and support any necessary statutory applications. This will include consideration of the approach to the construction phase and potential mitigation measures, such as traffic management, to minimise traffic disturbance. Surveys include archaeology, ecology, marine investigations, ground investigations, utility surveys, hydrology, and technical assessments. As these surveys are progressed and further information is gathered, new issues may be identified, resulting in changes to the route. This is a normal part of the design development process;
- Further design work will be progressed to ensure that the final design of the route is optimal and has the minimal adverse impact on the public and the environment;
- The Project Team will prepare the necessary licences (including Road Opening licences) and agreements to progress the Project through the construction stage and will continue to identify measures to minimise impacts and disruption; and
- Further updates will be published by EirGrid on the project website: [Powering Up Dublin](https://www.eirgrid.ie).