

ENVIRONMENTAL DESKTOP REPORT

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REPORT

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15 November 2021

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Appendices

Appendix A Constraints Mapping

1 INTRODUCTION

System Operator for Northern Ireland (SONI) have commissioned RPS to provide a desktop constraints study in respect of the proposed works to the Carnmoney to Eden section of the Ballylumford to Castlereagh 110 kV double circuit.

The Electricity Board for Northern Ireland constructed a double circuit 110 kV tower line in 1943 between Ballylumford Power Station in Islandmagee and Rosebank Main in East Belfast. The tower line also supplied Eden, Carnmoney, and Finaghy bulk supply points along the route. This tower line formed part of the original transmission system for Northern Ireland.

In the late 1960s the 275 kV system was constructed in Northern Ireland. As part of this project, the 110 kV double circuit was diverted in the newly constructed Castlereagh grid supply point. Since that work was completed, the double circuit has served to supply load at Eden Main and Carnmoney Main as well as provide a 110 kV feed to Castlereagh.

Notably, since the line was constructed, development has occurred in and around the route corridor on the Carnmoney to Eden route. This includes residential development and transport links including the M1 and M2. These present potential barriers to the refurbishment works as some towers have essentially become landlocked by housing.

An assessment of the line identified number of condition issues which have been identified, this includes conductors being assessed as *end of life*, corrosion of sections of towers and foundation defects. Due to this a programme of works is to be proposed for the entirety of the double circuit.

Works required along the double circuit are being considered in four sections:

- Ballylumford to Eden;
- Eden to Carnmoney;
- Carnmoney to Finaghy; and
- Finaghy to Castlereagh

This report is intended to form the Options for the Eden – Carnmoney section which has received approval for the refurbishment works.

This report represents the interim findings of the constraints study and an outline of the likely consenting requirements, associated environmental assessments and supporting information which may be required in delivering the project.

2 DEFINITION OF WORKS

SONI have provided RPS with the Carnmoney to Eden Options Report (dated 17/01/2021) which provides an assessment of Options which are intended to address the issues around the existing double circuit line.

The option report assesses the feasibility of refurbishing the existing tower line and consideration of alternative Options involving either the full or partial removal of the double circuit. In addition the report provides the results of *technical, economic, deliverability and socio-economic studies with a preliminary recommendation, based on the information at present... made on the preferred option.*

A Long List of Options (ranging from removing the line entirely, to retaining sections of the circuit in combination with underground cable along difficult sections). The SONI Carnmoney to Eden Options Report Draft rationalised the Long List into a Short List of Options. It is these Options which will be taken forward in any environmental reporting to be undertaken as outlined within this proposed scope of works.

The existing Carnmoney to Eden 110 kV falls within the boundary of two local authorities, Antrim and Newtownabbey and Mid and East Antrim Borough Councils.

SONI have provided GIS data in respect of the existing lines and proposed new elements as relevant to the Options noted above.

The Options are defined below;

2.1 Description of Options

The Options include refurbishing the existing tower line and alternative Options which involve either the full or partial removal of the double circuit and construction of new towers and cable circuits which will provide a connection between Carnmoney and Eden. In all cases (Options 1 – 3), an additional transformer will be required to be installed at Glengormley substation, within NIE Network, operational land.

The Options have been defined as follows:

| Option | Description |
|--------|--|
| 1 | Refurbishment of Entire Circuit |
| 2 | Carrickfergus and Carnmoney Undergrounding |
| 3 | Carnmoney Undergrounding |

Figure 2.1 illustrates an overview of the existing Carnmoney to Eden 110 kV line and potential undergrounding locations.

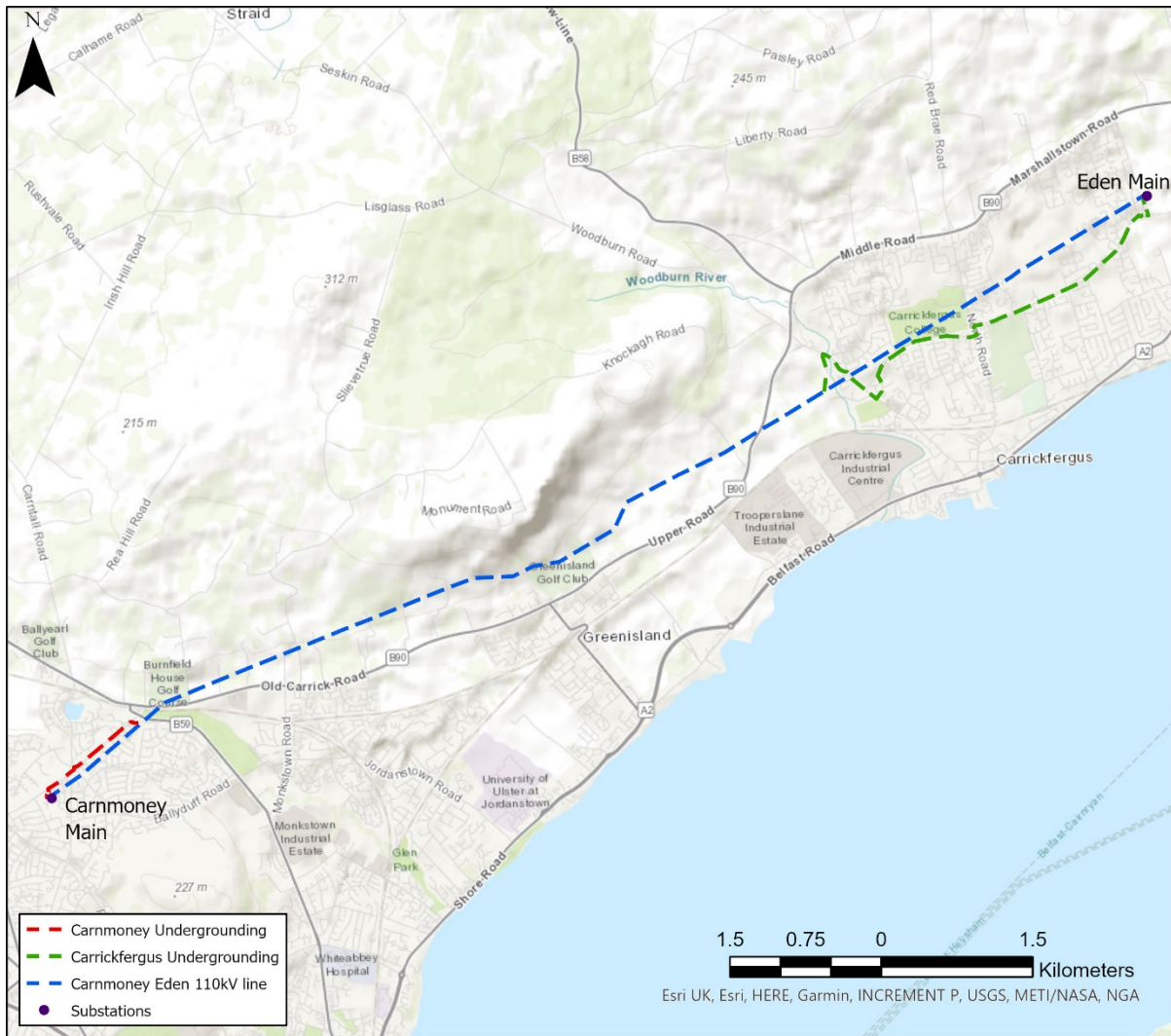


Figure 2.1 Overview of Options

2.1.1 Option 1 Refurbishment of Entire Circuit

Option 1 consists of retaining and refurbishing the Carnmoney to Eden sections of the Ballylumford to Castlereagh 110 kV double circuit (Figure 2.2). This would involve the double circuit being restrung with *Upas* conductor, giving a minimum rating of 144 MVA.

The option would include the replacement of at least two towers near Eden Main, there would also be work on the tower foundations and steel works at some towers.

An additional transformer will also be required to be installed at Glengormley substation, within NIE Network, operational land.

The refurbishment of the Carnmoney to Eden section is estimated to cost £8.8 million.

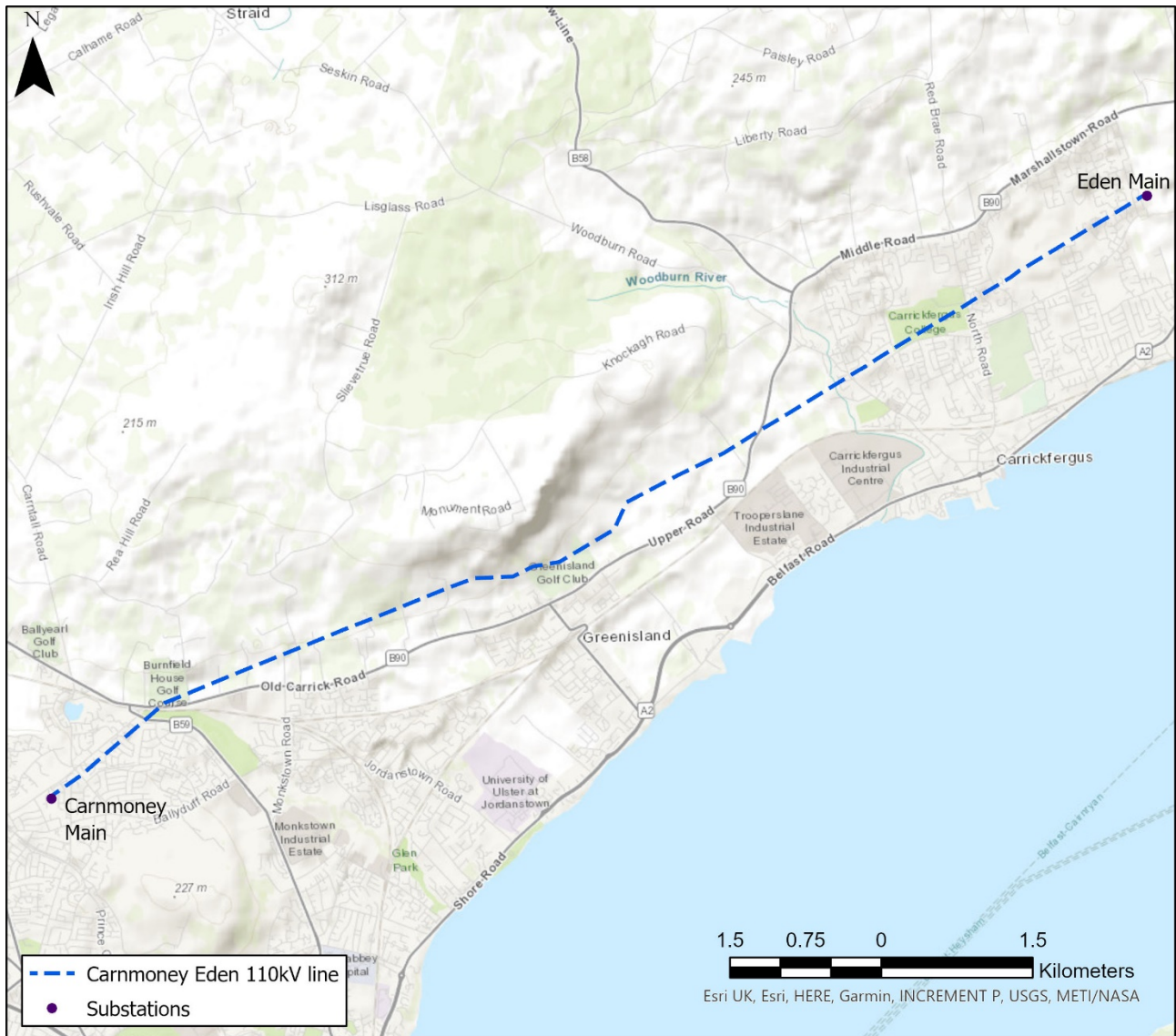


Figure 2.2 Option 1

2.1.2 Option 2 Carrickfergus and Carnmoney Undergrounding

Option 2 consists of the Carrickfergus to Carnmoney section of the Carnmoney to Eden 110 kV double circuit being retained and refurbished, as shown in Figure 2.3. Option 2 would involve the retained sections being restrung with *Upas* conductor, giving a minimum rating of 144 MVA. The areas of double circuit in residential areas of Carrickfergus and Carnmoney would be dismantled and recovered and replaced with double circuit cables with a minimum rating of 110 kV.

The option would include foundation works to at least 19 of the 27 towers.

Option 2 would also require new terminal towers, adjacent to Carnmoney substation and Carrickfergus substations; subject to final design, the terminal towers may be located outside of the existing circuit alignment. An additional transformer will also be required to be installed at Glengormley substation, within NIE Network, operational land.

The estimated cost of this option is approximately £20.4 million.

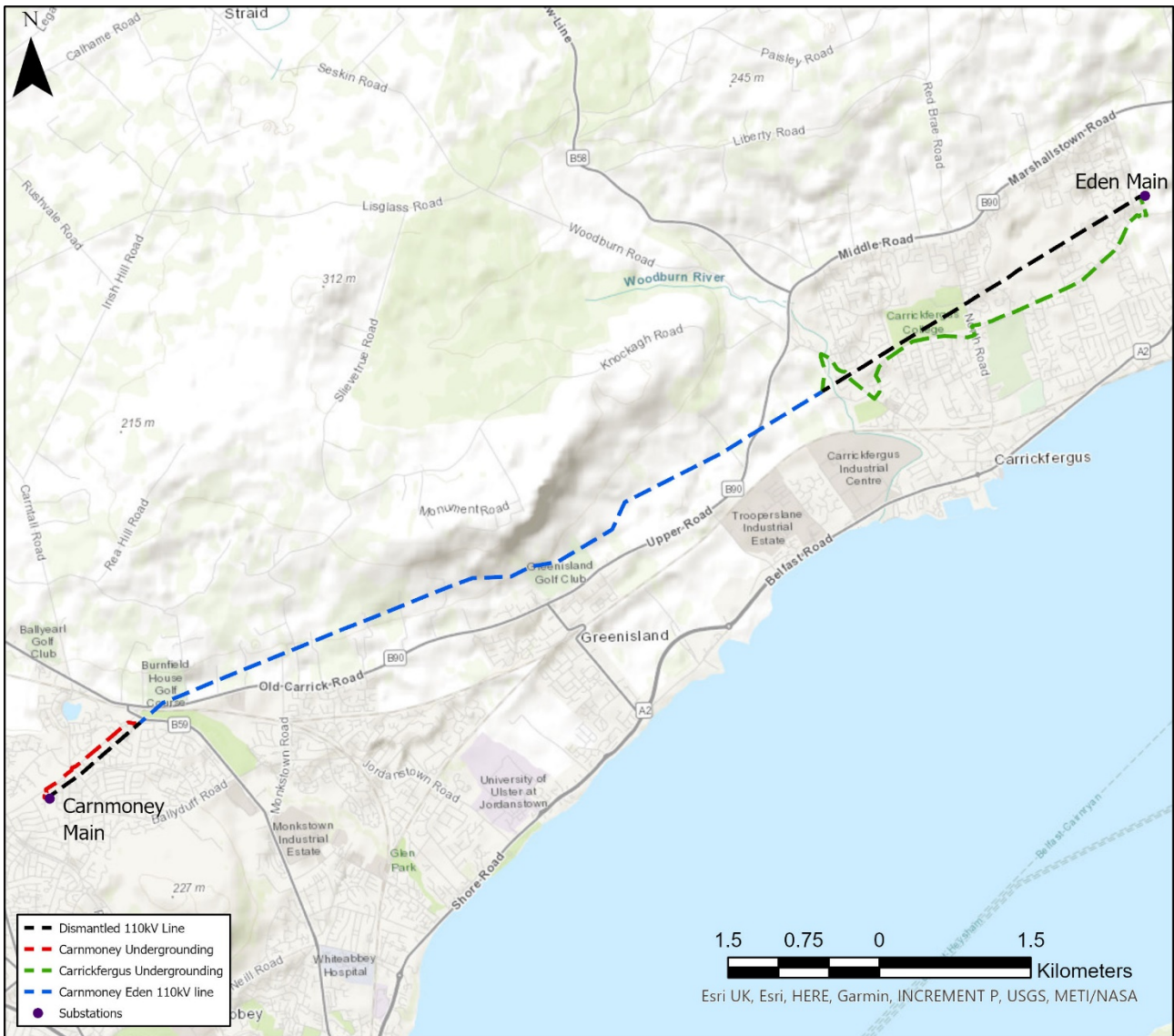


Figure 2.3 Option 2

2.1.3 Option 3 Carrickfergus Undergrounding

Option 3 is similar to Option 2, however the overhead line in Carrickfergus is retained and refurbished, as shown in Figure 2.4. Option 3 would involve the retained sections being restrung with *Upas* conductor, giving a minimum rating of 144 MVA. The areas of double circuit in the Carrickfergus residential areas would be dismantled and recovered and replaced with double circuit cables with a minimum rating of 110 kV.

Option 3 would also require a new terminal tower, adjacent to Carrickfergus substation; subject to final design, the terminal tower may be located outside of the existing circuit alignment. An additional transformer will also be required to be installed at Glengormley substation, within NIE Network, operational land.

The estimated cost for this option is approximately £14.44 million.

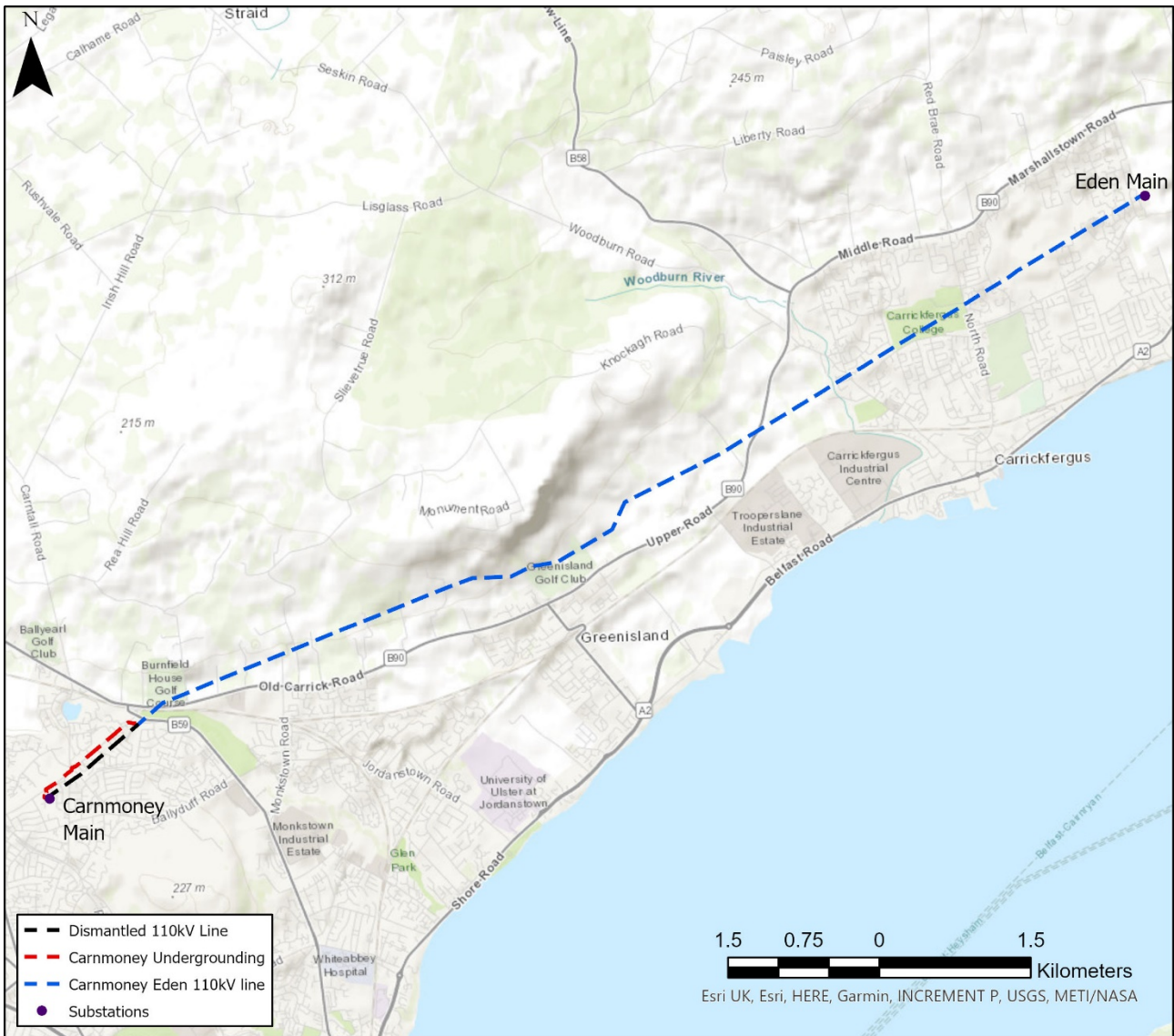


Figure 2.4 Option 3

3 SUMMARY OF CONSTRAINTS

3.1 Constraints Mapping

The potential constraints in the area of each Option are categorised into environmental, heritage, social, technical and visual. The Options have been illustrated in relation to these constraints in the drawings contained in Appendix A of this report:

- IBE1917 Environmental Constraints
- IBE1917 Heritage Constraints
- IBE1917 Social Constraints
- IBE1917 Technical Constraints and Opportunities
- IBE1917 Visual Constraints

Given the relative commonality and the limited geographic range between the Options, many of the potential constraints are common to more than one or all of the Options. For completeness, constraints have been described in full, as applicable to each Option.

3.2 Option 1 Constraints

Option 1 consists of the refurbishment of the entire Carnmoney to Eden 110 kV line. This option encounters the following constraints:

3.2.1 Environmental Constraints

The environmental constraints along the Carnmoney to Eden 110 kV line include three Sites of Local Nature Conservation Importance (SLNCI): Three Mile Water; Knockagh - Dorisland; and Oakfield. Each council area in Northern Ireland reports on locally important sensitive or valued habitats through the production of Local Biodiversity Action Plans (LBAPs). These Plans outline the areas of importance, such as SLNCIs, for natural heritage reasons within the council area, guiding development policy and potential enhancement of local biodiversity. The Three mile Water and Knockagh – Dorisland SLNCIs are within the Antrim and Newtownabbey Borough Council area and the Oakfield SLNCI is within the Mid and East Antrim Borough Council area. These are identified areas which support habitats, species or earth science features.

Given that the Carnmoney to Eden 110 kV line already passes through these SLNCIs, any refurbishment works associated with Option 1 will likely be short term and temporary in nature and will be confined to the construction phase. Particular care should be taken during the construction phase of the refurbishment works to avoid impacts via disturbance to habitats or sediment loss into waterbodies.

The Carnmoney to Eden 110 kV line is located within close proximity to Belfast Lough which is both an SPA and SAC; the principal features of these designations are the breeding colony of Common and Arctic Tern and the wintering populations of Redshanks, Bar-tailed Godwit and Black-tailed Godwit. Whilst offset from the Lough, works to the line associated with Option 1 a potential hydrological link could provide a pathway for sediment release which may impact water quality within these rivers, however this is likely to be short term and temporary and would be confined to the construction phase.

The Carnmoney to Eden 110 kV line passes across numerous rivers, two of which are known to contain salmonid species: Woodburn River (UKGBNI1NE050501120); and Three Mile Water (UKGBNI1NE050501118). The Atlantic salmon (*Salmo salar*), which are a key feature of these rivers, are internationally in decline. Therefore, any development particularly adjacent to or hydrologically connected to the river must ensure the conservation of the Atlantic salmon is considered. Given that Option 1 will involve refurbishment of the line, it is anticipated that any potential impacts (via noise, vibration or sediment release) to these waterbodies would be short term and temporary and would be confined to the construction phase.

The Woodburn River is also used for drinking water. In addition, the line overlaps the boundary of the Dorisland Surface Water Drinking Water Protected Area (UKGBNIPA1_10020) and Belfast Hills Island Magee Ground Water Drinking Water Protected Area (UKGBNIPA1_30017). These areas are protected under the Drinking Water Directive (98/83/EC). Any refurbishment works to the line associated with Option 1 could potentially

cause sediment release which may impact water quality within these rivers, however this is likely to be short term and temporary and would be confined to the construction phase.

3.2.2 Heritage Constraints

The Carnmoney to Eden 110 kV line passes close to a number of heritage features. These include records listed under the industrial heritage record, defence heritage record, listed buildings and the scheduled monument record.

The line does not pass directly through any heritage records, however there are Scheduled Monument Records approximately 30m away from the proposed route of the refurbishment of the line and Industrial Heritage Records approximately 50m away. It is anticipated that any impacts to these heritage sites would be minimal. However, refurbishment works associated with Option 1 could be constrained by any heritage sites in close proximity. Any refurbishment work done to the line should be undertaken with consideration of the location of these heritage features and their sensitivities.

3.2.3 Social Constraints

The Carnmoney to Eden 110 kV line passes through the settlement of Carnmoney, which has a low to medium population density in the vicinity of the line. The line extends northeast up to the settlement of Carrickfergus which has low to medium population density, in the vicinity of the line.

Given that the 110 kV line is already present in this area, and Option 1 would involve the refurbishment of the line, potential impacts are likely to be short term and temporary in nature and confined to the construction phase. The potential impacts during the construction phase are likely to be associated with noise, vibration and increased traffic congestion. As a number of towers are located in close proximity to residential properties, it is anticipated that during foundation works to towers there could be significant disruption to residents in the area. In some areas this could require residents to leave their houses for several weeks and could involve the partial demolition and rebuilding of their properties. Potential impacts are anticipated to be minimal outside the settlement boundaries given the much lower population.

Given that Carnmoney and Carrickfergus are residential areas, there may be restrictions on accessing the line, which may increase the duration of the construction phase works.

3.2.4 Technical Constraints

There are a number of technical constraints which have the potential to impact the refurbishment of the Carnmoney to Eden 110 kV line (Option 1). These technical constraints include both pluvial and fluvial flood extents, the Belfast to Derry/Londonderry Railway Line, the gas transmission line and areas of historic land use.

The Carnmoney to Eden 110 kV line passes through both pluvial and fluvial flood extents which may be a potential constraint to refurbishment works. In these areas there is the potential that refurbishment works may be difficult due to poor ground conditions and difficult construction conditions. Consideration should be given to the timings and seasonality of the works in conjunction with limitations on network outages outside of April – October.

The Carnmoney to Eden 110 kV line passes across the Belfast to Derry/Londonderry railway line. During the refurbishment works associated with Option 1 there is potential for disruption to traffic along the railway line. This disturbance would be confined to the construction phase of the works and is likely to be short term and temporary in nature.

The line also passes across a gas transmission line. Potential impacts associated with the re-string are anticipated to be minimal, however the replacement of towers or alteration of tower foundations should be undertaken in consideration with the location of the gas line and the potential impacts associated with below-ground works.

The Carnmoney to Eden 110 kV line lies in close proximity to multiple areas of historic land use, which have the potential for being contaminated sites. As the line is already constructed, there will be no change in land use and so potential impacts are anticipated to be minimal. The replacement of towers or alteration of tower foundations should be undertaken in consideration with the location of these historical areas and their land use.

3.2.5 Visual Constraints

The landscape in the area of the existing Carnmoney to Eden 110 kV line is considered to have a high – medium sensitivity to windfarm development for the most part, with a high sensitivity noted along the central section of the line, in the Greenisland area. Sensitivity to wind farm development scores indicate a visual sensitivity based on the surrounding landscape. There is potential for short term and temporary impacts to the visual landscape during the construction phase. However, given that the 110 kV line already exists in the area, there are no additional long term impacts to the visual landscape anticipated.

3.3 Option 2 Constraints

Option 2 involves retaining and refurbishing part of the Carnmoney to Eden 110 kV line and in the residential areas of Carnmoney and Carrickfergus the double circuit will be dismantled, removed and replaced with underground double circuit cables.

This option encounters the following constraints:

3.3.1 Environmental Constraints

The environmental constraints along the Carrickfergus section of the new double circuit cables include a Salmonid river as well as numerous river crossings. The new section of underground cabling passes across or under the Woodburn River (UKGBNI1NE050501120), which is known to contain salmonoid species. The Atlantic salmon (*Salmo salar*), which are a key feature of these rivers, are internationally in decline. Therefore, any development particularly adjacent to or hydrologically connected to the river must ensure the conservation of the Atlantic salmon is considered. The salmonid river could prove to be a constraint to works due to the legislative environmental protection (Fisheries Act) for salmonids. During the dismantling of the line and the undergrounding of the cable there is the potential for significant impacts (via noise, vibration or sediment release) on water quality, however these potential impacts should be short term and confined to the construction phase.

The route of the new double circuit cable in Carrickfergus also passes in close proximity (approximately 15m) to the Oakfield SLNCl and an area of potential ancient woodland. The location and potential impacts on these areas should be considered during the construction phase of any undergrounding works. However, it should be noted that there is anticipated to be an improved visual setting on the Oakfield SLNCl and ancient woodland due to the removal of the overhead 110 kV line.

The Carnmoney to Eden 110 kV line is located within close proximity to Belfast Lough which is both an SPA and SAC; the principal features of these designations are the breeding colony of Common and Arctic Tern and the wintering populations of Redshanks, Bar-tailed Godwit and Black-tailed Godwit. Whilst offset from the Lough, works to the line associated with Option 2 a potential hydrological link could provide a pathway for sediment release which may impact water quality within these rivers, however this is likely to be short term and temporary and would be confined to the construction phase.

The environmental constraints along the Carnmoney section of the new double circuit cables include a Salmonid river and SLNCl (Three Mile Water). As Option 2 involves the removal of a section of the Carnmoney – Eden 110 kV double circuit and replacing it with a new double circuit line, potential impacts to the Three Mile Water could be sediment release into the water course or noise and vibration which could impact on water quality and aquatic species within the waterbody. However, these impacts are anticipated to short term and temporary in nature and can mitigated for with good planning and good site practice.

The environmental constraints along the section of line which is retained and restrung include the Knockagh – Dorisland SLNCl and the Three Mile Water SLNCl. Given that the Carnmoney to Eden 110 kV line already passes through these SLNCl's, any refurbishment works associated with Option 2 will likely be short term and temporary in nature and will be confined to the construction phase. Particular care should be taken during the construction phase of the refurbishment works to avoid impacts via disturbance to habitats or sediment loss into waterbodies.

The Carnmoney to Eden 110 kV line passes across the Three Mile Water (UKGBNI1NE050501118), which is known to contain salmonoid species. The Atlantic salmon (*Salmo salar*), which are a key feature of these rivers, are internationally in decline. Therefore, any development particularly adjacent to or hydrologically connected to the river must ensure the conservation of the Atlantic salmon is considered. Given that Option 2 will involve refurbishment of the line, it is anticipated that any potential impacts (via noise, vibration or sediment

release) to these waterbodies would be short term and temporary and would be confined to the construction phase.

3.3.2 Heritage Constraints

The heritage constraints along the Carrickfergus section of the new double circuit cable include potential impacts to Scheduled Monuments, Scheduled Zones, Listed Buildings Defence Heritage records and Industrial Heritage records located in the vicinity of the proposed undergrounding. There is a scheduled zone, Scheduled monument and defence heritage record within 10m of the proposed route and an Industrial Heritage record (a bridge) within 2m of the proposed line. Potential impacts to these heritage features should be considered during the construction phase of the works, as to not damage these features. Any impacts to these features can be mitigated for with good planning and good site practice. It should be noted that there is anticipated to be an improved visual setting on these features due to the removal of the overhead 110 kV line.

The heritage constraints along the Carnmoney section of the new double circuit cable include potential impacts to Industrial Heritage records which lie in the vicinity of the proposed undergrounding. Potential impacts to these heritage features should be considered during the construction phase of the works. Any impacts to these features can be mitigated against with good site practice. It should be noted that there is anticipated to be an improved visual setting on these features due to the removal of the overhead 110 kV line.

The part of the Carnmoney to Eden 110 kV line which is retained and restrung passes close to a number of heritage features. These include records listed under the industrial heritage records and the scheduled monument record.

The line does not pass directly through any heritage records, however there are Scheduled Monument Records approximately 30m away from the proposed route of the refurbishment of the line and Industrial Heritage Records approximately 50m away. It is anticipated that any impacts to these heritage sites would be minimal. However, refurbishment works associated with Option 2 could be constrained by any heritage sites in close proximity. Any refurbishment work done to the line should be undertaken with consideration of the location of these heritage features and their sensitivities.

3.3.3 Social Constraints

The settlement of Carnmoney, has a low to medium population density in the vicinity of the line. The line extends northeast up to the settlement of Carrickfergus which has a low to medium population density, in the vicinity of the line. The potential impacts during the construction phase are likely to be associated with noise, vibration and increased traffic congestion, however these can be mitigated with good planning, good site practice and timings of works.

Given that Carnmoney and Carrickfergus are residential areas, there may be restrictions on accessing the line, which may increase the duration of the construction phase works. There may be some localised disruption to residents during the removal of towers, however as the towers would not require any foundation works it is anticipated that these impacts would be less significant than option 1. There are not anticipated to be any impacts on these areas post construction phase.

It should be noted that there is the potential for long term positive social impacts associated with the removal of the overhead 110 kV line, with the residents no longer being impacted by its presence.

The section of the Carnmoney to Eden 110 kV line which is being retained and refurbished doesn't pass through any major settlements, potential impacts are anticipated to be minimal outside the settlement boundaries given the much lower population.

3.3.4 Technical Constraints

Potential technical constraints along both sections of cable works at Carrickfergus and Carnmoney include the presence of fluvial and pluvial flood extents. In these areas there is the potential that the works associated with Option 2 may be difficult due to poor ground conditions and difficult construction conditions. Consideration should be given to the timings and seasonality of the works in conjunction with limitations on network outages.

In addition, the proposed undergrounding locations are within residential areas. Consideration should be given to access routes and access permissions during the construction phase of the works.

There are a number of technical constraints which have the potential to impact the section of line which is being retained and refurbished. These technical constraints include both pluvial and fluvial flood extents, the Belfast to Derry/Londonderry Railway Line, the gas transmission line and areas of historic land use.

The Carnmoney to Eden 110 kV line passes through both pluvial and fluvial flood extents which may be a potential constraint to refurbishment works. In these areas there is the potential that refurbishment works may be difficult due to poor ground conditions and difficult construction conditions. Consideration should be given to the timings and seasonality of the works in conjunction with limitations on network outages.

The Carnmoney to Eden 110 kV line passes across the Belfast to Derry/Londonderry railway line. During the refurbishment works associated with Option 2 there is potential for disruption to traffic along the railway line. This disturbance would be confined to the construction phase of the works and is likely to be short term and temporary in nature.

The line also passes across a gas transmission line. Potential impacts associated with the re-string are anticipated to be minimal, however the replacement of towers or alteration of tower foundations should be undertaken in consideration with the location of the gas line and the potential impacts associated with below-ground works.

The Carnmoney to Eden 110 kV line lies in close proximity to multiple areas of historic land use, which have the potential for being contaminated sites. As the line is already constructed, there will be no change in land use and so potential impacts are anticipated to be minimal. The replacement of towers or alteration of tower foundations should be undertaken in consideration with the location of these historical areas and their land use.

3.3.5 Visual Constraints

Both Carnmoney and Carrickfergus are considered to have a high – medium sensitivity to windfarm development. Sensitivity to wind farm development scores indicate a visual sensitivity based on the surrounding landscape. There is potential for short term and temporary impacts to the visual landscape during the construction phase. However, given that the proposal associated with Option 2 will be to underground the cables in these areas, there is anticipated to be a positive long term impact on the local landscape and views from the removal of these 110 kV overhead line sections.

The landscape in the area of the existing Carnmoney to Eden 110 kV line is considered to have a high – medium sensitivity to windfarm development for the most part, with a high sensitivity noted along the central section of the line, in the Greenisland area. Sensitivity to wind farm development scores indicate a visual sensitivity based on the surrounding landscape. There is potential for short term and temporary impacts to the visual landscape during the construction phase. However, given that the 110 kV line already exists in the area, there are no additional long term impacts to the visual landscape anticipated.

3.4 Option 3 Constraints

Option 3 involves retaining and refurbishing part of the Carnmoney to Eden 110 kV double circuit and dismantling and removing the double circuit in Carnmoney and replacing it with underground double circuit cables.

This option encounters the following constraints:

3.4.1 Environmental Constraints

The Carnmoney section of the new underground double circuit cables passes through a small area of the Three Mile Water SLNCI. As the option involves the removal of a section of the Carnmoney – Eden 110 kV double circuit and replacing it with a new double circuit line, careful consideration should be taken as to minimise the potential impacts on the sensitive features of the SLNCI when removing the line or laying the new double circuit cables. Potential impacts could include sediment release, noise and vibration; however, these would be short term and temporary and can be mitigated with good planning and good site practice.

The environmental constraints along the section of the Carnmoney to Eden 110 kV line which is being retained and refurbished include three Sites of Local Nature Conservation Importance (SLNCI): Three Mile Water; Knockagh - Dorisland; and Oakfield. These are identified areas which support habitats, species or earth science features.

Given that the Carnmoney to Eden 110 kV line already passes through these SLNCIs, any refurbishment works associated with Option 3 will likely be short term and temporary in nature and will be confined to the construction phase. Particular care should be taken during the construction phase of the refurbishment works to avoid impacts via disturbance to habitats or sediment loss into waterbodies.

The Carnmoney to Eden 110 kV line is located within close proximity to Belfast Lough which is both an SPA and SAC; the principal features of these designations are the breeding colony of Common and Arctic Tern and the wintering populations of Redshanks, Bar-tailed Godwit and Black-tailed Godwit. Whilst offset from the Lough, works to the line associated with Option 3 a potential hydrological link could provide a pathway for sediment release which may impact water quality within these rivers, however this is likely to be short term and temporary and would be confined to the construction phase.

The Carnmoney to Eden 110 kV line passes across numerous rivers, two of which are known to contain salmonid species: Woodburn River (UKGBNI1NE050501120); and Three Mile Water (UKGBNI1NE050501118). The Atlantic salmon (*Salmo salar*), which are a key feature of these rivers, are internationally in decline. Therefore, any development particularly adjacent to or hydrologically connected to the river must ensure the conservation of the Atlantic salmon is considered. Given that Option 3 will involve refurbishment of the line, it is anticipated that any potential impacts (via noise, vibration or sediment release) to these waterbodies would be short term and temporary and would be confined to the construction phase.

The Woodburn River is also used for drinking water. In addition, the line overlaps the boundary of the Dorisland Surface Water Drinking Water Protected Area (UKGBNIPA1_10020) and Belfast Hills Island Magee Ground Water Drinking Water Protected Area (UKGBNIPA1_30017). These areas are protected under the Drinking Water Directive (98/83/EC). Any refurbishment works to the line associated with Option 3 could potentially cause sediment release which may impact water quality within these rivers, however this is likely to be short term and temporary and would be confined to the construction phase.

3.4.2 Heritage Constraints

There are Industrial Heritage Records within the vicinity of the Carnmoney section of cabling, however it is unlikely that the laying of cable and dismantling of the existing 110 kV line would have any significant impacts on these Industrial Heritage Records, as they are over 150m away from the proposed route.

The part of the Carnmoney to Eden 110 kV line which is retained and restrung passes close to a number of heritage features. These include records listed under the industrial heritage records and the scheduled monument record.

The line does not pass directly through any heritage records, however there are Scheduled Monument Records approximately 30m away from the proposed route of the refurbishment of the line and Industrial Heritage Records approximately 50m away. It is anticipated that any impacts to these heritage sites would be minimal. However, refurbishment works associated with Option 3 could be constrained by any heritage sites in close proximity. Any refurbishment work done to the line should be undertaken with consideration of the location of these heritage features and their sensitivities.

3.4.3 Social Constraints

The settlement of Carnmoney, has a low to medium population density in the vicinity of the line. There is the potential that there will be disruption to traffic during both the laying of cable and the dismantling of the 110 kV line, however this is expected to only be temporary and short term.

Given that Carnmoney is a residential area, there may be restrictions on accessing the line, which may increase the duration of the construction phase works. There may be some localised disruption to residents during the removal of towers however as the towers would not require any foundation works it is anticipated that these impacts would be less significant than option 1. It should be noted that there is the potential for a long term positive social impact associated with the removal of the overhead 110 kV line, as residents will no longer be impacted by its presence.

3.4.4 Technical Constraints

There are technical constraints along the Carnmoney section of cabling. These include pluvial flood extents and areas of historic land use in close proximity to the cable route.

The new section of cabling in Carnmoney passes through pluvial flood extents. This may be a potential constraint due to poor ground conditions and difficult construction conditions, which may make the removal of the 110 kV line and the laying of new cable difficult and this could affect the timing of works.

There is an area of historic land use over 20m away from the proposed route, careful consideration should be taken as there is the potential that the land could be contaminated.

There are a number of technical constraints which have the potential to impact the refurbishment of the Carnmoney to Eden 110 kV line. These technical constraints include both pluvial and fluvial flood extents, the Belfast to Derry/Londonderry Railway Line, the gas transmission line and areas of historic land use.

The Carnmoney to Eden 110 kV line passes through both pluvial and fluvial flood extents which may be a potential constraint to refurbishment works. In these areas there is the potential that refurbishment works may be difficult due to poor ground conditions and difficult construction conditions. Consideration should be given to the timings and seasonality of the works in conjunction with limitations on network outages.

The Carnmoney to Eden 110 kV line passes across the Belfast to Derry/Londonderry railway line. During the refurbishment works associated with Option 3 there is potential for disruption to traffic along the railway line. This disturbance would be confined to the construction phase of the works and is likely to be short term and temporary in nature.

The line also passes across a gas transmission line. Potential impacts associated with the re-string are anticipated to be minimal, however the replacement of towers or alteration of tower foundations should be undertaken in consideration with the location of the gas line and the potential impacts associated with below-ground works.

3.4.5 Visual Constraints

Any visual constraints are minimal as this option involves the removal of sections of the existing line and the laying of underground cables. The local landscape and views could be impacted during the construction works by machinery, but this would be short term and temporary. Once construction has completed it is anticipated that there will be long term positive impacts on the visual amenity of the area as the overhead cables are removed.

The landscape in the area of the existing Carnmoney to Eden 110 kV line is considered to have a high – medium sensitivity to windfarm development for the most part, with a high sensitivity noted along the central section of the line, in the Greenisland area. Sensitivity to wind farm development scores indicate a visual sensitivity based on the surrounding landscape. There is potential for short term and temporary impacts to the visual landscape during the construction phase. However, given that the 110 kV line already exists in the area, there are no additional long term impacts to the visual landscape anticipated.

4 CONSENTING REQUIREMENTS

4.1 Planning Considerations

The proposed Options comprise of a range of works including refurbishment of existing towers, construction of new towers, re-stringing of conductors, construction of new underground cable connections and transformer installation. Whilst detailed design information is not presently available, consideration is given below to the consent process which may be required in the delivery of the project as defined by the three Options.

Certain types of development can be carried out without the requirement to apply for planning permission. Development which falls into this category is identified as 'permitted development'. Permitted development rights are defined in subordinate legislation within The Planning (General Permitted Development) Order (NI) 2015 (GPDO). Planning permission is granted under the terms of Article 3 of the GPDO, for the classes of development described as permitted development in the Schedule to the Order, subject to compliance with the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995, with any relevant restrictions specified in the Schedule. Development is 'not permitted' where it would be contrary to any condition imposed by any planning permission.

In accordance with the regulations, the proposed development (Options 1, 2 and 3) is considered to fall within Part 14 Class C (Electricity Undertakings), which covers permitted development in respect of development by electricity undertakers for the generation, transmission, distribution and supply of electricity for the purposes of the undertaking. SONI is an electricity undertaker in respect of Part 14, Class C, as is NIE Networks.

In the context of this proposal, the development would be considered permitted under Class C where it is *consisting of— (a) the laying underground of pipes, cables or any other apparatus, and the construction of shafts and tunnels reasonably necessary in connection with such pipes, cables or apparatus; and (h) any other development carried out in, on, over or under the operational land of the undertaking.*

Class 14, Section C.1, notes the limiting conditions for any proposals considered as permitted development. In the context of this proposal, it is noted that: Development is not permitted if—

(e) in the case of any Class C (h) development it consists of or includes— (i) the erection of a building, or the reconstruction or alteration of a building where its design or external appearance would be materially affected; or (ii) the installation or erection by way of addition or replacement of any plant or machinery exceeding 18 metres in height or the height of any plant or machinery replaced, whichever is the greater; or

(f) the land is within a site of archaeological interest.

The proposed development does not include the construction of any building and it is assumed that any new towers such as proposed in Option 1 and the terminal towers associated with Options 2 and 3 will not exceed the height of the existing towers to be replaced or 18m. The proposed works are not located within an area of archaeological interest.

There are further caveats where permitted development rights do not apply (i.e. if the project is considered EIA development) but in broad terms, a proposal which comprised of works within operational land and / or the installation of underground cable conductors, the works could qualify as permitted development and therefore not require planning permission.

On the assumption of permitted development rights being applicable, SONI would have the option to deliver the works without requiring consent from the planning authority. However, in order to provide a greater level of certainty prior to commencement of works, SONI may wish to avail of a Certificate of Lawful Proposed Use or Development (CoLPUD) which can be obtained from the relevant planning authority; in this instance, a submission to both Antrim and Newtownabbey and Mid and East Antrim Borough Councils would be required. Such a certificate is a legal document certifying the lawfulness of a proposed land use, buildings or operations.

In support of a CoLPUD application it will be necessary to demonstrate to the authorities that the proposed development does not trigger any of the caveats that would result in permitted development rights being lost. Note also the implications of Environmental Impact Assessment (EIA) requirements in Section 4.2 in the consideration of permitted development matters.

In the event that works are proposed which involve development which would not be deliverable under permitted development rights, such as a new substation or extension to an existing substation (not on operational land), a full planning application would be necessary. The proposed terminal towers associated with Options 2 and 3 (subject to final design) may require a planning application to be made in respect of the

single towers (with the remaining project works being undertaken under permitted development rights); this would be subject to direction of the relevant planning authority.

Any such planning applications would be dealt with by Antrim and Newtownabbey and / or Mid and East Antrim Borough Council with a submission being required to both authority. It should be noted however that the Planning (NI) Act gives the Department for Infrastructure (DfI) power to call in any application.

Pre-application discussions with the planning authorities are advisable from an early stage in the project. Depending on the consenting route, pre-application consultation with the local community/ key stakeholders may be mandatory. Formal pre-application community consultation may be a requirement should the project be considered a major application.

4.2 Environmental Assessment

4.2.1 EIA / Environmental Screening

Permitted development rights do not apply to a proposal which is determined to be EIA development. The application of permitted development rights to a project (under the provisions of a CoLPUD) is therefore dependent on the determination that the project is not EIA development, as defined by the Planning (Environmental Impact Assessment) Regulation (Northern Ireland) 2017.

The project does not automatically require an EIA under Schedule 1 of the Regulations; nor would the project fall under Schedule 2 as formally requiring an EIA determination as set out in the Regulations. Equally, permitted development rights cannot automatically be applied where a development is located within a sensitive area, as defined by the EIA Regulations, without the project being determined as non-EIA development; the project does not however fall within any sensitive areas.

In consideration of the need for an EIA, clarification with the consenting authorities through a formal EIA screening determination is recommended. In the event that the project is determined as EIA development, permitted development rights can no longer apply, necessitating the submission of a full planning application and an accompanying Environmental Statement. In support of any EIA determination, it is suggested that a formal multi-disciplinary, EIA Screening and Scoping report are submitted.

Even with a negative determination for EIA, this process will help establish the nature and extent of the environmental assessment information required to support the consenting process. It will also identify all relevant consultees (statutory and non-statutory) and any other key stakeholders, and initiate discussions on specific topics.

Notably in respect of EIA, principles established by case law directs that, in considering whether any project constitutes EIA development, the consenting authorities must consider the project in its entirety. In this instance, depending upon Option is progressed, consideration must be given to all necessary works associated with the refurbishment of existing infrastructure (including access) and the recovery of existing assets.

4.2.2 Habitats Regulation Assessment (HRA)

European Directives require assessment of the effects on designated sites (Natura 2000 network), including Special Protection Areas (SPAs) or Special Area of Conservations (SACs).

An Appropriate Assessment (AA) of the potential effects of a project on designated sites will be required in support of the consent applications. Surveys undertaken for the purposes of any EIA or environmental reporting will have a dual purpose, in that they will support the baseline assessment for the HRA also.

Whilst development of an Option may not directly impact upon one of the aforementioned designations, consideration must be given to downstream impacts which may arise where pathways to such sites are present, particularly in consideration of connections via watercourses which may connect into Belfast Lough which is both an SPA and SAC.

HRA is required to take into consideration the totality of the proposed development and is best done when there is sufficient certainty about the project technology, footprint and construction methods; the stage 1 and 2 AA would likely occur in parallel with the EIA Assessment.

It is good practice for a developer to submit a 'shadow' HRA report (or reports) along with a consent application to guide the competent authority on the range of potential effects and likely significant effects may arise, and support a robust assessment under the relevant legislation.

4.2.3 Environmental Assessment

It is expected that project will require an appropriate level of environmental information, to support any application for consent – as outlined in Section 3, there are a range of constraints throughout the study area.

The definitive environmental effects and interactions with these constraints will be dependent upon which Option is progressed. As a result of the aforementioned EIA screening and scoping processes, it will be possible to establish the nature and extent of the supporting environmental information required in support of an application for consent

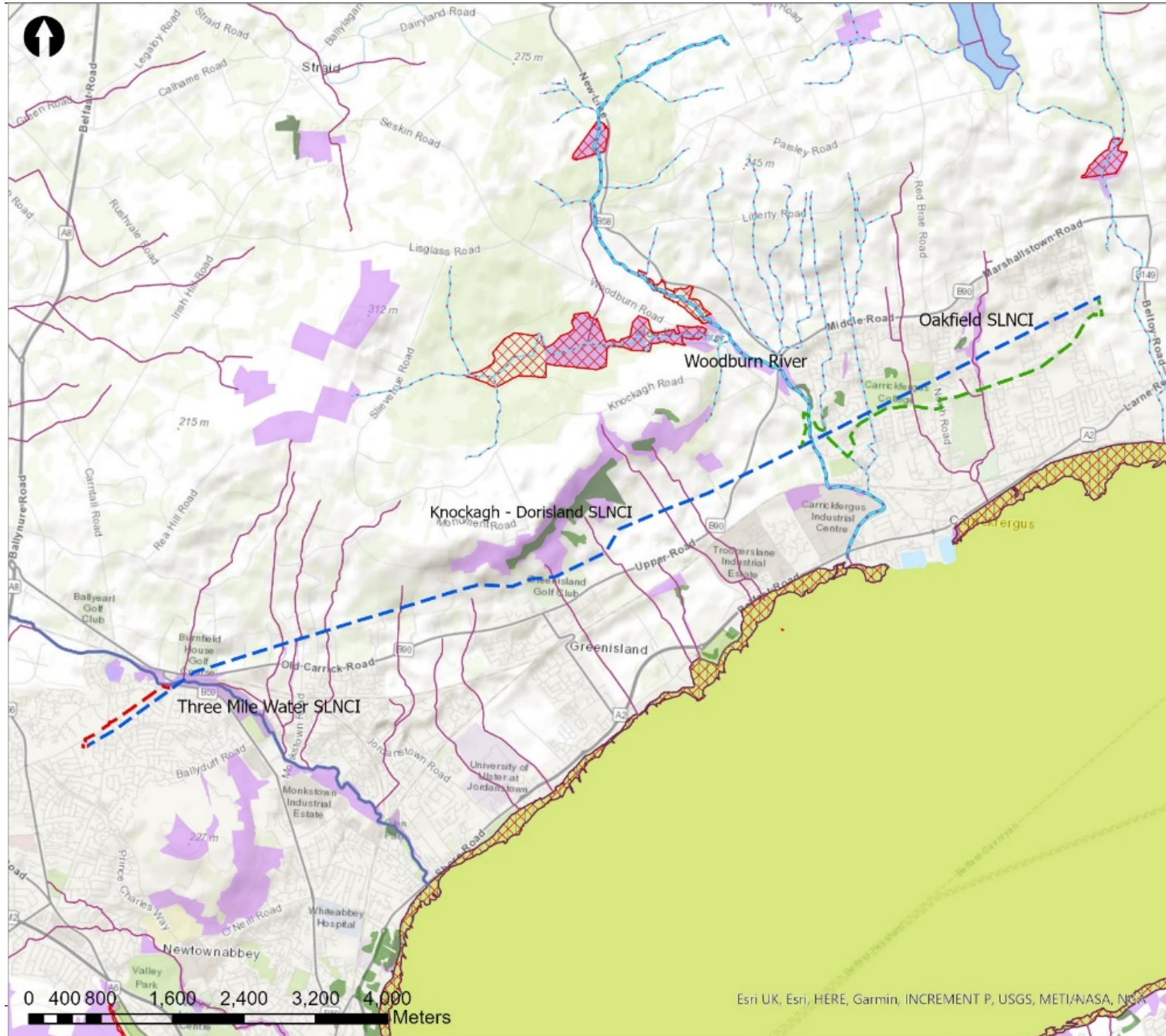
Typical matters which will be the subject of an EIA or individual standalone assessment reports in the event of a negative EIA determination, may include the following (this list is not exhaustive):

- Terrestrial Ecology;
- Ornithology;
- Water Quality;
- Fisheries;
- Plans & Policies;
- Air Quality;
- Noise & Vibration;
- Construction and Traffic;
- Landscape and Visual;
- Cultural Heritage;
- Geology and Soils
- Contamination (Preliminary Risk Assessment);
- Flood Risk

In the context of the proposed works associated with the three Options, it is considered unlikely that all of the aforementioned matters would require detailed consideration in the form of environmental assessment reports.

Appendix A Constraints Mapping

REPORT



- Carrickfergus Undergrounding
- Carrmonee Undergrounding
- Carrmonee Eden 110kV line
- Drinking Water Rivers
- Rivers
- Salmon Rivers
- Salmon Lakes / Drinking Water Lakes
- Potential Ancient Woodland
- Historic Parks & Gardens
- NNR & NR
- Ramsar
- ASSI
- SLNCI
- SPAs
- SACs

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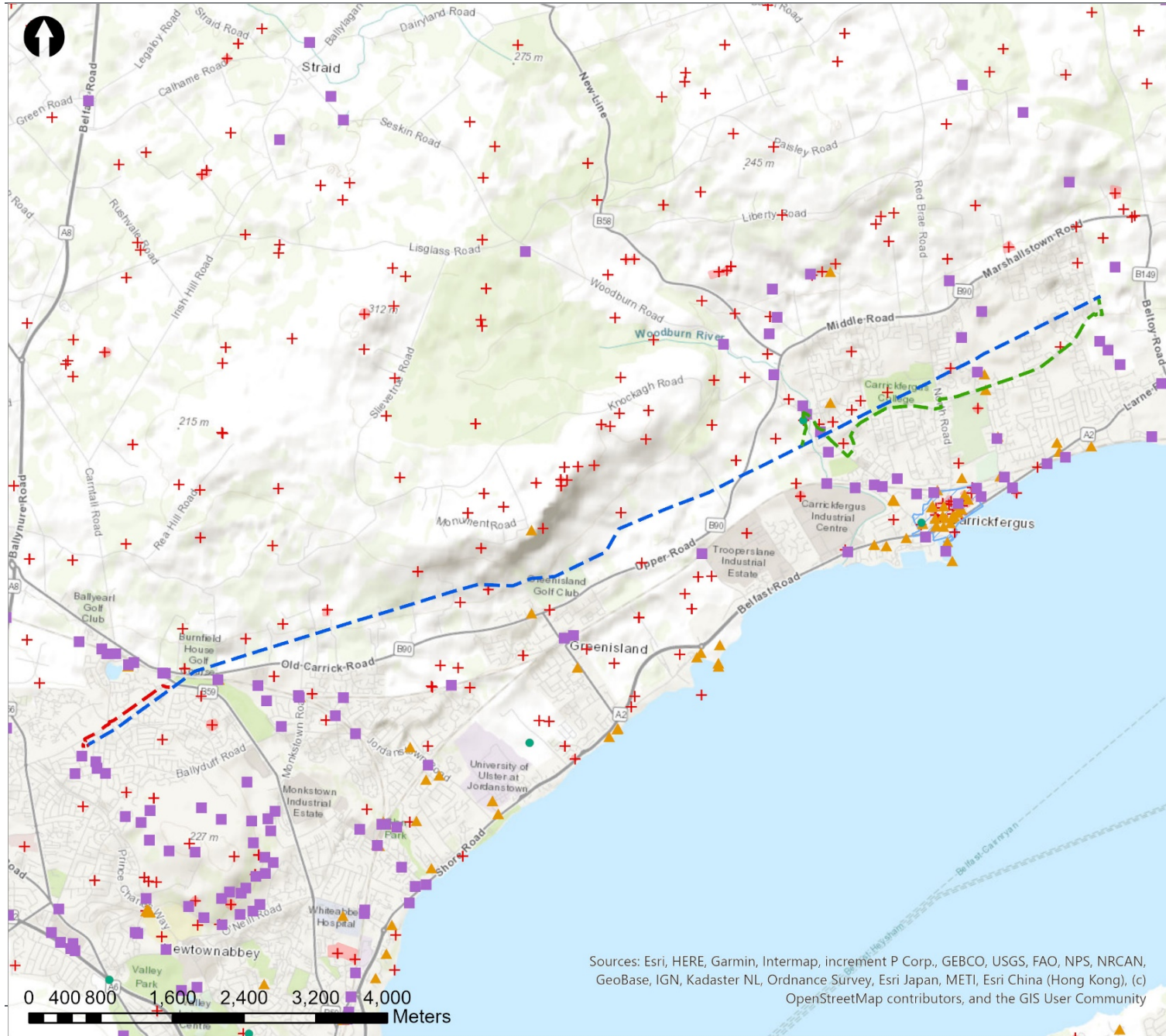
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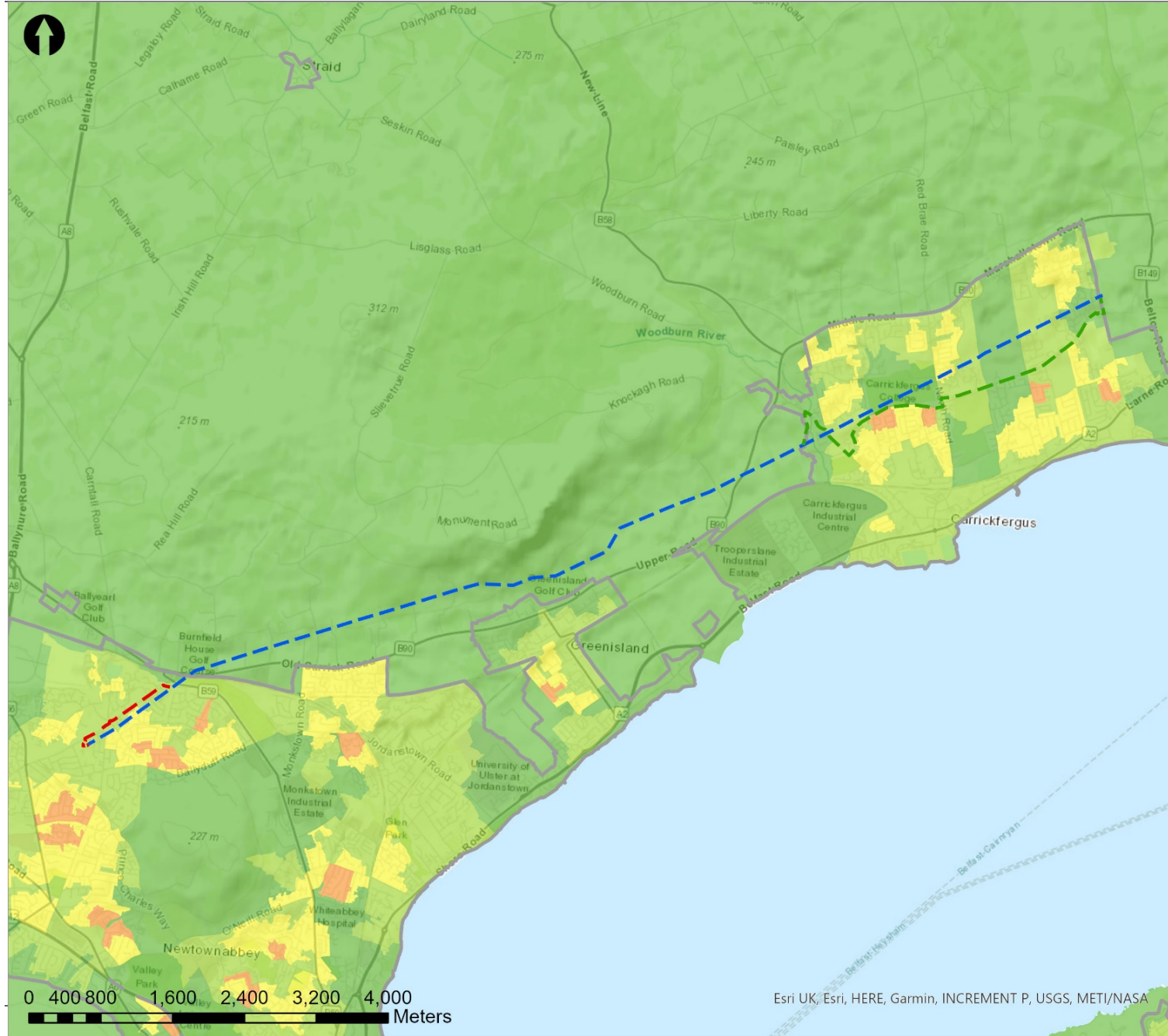


- Carrickfergus Undergrounding
- Carrumney Undergrounding
- - - Carrumney Eden 110kV line
- Defence Heritage Record
- Industrial Heritage Record
- ▲ Listed Buildings
- + Scheduled Monument Record
- Areas Archaeological Potential
- Areas Significant Archaeological Interest
- Scheduled Zones

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REPORT



- - - Carrickfergus Undergrounding
 - - - Carrmoney Undergrounding
 - - - Carrmoney Eden 110kV line
 - Settlements
- Population per km2
- Low
 - Low - Medium
 - Medium
 - Medium - High
 - High

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PROJECT
SONI Carrmoney - Eden

TITLE
Social Constraints

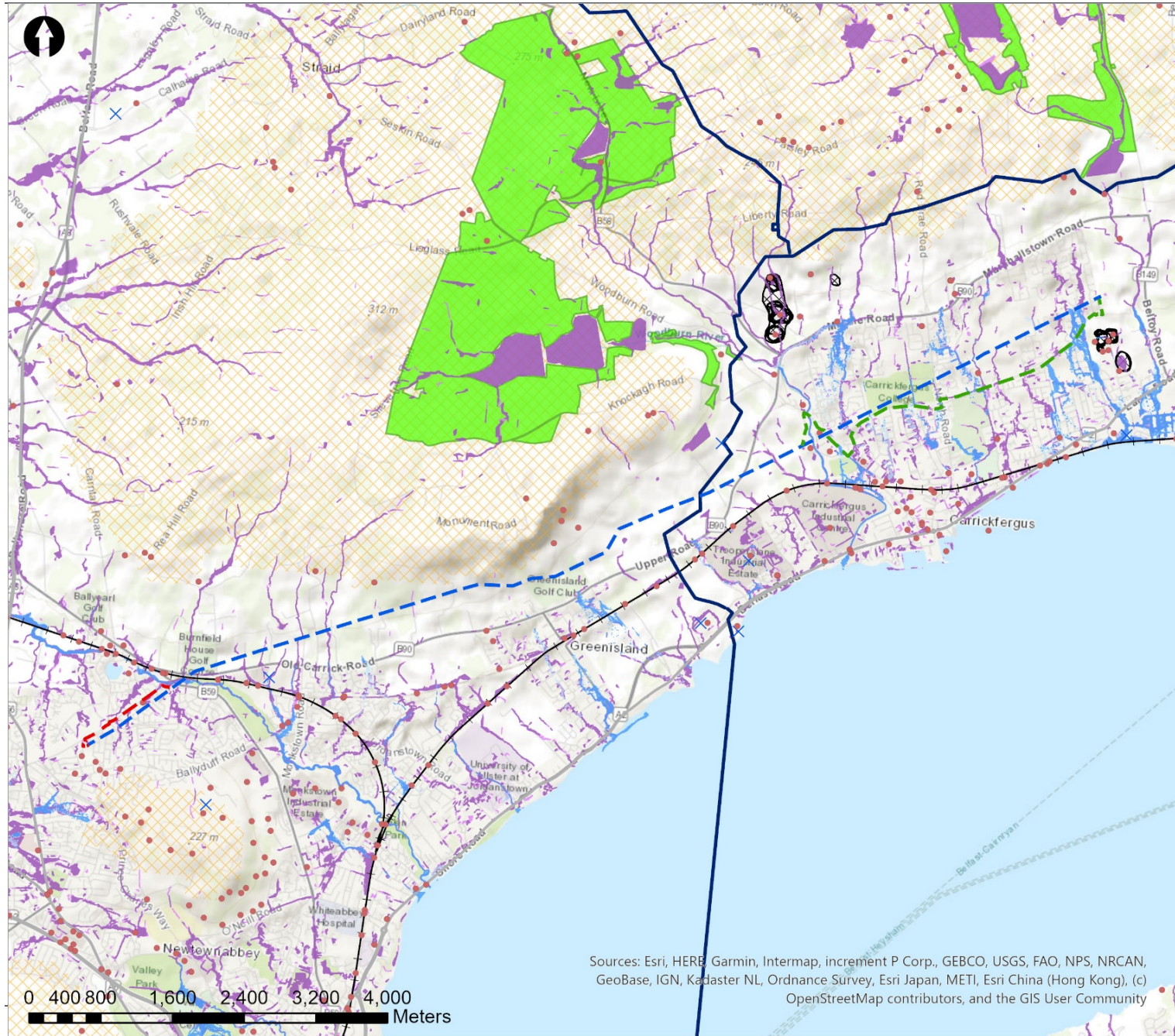
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REPORT



- Carrickfergus Undergrounding
- Carrmonee Undergrounding
- Carrmonee Eden 110kV line
- Historic Landuse
- × PPC Sites
- Historic Mines
- ▲ Active Quarries
- Gas Transmission Line
- Roads
- Railways
- Fluvial 100yr Flood Extent
- Fluvial 100yr CC Flood Extent
- Pluvial 200yr Flood Extent
- Pluvial 200yr CC Flood Extent
- Forest Sevice Lands
- Known Mines
- Upland Areas
- Steep Slopes

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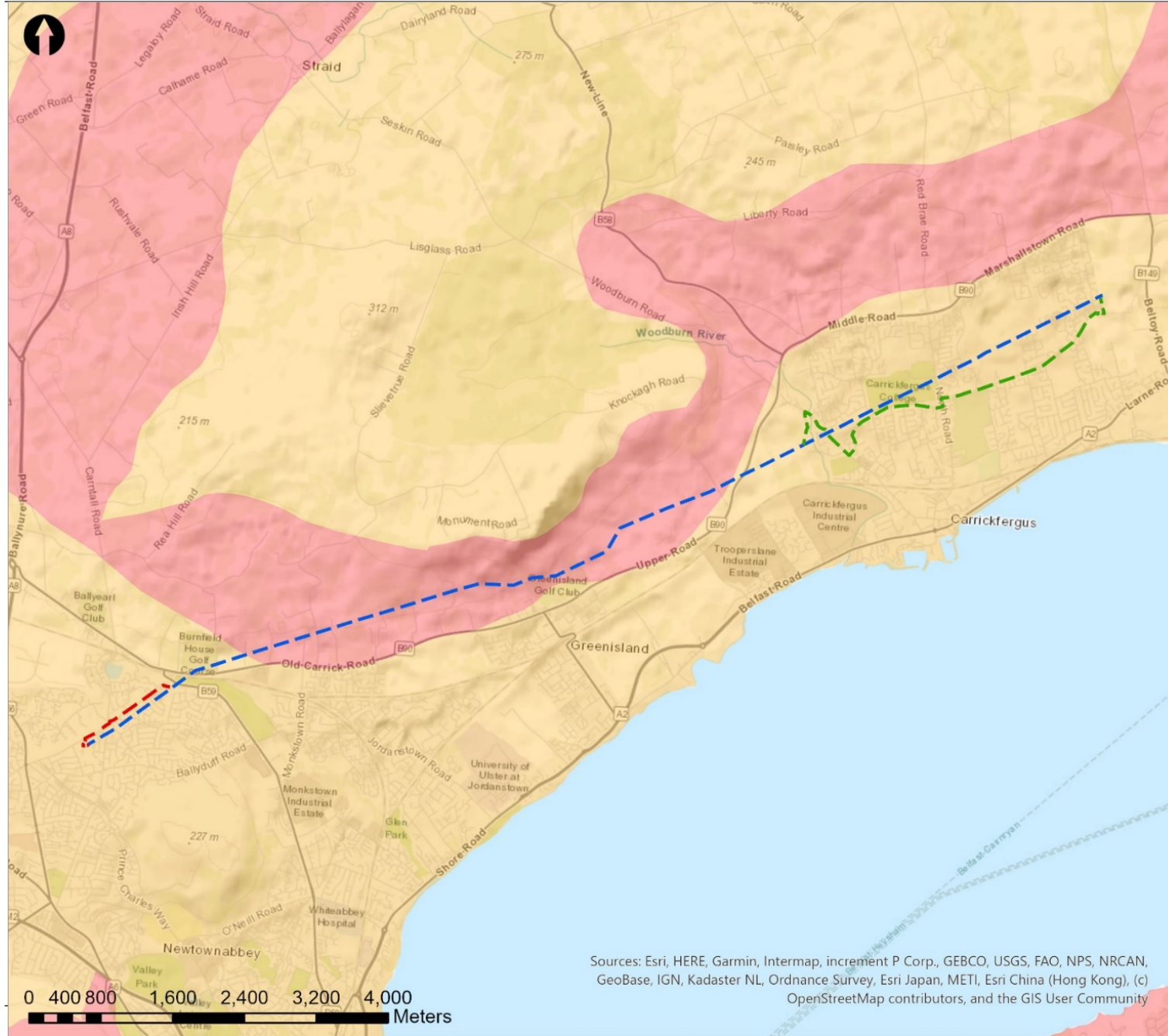
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

REPORT



- Carrickfergus Undergrounding
 - Carrmonee Undergrounding
 - Carrmonee Eden 110kV line
 - ▣ Areas of Outstanding Natural Beauty
- Sensitivity to wind farm development
- Score
- 1 Medium - Low
 - 2 Medium
 - 3 High - Medium
 - 4 High

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