

Volume 8: Appendices (Introductory)

Appendix 5.1  
Malahide Community  
Forum Offline Option

## **1. Introduction and Background Context**

Arup has been engaged by North Irish Sea Array Windfarm Limited (NISA). as the Lead Consultant for the early-stage design of the onshore cable infrastructure to support a planning application for the NISA Offshore Wind Farm.

This file note assesses the potential alternative off-road cable route corridors from Malahide Rugby Football Club (RFC) on Estuary Road to Belcamp substation. The general proposal of this off-line routing has been tabled by the Malahide Community Forum for consideration by NISA. as part of their wider cable route study. The objective of the proposed alternative route corridor is to alleviate potential temporary disruptions associated with the construction activities required to route the cable in the public road in the Malahide area.

In the interest of clarity, the overall cable route will be broken into the following three sections:

- **Sector 1– Reason for route to Estuary Road**

A brief overview will be provided to outline the history and reasoning for the preferred cable route being directed along Estuary Road

- **Sector 2 – Estuary Road to Baskin Lane**

The proposed alternative route study area will be assessed between Estuary Road and Baskin Lane

- **Sector 3 – Baskin Lane to Belcamp Substation**

This section of the proposed alternative route area has already been assessed in previous studies. A summary of the proposed alternative route in this area will be assessed with a summary of the following documents

- 281240-ARP-ZZ-XX-FN-16-001 NISA - Offline/Online Routes to Belcamp Substation.
- 4-04-03 281240-FN-002 NISA – Onshore Cable Route – Constraints in the vicinity of Belcamp

The primary objective of assessing the proposed route is to evaluate if the suggested offline route, as tabled by the Malahide Community Forum, is feasible given the basis of design, the constraints entailed, and the impact of this offline route compared to the impact of the preferred route.

## **2. Overview of Preferred Cable Route (Malahide)**

The southernmost section of the preferred cable route (Red line boundary draft 22) as it approaches Belcamp substation is shown on Figure 1.

The preferred cable route leaves the R132 at the Fingallians roundabout and travels northeast towards Estuary Road. The preferred cable route traverses beneath the M1 along Estuary Road and continues south where it turns east onto the R106 for approximately 1km before turning south onto the R107. The route follows the R107 to the south for approximately 5km and then turns west onto the R139 where the two roads meet at Northern Cross. The route continues along the R139 approximately 1.9km to the entrance of the existing Belcamp Substation.



Figure 1 - Current Preferred NISA Onshore Cable Route

### 3. Basis of Design

The NISA onshore cable route is informed by the EirGrid Functional Specifications (CDS-GFS-00-001-R1) and engagement with EirGrid continues as the project develops. The preference is to construct the cable corridor within the existing road network or public lands as per Section 4.3 Route selection for underground cables within EirGrid's Functional Specifications (see CDS-GFS-00-001-R1). Additionally, there is a requirement for the cables to be installed in an Open-Cut-Trench, trenchless technology, such as Horizontal Directional Drilling (HDD), may only be permitted in specific circumstances.

- Section 4.3 Route Selection for Underground Cables

***“Underground cables shall, as a standard, be routed within the reserve of public roads. If it is absolutely necessary and no other reasonably practical options exists, the Customer may propose routing cables on private land, subject to a design review and acceptance by EirGrid.***

*Where a Customer proposes to route a high voltage cable through private land that is owned by a third party then, in such circumstances, the Customer will be required to undertake a detailed feasibility study that describes all of the options considered and explains to EirGrid's satisfaction why the routing of the cable off public road cannot be avoided.*

*EirGrid shall be consulted at the earliest opportunity and prior to the submission of any planning application.*

*EirGrid approval for such deviation will be via derogation process (refer to XDS-GGD-00-001). The routing of HV cables through third party lands shall only be considered if all other options have been exhausted (to the satisfaction of EirGrid).”*

- Section 4.9 Trenchless Technology

*Trenchless Technology, such as Horizontal Directional Drilling, shall only be used in circumstances such as:*

- Crossing watercourse
- Crossing railways
- Crossing motorways

*where standard design is not feasible. The Customer will be required to undertake a detailed feasibility study that describes all of the options considered and explains to EirGrid's satisfaction why the Trenchless Technology has been selected. Trenchless installation shall be considered in the Customer cable rating calculation and report.*

Location specific constraints shall also be considered, for the alternative proposed route these constraints have been appraised in Section 5.2.

## **4. Methodology**

### **4.1 Alternative cable routing methodology**

The following cable routing methodology has been employed in order to identify and assess the feasibility of the proposed amendment to the preferred cable route:

- Identify the cable route study area as tabled by Malahide Community Forum
- Undertake a desktop study to identify all relevant constraints as set out in section 4.2 located within the study area
- Use Geographic Information Systems (GIS) and AutoCAD to map all the relevant constraints and allow these to be overlaid and viewed together
- Review existing services information from service providers (for major service clashes / potential areas of congestion), including
  - ESB Networks
  - Gas Infrastructure
  - Watermains
  - Telecommunications
  - Wastewater Infrastructure
- Review the study area, identifying significant planning applications for future development that might impact the choice of route
- Assess and understand the feasibility of the suggested route option with respect to the above

### **4.2 Key Constraints**

The following constraints were assessed during preparation of this note. These are discussed in detail in Section 5.

- Utilities (Uisce Éireann, ESB, Gas Networks Ireland, Telecommunications)
- Environmental considerations
  - Ecology (Natura Conservation and biodiversity – NPWS designated areas and habitat and species)
  - Heritage (Fingal County Council’s Record of Protected Structures, National Monuments Service, Architectural Areas and the National Inventory of Architectural Heritage were examined to identify potential constraints)
- Local Amenity – Mapping from previous NISA Onshore Cable Routing Assessment is used and supplemented with site visit and Google Maps identified information
- Land Use Zoning (Fingal County Council Development Plan 2023-2029 and Dublin City Council Development Plan 2016 to 2022)
- Land Ownership based on input from NISA’s land agent and information taken from Land Direct website
- Geological constraints; (Geological Society of Ireland database)



- Planning Constraints and Proposed Developments; (An Bord Pleanála, Fingal County Council (FCC) and Dublin City Council (DCC) planning applications (from previous 2 years) within off-road route corridors only
- Any other relevant considerations

## 5. Route Study Areas

### 5.1 Sector 1–Reason for Route to Estuary Road

Initial early-stage cable routing options recommended a preferred route along the R132 and then Stockhole Lane, approaching Belcamp Substation from the West or North. The preferred route was subsequently amended to an alternative preferred route along Estuary Road from the R132 at the Fingallians Roundabout in response to the following:

- **MetroLink Development:** Further analysis found that there would be significant lengths of paralleling with the MetroLink North line along the R132, coming south from Swords to Dublin Airport. Following detailed consultation with MetroLink it was deemed necessary to minimise this interface and develop alternative routes
- **Utility Constraints:** Supporting HV electrical cables for the MetroLink development are also planned to be routed from Belcamp Substation. One of these cable routes is along Stockhole Lane
- **Aviation Fuel Pipeline:** The Aviation Fuel Pipeline (Dublin Port to Dublin Airport) is routed along the R139 and Stockhole Lane

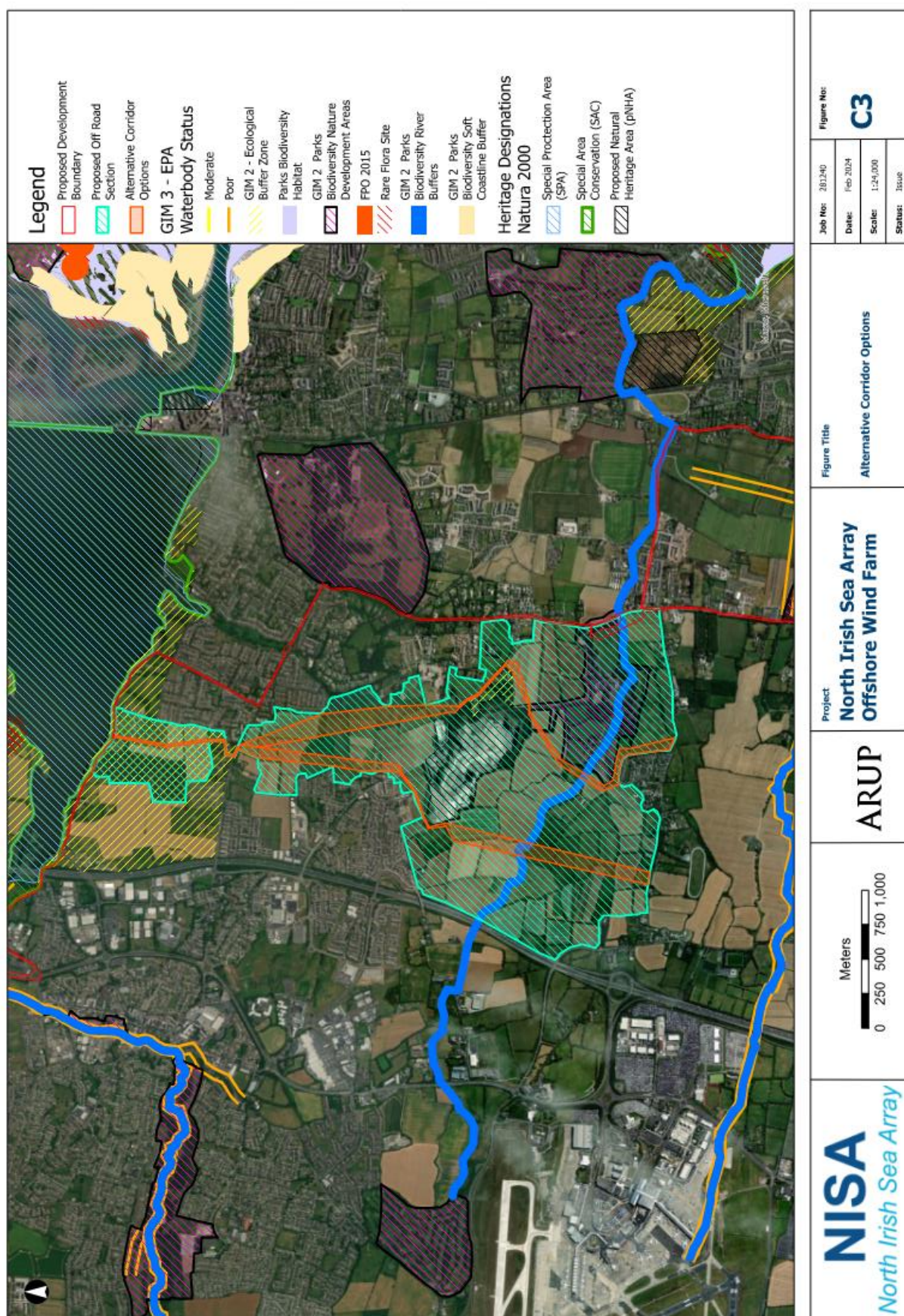
As a result, there is no in-road approach to Belcamp along Stockhole that would not interact with either (or both) the proposed MetroLink HV cables and the Aviation Fuel Pipeline. Stockhole Lane is noted as being “*particularly difficult with very limited room remaining in the carriageway to route further services*” by FCC, refer to 4-04-03 281240-FN-002. As a result, it is necessary to avoid this route through alternative options.

### 5.2 Sector 2 – Estuary Road to Baskin Lane

The main area for review within this document is from Estuary Road to Baskin Lane, this area is identified in Figure 2. Due to Feltrim Quarry being centrally located within the study area, alternative cable route corridors (East and West) are identified in Figure 3. Constraints previously identified during design development of the current proposed planning route (i.e. those within the Red Line Boundary version 22) are not described as part of this assessment.









### 5.2.1 Existing Utility Information

- The existing utility information has been requested from the following utility providers: Uisce Éireann (IW)
- Gas Networks Ireland (GNI)
- Electricity supply Board (ESB)
- Telecommunications (Eir and Virgin Media)

Maps showing the location of these services are presented in Appendix A

For cable routing purposes, it is assumed that non-critical utility infrastructure (such as watermain, sewers, drainage) that cannot be crossed can be moved or replaced if required in order to create space to accommodate the underground infrastructure, such as the cables, ducts, and joint bays. The number of high voltage and high-pressure utility crossings should be minimised where possible.

A high-level review of the existing utility infrastructure is outlined below.

- **Uisce Éireann (IW)**

The Uisce Éireann record drawings of the study area indicate that most of the water main infrastructure is situated within. There is no known water main infrastructure located in off-road sections within the study area.

Most of the sewer lines in the study area are located within the road, with the remaining few located in private land.

- **Gas Networks Ireland (GNI)**

According to the information obtained from the GNI records, there are no high-pressure gas mains located within the study area. However, it has been noted that there is medium (<2Bar and >4Bar) and low-pressure (<25mBar and >75mBar) gas pipelines present within the existing roads.

According to the GNI document "Guidelines for designers and builders industrial and commercial sites" a minimum clearance of 300mm is required where necessary to cross or run in close proximity to any other utility service.

There is no known gas main infrastructure located off-road within the study area.

- **Electricity Supply Board (ESB)**

According to ESB record drawings within study area, there are 2 number HV lines passing through the area. There are multiple Low-Medium Voltage underground and overhead lines present within this study area.

- **Telecommunications**

There are a number of Virgin Media telecommunications infrastructure within the study area. Some of these are, as expected, in the public roads. Approximately 10no. services cross the study area off the road, expected to be buried in trenches following ditch lines. These services will need to be crossed and should be considered for any alternative route. It is not envisaged that any of these services would cause any significant restriction to the routing of a cable.

### 5.2.2 Natura Conservation and Biodiversity

Information obtained from The Fingal County Council (FCC) has been reviewed and assessed regarding environmental and ecological considerations.

Upholding the FCC requirements with respect to biodiversity and conservation is paramount and any proposals which pass through areas of importance outlined by FCC will require additional extensive ecological assessment and considerations and should be avoided if practicable to avoid additional complexity to the route. The key aspect of this information is outlined below.

- **GIM 2 Ecological Buffer Zone.**

The area between Estuary Road and Swords Road (R106), and the area to the East of Feltrim Quarry are designated as Ecological Buffer Zones by FCC. These buffer zones protect the ecological integrity of the nationally and internationally designated sites by providing suitable habitat for key species such as birds, by providing for compatible land-uses around the designated sites, and in the case of the freshwater wetland areas, by ensuring a steady supply of clean groundwater and surface water. Around the estuaries the buffer zones can also provide for recreational uses and are also important for coastal flood protection and for climate change adaptation. Ecological buffer zones are areas where agricultural uses may be combined with nature conservation and low-intensity recreational use such as walking and cycling. FCC Policy GINHP19 intends to protect the functions of the ecological buffer zones and ensure proposals for development have no significant adverse impact on the habitats and species of interest located therein. Any route through this buffer zone will require additional extensive ecological assessment and considerations and should be avoided if practicable. Although the current preferred route is located within the ecological buffer zone, the cables will be placed within the public road, and therefore will have less impact on the environment compared to locating the cables in a greenfield site.

- **GIM 2 Parks Biodiversity Nature Development Areas**

There is an area to the South of Feltrim Quarry which is designated as Biodiversity Nature Development Areas, by FCC. 'Nature Development Areas', are locations where nature conservation can be combined with existing activities such as farming, forestry, quarrying and recreation (e.g. golf courses). These areas are reservoirs of biodiversity in the wider countryside and together with the corridors and stepping-stones allow species to move through the landscape. Green Infrastructure and Natural Heritage FINGAL DEVELOPMENT PLAN 2023-2029 351. Specific objectives have been developed for the Nature Development Areas in the Fingal Biodiversity Action Plan and the Council will work with landowners to achieve benefits for biodiversity in these areas. FCC Objective GINH037 intends to maintain and/or enhance the biodiversity of the Nature Development Areas indicated on the Green Infrastructure maps. Any route through this area will require additional extensive ecological assessment and considerations and should be avoided if practicable.

### 5.2.3 Local Amenity

Fingal County Council has identified several areas within their jurisdiction as having a high sensitivity to development. Particular areas are deemed to have a low capacity to absorb new development and are displayed in the council's Green Infrastructure Maps. The county council has set out the following principles for development in these highly sensitive areas:

- Skylines, horizon, and ridgelines should be protected from development
- Sites with natural boundaries should be chosen, rather than elevated or open parts of fields. The form of new developments should be kept simple, and they should be sited within existing shelter planting or within the contours of the land to minimise visual impact

- Clustering with existing farmhouse and/or farm buildings is generally preferable to standalone locations
- Field and roadside hedgerows should be retained. Proposals necessitating the removal of extensive field and roadside hedgerows should not be permitted
- The retention and active management of trees and woodland blocks should be promoted
- The use of trees and woodlands to contain new development should be encouraged. Strong planting schemes using native species, to integrate development into these sensitive landscapes, will be required. New planting needs to be carefully located and selected
- The management of the river margins should be promoted and development along the riverside which will intrude on the character of the river valleys should be restricted
- Establish riparian corridors free from new development along all significant watercourses in the County. Ensure a 10- to 15-metre-wide riparian buffer strip measured from top of bank either side of all watercourses, except in respect of the Liffey, Tolka, Pinkeen, Mayne, Sluice, Ward, Broadmeadow, Corduff, Matt and Delvin where a 30m wide riparian buffer strip from top of bank to either side of all watercourses outside urban centres is required
- Estuary margins and any hedgerows along the margins must not be disturbed
- The special character of the coast should be protected by preventing inappropriate development on the seaward side of coastal roads
- The character of the coastal visual compartments should be retained by preventing intrusive developments on headlands, promontories and coastal lands within the compartments. The coastal skyline should be protected from intrusive development
- Local amenities identified within the study area include Drynam Park Golf Centre, Kettles Park, Fingallians – Kettle Park, Drynam Riding stable, Kinsealy United Football Club and Malahide RFC

#### 5.2.4 Cultural heritage

A desktop study was undertaken to identify protected structures/ areas along the proposed cable routes. Fingal County Council's Record of Protected Structures (RPS), the National Monuments Service (NMS), Architectural Conservation Areas (ACA) and the National Inventory of Architectural Heritage (NIAH) were examined to identify sensitive receptors to any development along each route corridor option. All these heritage sites and their interaction with the cable route options can be seen in Appendix A.

Routes that do not impact on archaeological conservation areas will be preferred. It may be feasible to develop a route offline that does avoid all of these areas.

#### 5.2.5 Planning, Zoning and Development Plans

The majority of the offline area studied is designated as Green Belt and Open Space. These designated should not adversely impact the routing of a cable in the study area.

#### 5.2.6 Landowners

In general, it is assumed that Fingal County Council or Dublin City Council own the public roads and the bordering ditches. Online cable routing along public roads allows minimal interruption of privately-owned land and therefore limiting the number of negotiations needed regarding land use. But for offline cable routing negotiations with landowners is required.



It is anticipated that in the order of 27 parcels of land within 14 different land folios could require engagement depending on the route of the cable. Any negotiations with this number landowners would undoubtedly be a lengthy process. Furthermore, there is a high probability that one or more of these negotiations would be unsuccessful.

#### **5.2.7 Geological Review**

The primary geological feature within the study area is Feltrim Quarry. Routing of the cable through Feltrim Quarry is not a practical solution and will not be considered. The elevation variations within a quarry, the future changing of the ground profile due to the continued works, as well as the vibrations associated with an operational quarry are the main constraints with respect to routing of electrical cables through the area. Additionally, Feltrim Quarry is noted as a Proposed Natural Heritage Area within the FCC County Development Plan 2023-2019. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation.

### **5.3 Sector 3 - Baskin Lane to Belcamp Substation**

Arup previously explored multiple alternative routes from Baskin Lane to Belcamp Substation due to the potential co-location with ESB MetroLink project along the Malahide Road (R107). Some of the considered routes included off-road routes across private land to the West of Malahide Road, in an area similar to the area proposed for this study. Routes to the East of Malahide Road were also assessed.

This study is fully outlined in 281240-ARP-ZZ-XX-FN-16-001.

The previous study of alternative routes from Baskin Lane to Belcamp highlighted multiple significant constraints within the area being proposed by the Malahide Community Forum. Constraints included planned Uisce Éireann Greater Dublin Drainage (GDD) infrastructure, Fingal County Council designations, and ecological and heritage features.

- These routes entail significant off-road routing of the cable and would therefore, contravene EirGrid's Functional Specifications
- This area entails the planned Greater Dublin Drainage Scheme (GDD) infrastructure route being developed by Uisce Éireann. Permission will be required from Uisce Éireann to locate the cables within the GDD infrastructure route. EirGrid are unlikely to accept a cable route proposal which passes through a yet-to-be constructed development of this nature
- Planning application with reference number F23A/0040 is submitted for development of new electrical transmission infrastructure at the existing ESB Belcamp 220 kV substation
- Routes in this area pass through multiple folios of private land. The various options in this area entail passing through 4 to 6 different private landowners. In-road cable routing along public roads allows minimal interruption of privately-owned land and therefore limiting the number of negotiations needed regarding land use. Additional negotiations take time and crucially with more negotiations comes and increased likelihood of an unsuccessful negotiation
- There is one protected structure, and nine national monuments present in this general area which need to be considered
- Constraints associated with travelling along Baskin Lane are not considered to be prohibitive for this study. Any potential route in this study will likely cross Baskin Lane perpendicularly







Figure 5 - Major Constraints Baskin Lane to Belcamp



## **6. Conclusion**

### **6.1 Conclusion - Sector 1- Route to Estuary Road**

Due to significant constraints regarding the Aviation Fuel Pipeline and the MetroLink project and its associated cabling cables, there is no feasible cable route that can approach Belcamp Substation from the West via Stockhole Lane. As a result, the preferred route is along Estuary Road.

### **6.2 Conclusion - Sector 2 – Estuary Road to Baskin Lane**

The alternative route area as tabled by the Malahide Community Forum has been assessed and a number of significant constraints have been identified between Malahide Road and Baskin Lane which impact the feasibility of the overall route. The general impact of the suggested route on the area has been determined to be more significant than that of the current proposed route along Estuary Road.

The impacts are considered to be far greater than those temporary impacts and disturbances in terms of possible road restrictions which can be managed with good practice and mitigation. Additionally, the proposed alternative area would contravene the EirGrid Specification requirements for the cable to be located within the public road. There is no reasonable justification for the route not to adhere to the requirements set out in this specification.

In addition to the constraints outlined in Section 5.2 some other knock-on impacts are noted below:

- **Length**

Some of the potential route corridors within the study area are of greater length than others. Regarding the overall length of the entire cable route, there would not be a substantial increase in length for any option chosen for this section. However, the longer routes will nevertheless be more convoluted and more destructive to hedgerows and habitats.

- **Timeline**

At present, given project timelines for delivery, engaging with up to 18 private landowners, undertaking the necessary additional studies (ecological, archaeological, geotechnical etc.) and the process of gaining approval from EirGrid for an off-road route would significantly jeopardise the project delivery. Additionally, it is unlikely that the off-line route would be approved by EirGrid due to the contravention of the Eirgrid specification.

### **6.3 Conclusion - Sector 3 – Baskin Lane to Belcamp**

As described in Section 5.3 the area between Baskin Lane and Belcamp substation was previously explored for potential alternative off-road options for the cable route. This area involved a number of key constraints to routing the cable here, including the presence of GDD infrastructure, ecological constraints and the contravention of the EirGrid specification.