ENGINEERING / CABLE ROUTE

THE NATIONAL GRID ELECTRICITY TRANSMISSION PLC (SCOTLAND TO ENGLAND GREEN LINK 2) COMPULSORY PURCHASE ORDER 2023

STATEMENT OF EVIDENCE

Damian Spurr
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1. QUALIFICATIONS AND EXPERIENCE

1.1 My name is Damian Spurr, and I am a Senior Project Manager with National Grid Electricity Transmission Plc (NGET), specialising in project optioneering, development and project management of overhead power line replacement and Cable replacement schemes. I have a degree in Business Studies.

1.2 In my role with NGET, I was responsible for the front-end engineering and scheme design works that were carried out on the project, in the period between mid-2018 and August 2023 when I transitioned to a new role within NGET. My responsibilities associated with the Front-End Engineering Design (FEED) works and scheme design were separated out into several bespoke activities, that were carried out as part of the scheme development works.

1.3 Prior to commencing works on the SEGL2 scheme, I was responsible for undertaking the optioneering and development works associated with the southern landfall and cable route on the Scotland to England Green Link 1 (SEGL1), this is a similar project, a HVDC link project between Torness (Scotland) and Hawthorn Pit (England) being delivered by a separate JV consisting of National Grid and Scottish Power Networks. Prior to works on the SEGL schemes I was responsible for the development works associated with a visual impact provision scheme (VIP) for NGET associated with the removal of 2km of OHL and replacing with a new cable solution.

1.4 I have nine years of experience working for NGET in various project management roles, associated with optioneering, development and delivering complex and challenging projects associated within both transmission overhead line projects (OHL) and Cable replacement schemes. I have a further twenty-three years of experience working for a contractor in the same electricity industry prior to commencing works for NGET, working in various project management roles associated with optioneering, development and delivering complex and challenging projects working primarily for NGET within the same OHL and Cable industry.

2. INTRODUCTION AND SCOPE OF EVIDENCE

2.1 The purpose of my evidence is to explain the front-end engineering design (FEED) and scheme design methodology of the Scotland to England Green Link 2 (the **Project**), specifically the southern cable corridor from landfall to the connection at the converter station (including access and construction compounds for the cable installation).

2.2 Although my role focused on the Southern (English end) of the HVDC link for detailed development works, I was responsible as National Grid representative to conduct joint assessment of SEGL 1 and EGL 2 entire routes alongside Scottish Power and Scottish and Southern Electricity Networks (SSEN) project leads during the development stages of both projects.

2.3 My evidence does not address the wider need for the Project (*addressed by Richard Gott) in section 5 (Need for the project) of their respective evidence*) or the engineering design and construction methodology in terms of Cable Depth or Decommissioning, which is the responsibility of *Dave Rogerson* and is dealt with in his evidence (section 2 Cable installation depth), Engagement with non-Engineering Stakeholders, for example

Landowners, is also not covered within my evidence and shall be addressed by Camilla Horsfall (section 6, Status of negotiations).

2.4 My statement of evidence is structured as follows:

2.4.1 Section 3 provides an overview of the Project.

2.4.2 Section 3.4.5 describes the front-end engineering design (FEED) and the scheme design works that were carried out during the optioneering phase and detailed design stage.

2.4.3 Section 5 comments on objections made to the Order.

2.4.4 Section 6 contains my conclusions.

3. OVERVIEW OF THE PROJECT

3.1 NGET owns and maintains the high voltage electricity transmission network in England and Wales. In England and Wales, the high voltage electricity transmission system operates at 275,000 volts (275kV) and 400,000 volts (400kV), comprises some 7,000 route kilometres of overhead lines, over 600km of underground cable and over 320 substations. At the substations, generation is connected to the system and the primary transmission voltage of 400kV or 275kV is transformed to lower voltages. The lower voltage electricity is taken by regional electricity companies who supply it to industrial, commercial, and domestic users across the UK.

3.2 NGET is promoting and developing proposals for a subsea High Voltage Direct Current Link (**HVDC**) between Peterhead in Aberdeenshire and Drax in North Yorkshire (**Project**). The Project has been proposed in partnership with Scottish and Southern Electricity Networks (**SSEN**) which is the transmission owner for northern Scotland and responsible for the onshore and offshore aspects of the project in Scotland.

3.3 The primary objective of the Project is to reinforce the electricity network and increase transmission network capability between Scotland and northern England. by 2029 to enable the efficient and economic transmission of electricity. The benefits of the Project are that it provides this reinforcement and provides resilience to the electricity network, addressing the current boundary constraints and transmitting renewable energy produced in Scotland to the English national electricity system.

3.4 The Project comprises the following components:

3.4.1 **Scottish Onshore Scheme:** A converter station located to the south of Peterhead, Aberdeenshire. There will be approximately 1 km of buried HVDC cable between the converter station and a landfall at Sandford Bay at Peterhead. The converter station will be connected to an adjacent substation by approximately 1 km of High Voltage Alternating Current (**HVAC**) cable. The substation connects the Project to the existing transmission system.

3.4.2 **Marine Scheme:** Approximately 436 km of subsea HVDC cable from Sandford Bay at Peterhead to the East Riding of Yorkshire cost at Barmston Sands, near Fraisthorpe of which 150 km transits Scottish waters before entering English waters for the remainder of the Project. The Marine Scheme is being developed jointly by NGET and SSEN who have submitted marine licence applications to the Marine

Scotland Licensing Operations Team (**MS-LOT**) and the Marine Management Organisation (**MMO**).

3.4.3 **English Onshore Scheme:** Approximately 69 km of underground HVDC cable from the landfall at Fraisthorpe through East Riding of Yorkshire, across the River Ouse into Selby District to a converter station at Drax, adjacent to the Drax Power Station. The converter station will be connected to the existing substation at Drax, the Drax Power Station. The existing substation at Drax Power Station will be connected to the converter station by approximately 500m of High Voltage Alternating Current (**HVAC**) cables. The substation connects the Project to the existing transmission system.

3.4.4 The English Onshore Scheme components of the infrastructure required to deliver the Project will comprise the following.

3.4.5 **Landfall**: A Transition Joint Pit (**TJP**), which will connect the marine HVDC cables forming part of the Marine Scheme to the onshore HVDC cables forming part of the English Onshore Scheme, at a landfall located at Fraisthorpe, East Riding (the **Landfall**) and including the cables from the low water mark to the TJP; The TJP is essential for transition from the HVDC marine cable type to the HVDC land cable type. While detail design is subject to the contractor design submission, it is envisaged that TJP would require a footprint of approximately 3mx10m at the Fraisthorpe location.

3.4.6 **HVDC Cables**: Approximately 69 km of two underground HVDC cables (inclusive of communication and performance monitoring apparatus) between the TJP and the converter station at Drax, Selby and including the cables from the low water mark to the TJP (the **HVDC Cables**).

3.4.7 **Converter Station**: Converter station buildings and outdoor electrical equipment together with formation of internal roads and erection of security fencing and provision of landscaping (the **Converter Station**); Subject to detailed design by the converter station contractor, FEED assessment established that the overall plot size for the converter would be approximately 200mx250m to allow the indoor and outdoor infrastructure making up the operational converter station. The size of the plot is based on available data for similar capacity converter stations.

3.4.8 **Substation**: minor works to the existing substation at Drax comprising modifications within the footprint of existing substation to facilitate connection of the HVAC Cables to the electricity transmission network (the **Substation**). This requires creation of a new cable bay for HVAC connectivity, replacement of existing cables to manage the required higher ratings for transmission connectivity to Overhead Lines. Further wider works include upgrade of existing towers (strengthening works) and replacement of OHL conductors to achieve higher capacity transmission following the SEGL 2 connectivity into Drax Substation.

3.4.9 **HVAC Cables**: approximately 500m underground HVAC cables connecting the new converter station (the **HVAC Cables**) to the existing Drax substation.

3.4.10 **New Permanent Access**: formation of new accesses (the **New Accesses**).

3.4.11 **Temporary Accesses**: formation of temporary accesses for use during construction and commissioning.

3.4.12 **Drainage**: construction and installation of drainage solutions outside of the HVDC Cable Route (the **Drainage**).

3.4.13 **Temporary Compounds**: construction of associated temporary construction compounds, temporary work areas, and temporary vehicle access arrangements (the **Temporary Compounds**).

3.4.14 **Converter Station Compound**: construction of a construction compound for the converter station site (the **Converter Station Compound**).

4. FEED / SCHEME DESIGN WORKS CARRIED OUT TO DATE TO ESTABLISH THE ROUTE ALIGNMENT ON THE SOUTHERN HVDC CABLE ROUTE BETWEEN THE LANDFALL LOCATION AND THE CONNECTION INTO THE EXISITNG 400KV DRAX SUBSTATION.

4.1 FEED design works conducted during the development stages for the project are summarised below.

4.2 Landing Sites: Several sites were considered for possible landing points at the southern end of the HVDC marine cable. The assessment considered the possible constraints at each site for offshore and onshore conditions for cable transition onto land, implications concerning onwards connectivity alignment for land sections and its implications to impacted stakeholders. The assessment reviewed the offshore conditions of rock profiles, sandbanks and tidal movement profiles, sea land transition e.g., height of transition (cliffs) for ease of cable installation were duly considered. Fraisthorpe, East Riding was selected as most suitable site.

4.3 The alignment of the land section of HVDC cable between Fraisthorpe and Drax Substation was subject of staged constraint assessment starting with environmental assessment of several routes with regards to suitability of routes conditions, existing infrastructure, stakeholders, and accessibility. Richard Gott's evidence addresses the assessment of alternatives for the cable route. This was followed up by FEED studies establishing the optimum route to minimise and where feasible, eliminate any concerns related to the terrain and stakeholder impact.

4.4 Assessments were conducted as part of the FEED works to determine traffic routeing, expected traffic profiles at various locations and accessibility implications for stakeholders. These assessments will form the basis for detailed studies, stakeholder coordination, provision of traffic management systems and preferred route selections to minimise disruptions in coordination with stakeholders and relevant authorities during the detailed design works to be carried out by the awarded main works contractor.

4.5 FEED works undertook to minimise use of public roads by limiting the HGV construction traffic to temporarily constructed Haul Road in certain location for the land section of the HVDC route. The works were carried out in conjunction with stakeholder engagement with the local highways team, with planning requirement required to gain approval of the traffic management plan prior to commencement of the construction works Furthermore, several sites were assessed to create construction compounds for site storage, site facilities

and vehicle and plant parking away from public locations, addressed by Camilla Horsfall (section 3.86, General descriptions).

4.6 Assessment was carried out during the FEE works to establish Hydrology and drainage implications resulting from the proposed cable alignment and related construction works. Required solutions include drainage channels, holding ponds as initial work. Detailed and ongoing assessment for such issues will be carried out throughout the delivery stage of the project, commencing as part of the detailed design works with the main works contractor.

4.7 Several sites were considered for the converter station for HVDC connectivity in the proximity of the Drax substation. Following detailed assessment of each site, implications of route alignment for both HVDC and HVAC cables, accessibility and lifecycle maintenance and environmental impact were considered. Based on such assessment, the site adjacent to Drax substation was selected, see converter landscaping layout plan as contained within Richard Gott's statement.

4.8 Connectivity between the converter station and the 400kV Drax substation was subjected to FEED studies for the best solution for the HVAC cable alignment and connectivity with consideration to existing crossings and accessibility implications.

4.9 FEED works undertook impact assessment for stakeholders which includes utility companies, landowners, service providers and other authorities. A crossing matrix was produced which formed the basis of direct and development stage coordination with all stakeholders being impacted directly by the route alignment and related activities during construction stages of the project.

4.10 Section 3 above sets out the key components of the Project. This section of my statement of evidence provides further detail on the approach undertaken for FEED works carried out regarding the initial route optioneering works and the associated design scheme development works t to establish a route alignment.

4.11 An initial FEED specification was prepared and tender documentations were issued, with the works aligned to an existing NGET procurement framework set up for FEED support to be provided by approved specialist engineering contractors The specifications were issued to the contractors on the framework for the required works, with the returns evaluated and scored in line with procurement guidelines to establish the specialist engineering organisation to undertaker the initial FEED and scheme design works.

4.12 The stage 1 routeing and siting study was commissioned regarding the FEED contractor undertaking an initial review of the engineering and constructability considerations for a series of corridor options proposed by National Grid's Environmental Consultant. Richard Gott's evidence addresses this (section 4.12-4.20Cable routeing). This resulted in identification of a preferred route corridor, and thereafter a preferred cable alignment (see Figure 1). Details of the project development and alternatives are detailed in the

environmental statement, chapter 2 that was submitted as part of the planning application documentation.

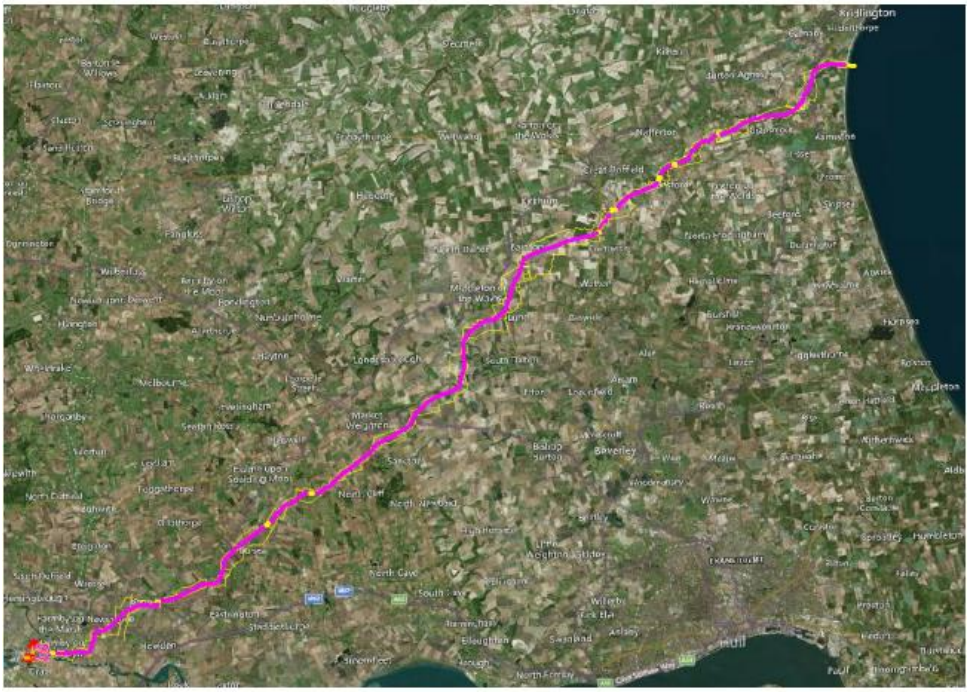

Figure 1 - Preferred end-to-end cable alignment (Fraisthorpe to Drax)

4.13 The information was comprehensive, covering several topic headings associated with the scheme ranging from constraint identification, HVDC routing/review of corridor options, landfall site, converter site (CS42) and preferred cable alignment (see figures 2 and 3). Details of the project development and alternatives are detailed in the environmental statement, chapter 2 that was submitted as part of the planning application documentation.

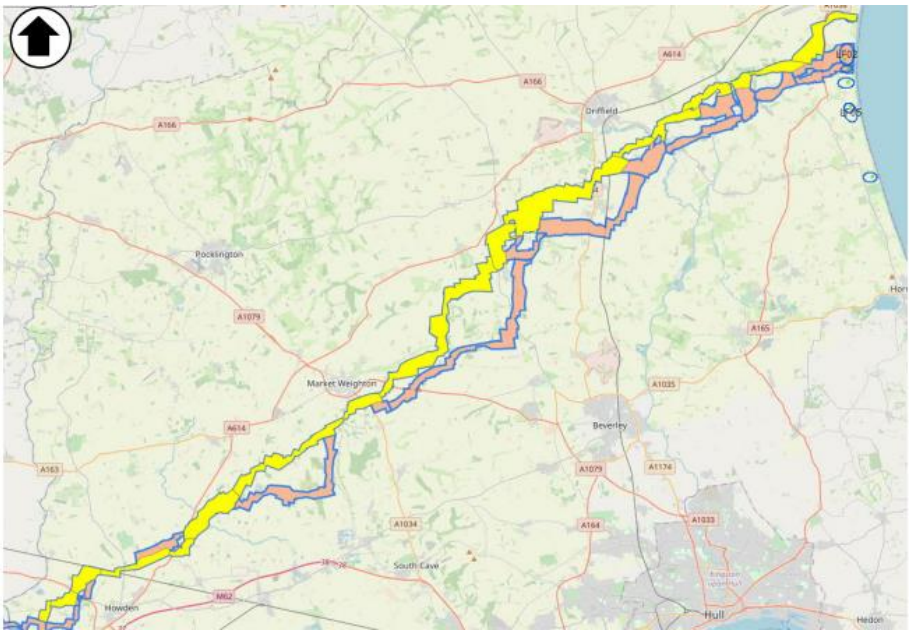

Figure 2 - Preferred route corridor (yellow) from landfall to Asselby, approx. 64.4km (non-preferred section

Figure 3 - Preferred route corridor from Asselby to the converter locations. Note site CS42 was selected as the preferred location.

4.14 Stage 2 routing and siting report was commissioned upon completion of the stage 1 study and was completed in October 2022. The scope of Stage 2 was to identify and mitigate project risks associated with information that was outstanding at the end of Stage 1. This comprised the following activities:

Desktop studies:

4.15 The FEED contractor gathered all historic information along the route corridor, publicly available or via other statutory undertakers, these include:

- Phase 1 Geo-environmental desk study
- Utilities: Obtaining utility records that were outstanding at Stage 1 and repeating utility searches prior to tender
- Unexploded Ordnance (UXO): Obtaining a risk report from Zetica.

Additionally, the contractor undertook engagement with key stakeholders (e.g.: highway authorities, statutory undertakers, drainage boards, Network Rail, etc.) to determine their requirements, assess the impact on the scheme and necessary mitigations, and achieve consensus regarding the principles of the scheme.

Targeted intrusive and non-intrusive surveys:

4.16 As part of FEED process several targeted surveys were carried out to support in determining the optimal solution. Surveys generally target those locations considered to be of higher risk from desktop reviews, or where there is a lack of historic information. Obtaining access agreements can also determine the number of surveys that can be carried out (access issues will be discussed by Camilla, in section 5.4.3 and 6.4.10). This forms the project's targeted approach to surveys onsite. These include:

- Ground investigation carried out at regular intervals along the alignment and at high-risk locations. Note that the scope of these surveys is to de-risk the scheme; further and more detailed surveys will be required to be conducted by the awarded contractor as part of the detailed design works.
- Topography and bathymetry at locations considered to be higher risk (e.g.: larger watercourses, railway crossings, areas with steep topography)
- Non-intrusive geophysical utilities survey (ground penetrating radar) at high-risk utilities (e.g.: high pressure gas mains, fuel pipelines, buried HV cables).

Engineering Stakeholder Engagement

- Further to point 4.14.7 above, the project, via its FEED Contractors engaged with several of the key stakeholders and Statutory Undertakers, including:
- BT Open Reach
- East Riding of Yorkshire Council & North Yorkshire Council (Highways and PROW)
- IDB.s (Internal Drainage Boards) LLFA (Lead Local Flood Agency) and the EA (Environmental Agency), in relation to Watercourse crossings and drainage)
- INEOS SABIC, Utility Crossing.
- NWR (Network Rail), Rail Crossing.
- MOD (Ministry of Defence), abandoned fuel pipeline crossing.
- National Grid, Utility Crossing.
- Northern Gas, Utility Crossing.
- Northern PowerGrid, Utility Crossing.
- Yorkshire Water, Utility Crossing.

Development of civil engineering design to determine the scheme red line boundary.

4.17 Following the information gathering exercises, as detailed above, the route is optimised, taking account and consideration of;

- Accessibility: Development of access routes including determining constraints and works required on the public highway.
- Drainage: Development of an outline drainage strategy and drainage proposals.
- Earthworks: Reviewing options for raising the converter station following completion of a Flood Risk Assessment by others.
- Public Right of Way (PROW) crossings.
- Reviewing and responding to Change Requests arising from the non-statutory public consultation.
- Preparation of construction methodology, programme and traffic assessment documents to assist National Grid's consultants with preparation for planning and public consultation.

4.18 The scope of work included extensive support from the National Grid's lands team and environmental consultant, to assist in the preparation of the planning submission and plans for land acquisition. It also included supporting National Grid's tender process, for appointment of a Design & Build Contractor. Both elements have comprised of numerous workshops and meetings, many of which have resulted in amendments to the engineering design. Design developments have been detailed within this report under the relevant subject headings.

4.19 This document summarises the activities undertaken during the routing and siting works, to provide a clear record of decisions and assumptions used in the development of the scheme. The report details several change requests associated with proposed changes to the route alignment that were discussed and were included:

4.20 **Swathe width and Optionality**

4.21 As discussed above the FEED development works refined the route to a single, buildable proposal. In terms of the cable route this formed a nominal 60m redline boundary swathe of which a 40m construction swathe would be finalised by the Principal Contractor following further Ground Investigation and Detailed Design.

There are exceptions to this, where there were known engineering complexities e.g., crossing obstacles; roads, rivers etc, where the swathes increase to greater widths, for example 100m; and, where, due to obstacles, a second parallel route 'option' was proposed in both the Planning Application and the CPO submission. This only affects two locations, due engineering reasoning – other Optionality is due to Landowners Engagement (and is covered by Camilla Horsfall)

4.22 **Kiplingcotes PROW / Old Railway Crossing**; Affecting the precise crossing location of the PROW (Old railway track). See Figure 4, at the time that the CPO was made, the project needed to retain two options for a short section of the cable route, where the route needs to cross a former railway corridor. The preferred option for cable installation is to use a trenchless installation, typically by way of Horizontal Directional Drilling (HDD). The preferred HDD route at this point has always been along the option to the west as shown on the plan. The alternative option was originally planned to be a trenched installation (required to cross the old railway) to the east as shown on the plan.

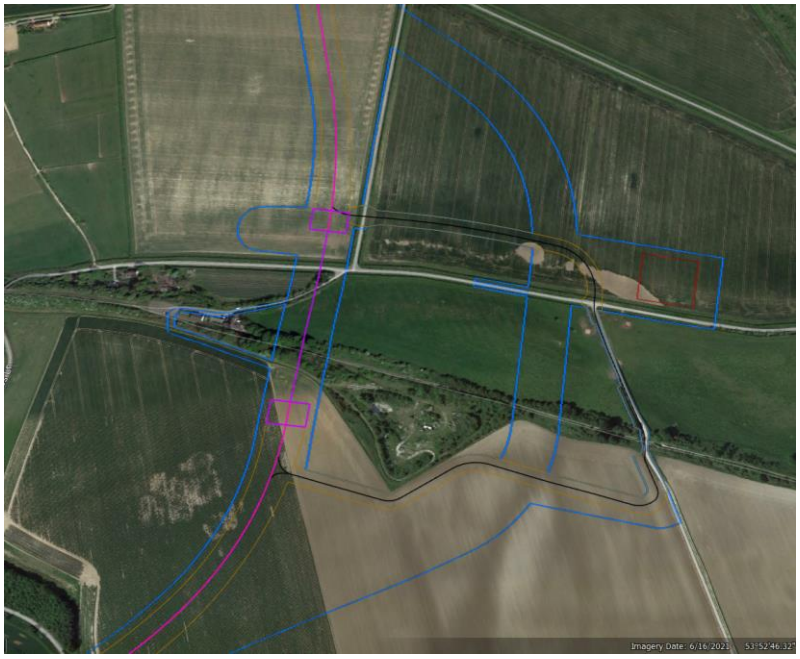

Figure 4 -Kiplingcotes 'Optionality'

The second option (East route as shown within figure 4) was proposed as it is anticipated that due to topography and ground conditions, HDD at this specific location could be challenging. The exact topography and ground conditions will not be known until more detailed geotechnical investigations and surveys are undertaken on-site. To ensure that there is flexibility if the HDD route is not feasible, an alternative alignment to the west has been identified, which would permit either an open-cut, or shorter trenchless, crossing. CPO powers would have only be exercised over one option, on completion of detailed design works, if a voluntary agreement cannot be reached with the landowner.

Both options are permitted by the ERYC Planning Permission and are include in the planning boundary (East Riding of Yorkshire 22/01990/STPLFR & North Yorkshire 22022/0711/EIA).

However, since the CPO was made, the Preferred Bidder proposed using the western HDD route. The project is therefore able to remove the eastern route, and optionality at this locale.

4.23 **Hutton Cranswick – A164 Highway Crossing**; Affecting the precise crossing location of the A614. See Figure 5. This provides very minor optionality for a short section of the cable route at the road crossing. The ground conditions in this area mean that a groundwater source protection zone has potential to be impacted by the HDD cable installation if the eastern option is utilised.

An alternative cable alignment has therefore been identified slightly to the south (see figure 5) in order to minimise the risk of impact at this location. This alternative alignment would allow for an open-cut solution if HDD at the western optionality was not feasible, due to the potential engineering difficulties associated with installing a HDD solution in this area, due to the ground water source protection.

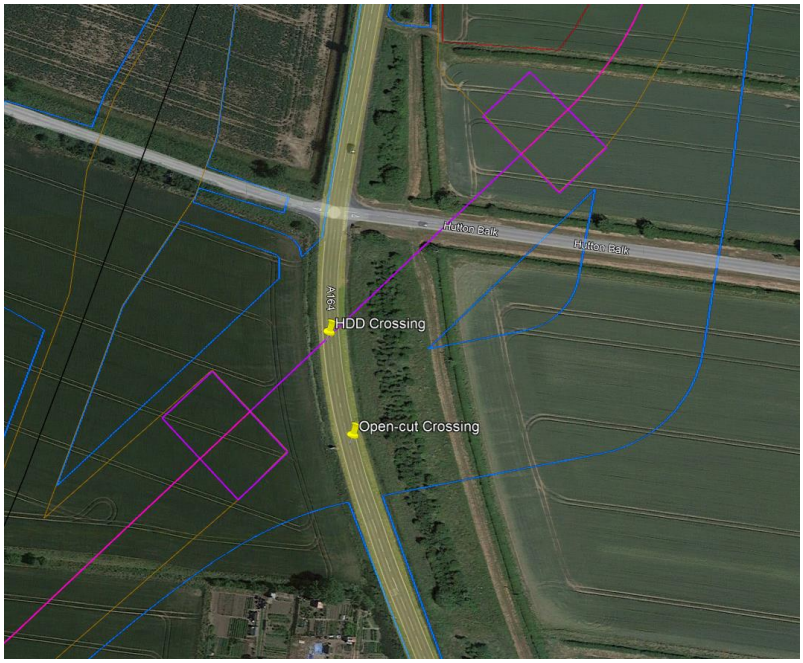

Figure 5 - Hutton Cranswick 'Optionality'

4.24 The optionality at this location is required pending completion of main works contractors detailed design ground investigation works, completion of a Hydrogeological Risk Assessment and continued engagement with the highway authority on completion of the detailed design works. Once this is completed, a decision will be made as to which option will be taken forward. CPO powers would only be exercised over one option if a voluntary agreement cannot be reached with the landowner.

Both options are permitted by the ERYC Planning Permission, the planning boundary was widened in this location to allow for the two possible solutions.

4.25 **Early Accesses/ Routes** As part of the route design, as well as planning the main cable and haul road routes, it was imperative to support the construction plan with additional early/side accesses along the route.

The purposes of introducing these additional access routes into the construction swathe were for a) Preconstruction Works (pre-discharge of planning requirements) including. Provide access for pre-construction works, including non-intrusive surveys, such as environmental and topographical surveys. Provide access for intrusive surveys, such as Ground Investigation, and Archaeological investigations. Early Construction Works (post-discharging planning requirements), prior to a full construction haul road being installed.

The installation of site boundary / demarcation / fencing, to ensure the site boundary was safe and secure for the project, and predominately for the safety of Landowners, Tenants, and the public. The provision to the main works Contractor for access for limited construction plant to both sides of obstacles along the route to progress the main haul road – for example to be able to access both sides of stream to install a culvert for the construction haul road. Early access to locations where HDD (Horizontal Directional Drilling) works were to take place. The purpose of this was to de-risk the construction programme by not requiring the haul road to fully construction prior to commencing with HDD activities.

4.26 These access routes were to follow utilise existing highway access points to tracks / fields and follow the most appropriate route to key locations (follow existing field tram lines, or follow the edge of fields)

4.27 An information document was prepared and issued in January 2023, providing landowners and tenants with details associated with works requiring early/side accesses. This document was prepared in response to several queries raised during landowner discussions. The document was revised and reissued in January 2024.

4.28 In January 2024, following analysis of the routes and methodologies by the Preferred Contractor, the requirements for use of early/side access were refined, removing the requirement for HDD access – in all cases other than exceptional circumstances. An example of exceptional circumstances would be where substantial archaeological finds have been discovered halting the construction haul road installation. In this circumstance we would further negotiate and seek agreement with the impacted landowners for use of these accesses. The latest version on the briefing paper in within the appendices of this proof.

4.29 A scheme specific drone survey was carried out in April 2022 which was combined with the route alignment works to establish a visual media that was prepared to show the route alignment and the various site constraints and complexities along the cable route between the landfall and the connection point at Drax into the existing transmission network.

The drone footage was shared with landowners and agents during discussion and during the engagement day that was held in 2023.

5. OBJECTIONS MADE TO THE ORDER

5.1 Section 8 of the evidence of (Camilla Horsfall) outlines the objections remaining at the time of writing, NGET's response to them and the status of negotiations.

5.2 Several objections have been raised in relation to the proposed development, in terms of route alignment (including optionality), surveys and investigations, engineering agreements and methodologies. The following section shall respond to these objections.

5.3 **Objection 2** raises the issue from Network Work Rail, on the ground that their operational railway interests/ land will be adversely affected. As stated above within section 4.17 the project has been liaising with NR and the project currently has a draft BAPA (Network Railway's Basic Asset Protection Agreement) in place for this works (the documentation requires detailed design works to the carried out by the main works contractor to be able to confirm the exact locations of the proposed cables within the planning boundary swathe).Additional information is contained with Camilla Horsfall statement, see section 8.3.2

Objection 5 raises concerns on Construction Traffic, Roads, Use and Condition, as well as survey information. Witness (Camilla Horsfall) will provide further detail within her statement regarding general communication, however as per section 4.39 above, the project has provided information on early/side access (See appendices A), which may impact Mr Drysdale. Details regarding early accesses are covered within section 4.39 – 4.41 above.

As detailed recently (Jan 2024) we have updated this briefing note (See appendices A) reducing the types of use/works proposed for these types of access, further reducing the impact at this location. In terms of damage to private tracks, roads, or lands; the project has committed to carry out pre and post conditional surveys (photo and description) to ensure that any impacted lands area returned to their original condition.

At this location the project is aware of settlement concerns at Mr Drysdale's property. We are proposing pre and post settlement surveys in relation to site investigations, as covered within section 4.23, we have gathered desktop and performed target ground investigation (intrusive bore holes and non-intrusive surveys) to form our proposal. The Principal Contractor will carry out further ground investigation works and investigation to produce a detailed design to satisfy the findings and constraints.

5.4 **Objection 6** relates to the 'Optionality' at the Kiplingcotes locale. Based on the targeted investigation, and the visible gradients in the location, at the time of Planning and CPO submission a preferred crossing location had not been confirmed. However, following an assessment by the preferred bidder, as of January 2024, the project has been able to remove this optionality and can confirm the western crossing location will be required only.

5.5 **Objection 8(8)** also relates to 'Optionality' at the Kiplingcotes locale. As stated above this optionality has been removed, and the proposal will now follow the western route. Additionally, in relation the general development of the scheme at the Kiplingcotes/Soanes locale, see section 8.3.14 of Camila Horsfall statement, detailing the rationale and process in proposing the access / highway crossing and sharing a small section of private road.

5.6 **Objection 12** relates to the engagement with INEOS. As stated in section 4.23 above, the project has engaged on engineering matter with stakeholders including INEOS, these works were carried out during the FEED stage of the project.

5.7 **Finally, Objection 17** is concerned with the PROW (Public Right of Way) at the Kiplingcotes location and mitigation/ methodology to not interfere with use. The project confirmed that should the eastern option be taken up. The PROW would be undergrounded by a trenchless solution technique. However, as stated above this optionality (Eastern Route v Western Route) has since been removed, and the proposal will follow the western route. This route incorporates a trenchless crossing of the PROW.

6. SUMMARY AND CONCLUSION

6.1 In my statement of evidence I have described the works carried out from the initial commencement of the FEED works to the subsequent preparation of the scheme design works that were carried out as part of the detailed design and route development works that were carried out on the scheme to date over the approx. 69km of HVDC underground cable route from the landfall location to the converter station and the associated temporary construction compounds, together with the works that are required to construct and/or install those physical components.

6.2 I consider that the front-end engineering design (FEED) and scheme design associated with the southern DC cable route is appropriate and feasible, this can be seen in the level of works caried out from the completion of the initial FEED specification, completion of the initial and detailed engineering optioneering works. Inclusive of recent dialogue

prepared and issued in relation to early/side access and the preparation of the drone survey that detailed the routes complexities and challenges established as part of the initial FEED and scheme design works.

7. DECLARATION

7.1 I confirm that the opinions expressed in this proof of evidence are my true and professional opinions.

Damian Spurr

16th February 2024

APPENDIX A

Eastern Green Link – EGL2

Information for landowners and tenants: Works requiring early/side access

January 2024

Introduction

This document shares information on the works that require early and/or side access, as part of our proposed EGL2 project. These works are essential to enable the construction/installation of EGL2's onshore elements, including the cables.

Please note, the information below should be used as a guide only. Exact timescales, and vehicle type and numbers used will depend on the size of the installation, site environment and is subject to the detailed design works. The project will make contact to coordinate all access.

Clarification on Permanent Right of Access

Some side accesses are marked as permanent access. To be clear this is only a 'right' to use a route for inspection or in a future faulting event – in either circumstance access would be arranged and coordinated with landowners/ tenants. No installation will remain, unless agreed otherwise.

Works requiring early/side access routes

The early/side accesses are required for the following works:

1. Access for surveys and designs
2. Worksite fencing / demarcation
3. Support the installation and removal of temporary culverts and bridges
4. Works relating to access itself

In a change to previous versions of this document in the vast majority of 'early accesses' we are now not proposing to use these early/side accesses for:

5. Installation of Horizontal Directional Drills (HDDs), inclusive of plant and equipment required to install the HDD
6. Installation of other trenchless cable laying techniques

Following further analysis by the Main Works Contractor, HDD/Other trenchless works are not planned to be used via these accesses (with very few exceptions)[1]. However, in exceptional circumstances, access for HDD/Other trenchless works may be requested at a later date – in such circumstances specific detail on our exact requirements will be provided and agreement sought with further mitigation agreed.

For clarity, the early/side access routes **WILL NOT BE** used for the installation of the cables themselves. Instead, the installation of the cable will be made via the construction haul road.

[1] If temporary rights of access are required for HDD/Trenchless techniques, this will be made clear to landowners and occupiers separate to this briefing note.

1. Access for surveys and designs

To support the project design, the early/side access routes are likely to include access for surveyors and engineers to gather non-intrusive survey information. This would be infrequent and in pickup trucks or similar. Additionally, where intrusive surveys are required, tractor and trailer access may be required for the transportation of equipment.

2. Worksite fencing / Demarcation

The purpose of this work is to install the boundary fence-line of the working swathe along the cable route to ensure the safety of landowners, our workers, the public and livestock. We would install gateways where necessary to allow landowners the ability of access all their lands. The fencing usually installed in agricultural land would be stockproof fencing wire and timber. However, there may also be the need to install other environmental fencing.

3. Support the installation and removal of temporary culverts and bridges
4.

Many locations along the cable route are dissected by obstacles, including streams, rivers and ditches. To cross these obstacles, the Main Works Contractor may be required to install temporary culverts and bridges, which in many cases are difficult to install from only one side. Side accesses are therefore required to enable the installation of the culverts and bridges. Haul roads can then link the crossings.

Culverts

As discussed above, side accesses are required to be able to access both sides of a ditch for the safe installation and removal of culverts, typical example of culverts as per figure 1.2.

Figure 1.2

Works

Depending on the environment and obstacle, local damming and over pumping may be required during the installation. The works will include excavation of the area, for the installation of a ‘box’ or ‘circular’ culvert. These are either made of concrete, galvanized steel, aluminium, or PVC.

Works will be carried out in line with the necessary statutory consents and approvals required prior to commencement of these works.

Vehicles

- Excavator, tractor and trailer for delivery of materials (pipes, concrete, aggregate)
- Pickup trucks for light goods and engineering team
- Potential requirement for pumping equipment

Duration of works

One to two weeks (dependant on culvert size).

Bridges

In certain locations it may be more appropriate for the main contractor to install temporary bridges to cross obstacles such as streams or ditches. Similarly, to installing the culverts, the main contractor will require access to both sides of the ditch for the safe installation and removal of these bridges. See figure 1.3 for typical example of bridges.

Figure 1.3

Works

The works would include the excavation of an area for the abutment (the part that supports the ends of the bridge) and associated works. The temporary steel bridge would then be placed into position via a crane lift, as per agreed methods of installation. The bridges would be designed and installed as per the agreed design.

Once no longer needed, the bridge, concrete and abutment will be removed and the land reinstated. These works will be carried out in line with the necessary statutory consents and approvals required prior to commencement of these works.

Vehicles

Due to the size and length of cranes and other associated vehicles we do not expect the early/side access to be used for the main installation of the bridges. Instead, it would be used for preparation works. These works would require the use of:

- Excavators
- Tractors and trailers for the delivery of materials
- Pickup trucks for light goods and transporting the engineering team

Duration of Works:

Approximately four to six weeks, depending on bridge size.

5. Works relating to access itself

Minor works may be required to ensure the route is fit for purpose. These could include vegetation clearance, temporary trackway and/or stone road installation and removal. It is unlikely that these works will include any permanent installations.

As stated, following further analysis by the Main Works Contractor, HDD (or other trenchless cable laying techniques) works are not, in the vast the majority, planned to be used via these early/side accesses, instead the construction hauls road with be used.

However, there two exceptions to this:

1) In one or two locations along the entire 68km route, side accesses may be required for the construction of HDD or Other trenchless techniques. Affected landowners/ tenants will have been made aware of this in advance.
2) In exceptional circumstances, access may be requested at a later date, for HDD/trenchless works – In such circumstances contact will be made with the landowners/ tenants of the land in advance to agree the specific terms for access depending on the main work contractors' requirements. This could be required in such circumstances as an Archaeologic Find blocking/slowing the progress of the haul road installation – but this would be a last resort, as the project would look at resequencing the works in the first instance.

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The following is for information only and provides detail on works that would be involved in the exception events above:

6. Installation of Horizontal Directional Drills (HDDs)

Horizontal Direction Drilling is a trenchless method of installing underground cables to cross obstacles, with minimal impact to the surrounding area. The HDD installs cables in a shallow arc along a prescribed bore path by using surface-launched drilling rig (see figure 1.1.).

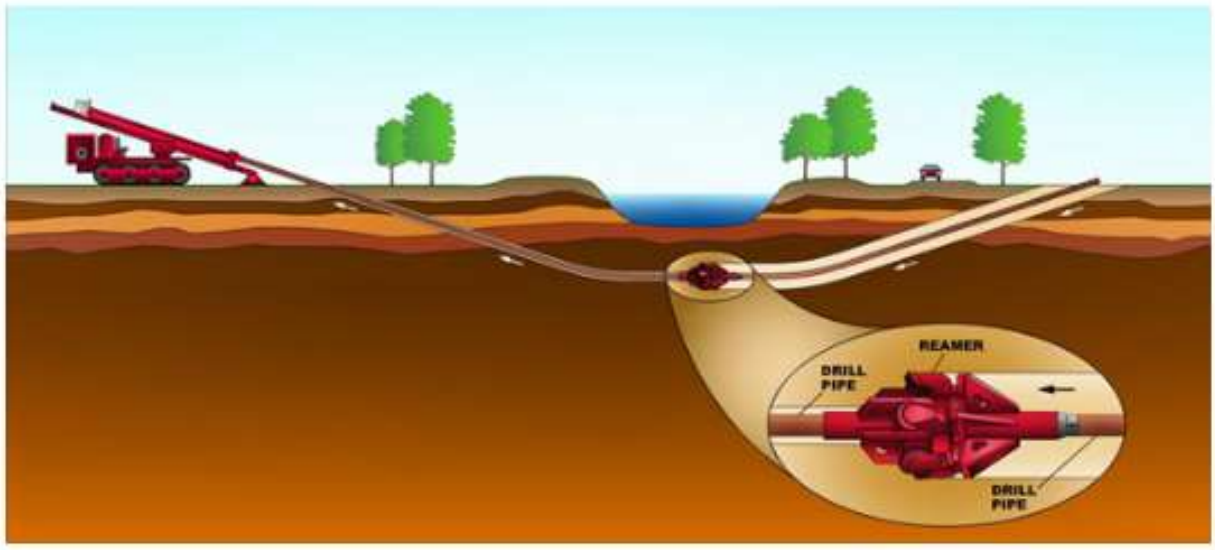

Figure 1.1

Using side access for the installation of the HDDs along the proposed cable route could greatly reduce the overall programme of the work. Without the side access, the complete construction haul road (and associated, stone, culverts etc.) would need to be installed from the main construction access points, for both sides of the obstacle. These distances are significant in places along the cable route, requiring additional time periods to firstly install the haul roads prior to the installation of the HDDs.

The drilling rig is the main element of the HDD setup. Drilling rods are added one segment at a time as the drilling head progresses through the ground. A drilling head attached to the front of the drill string cuts through the soil and drops the cuttings into the bore. There are various drilling heads designed for different ground conditions. Most HDD

projects rely on a drilling mud system. These require a bentonite mixture that seals the bore walls and prevents subsidence. This also carries the cuttings out of the bore and provides lubrication and cooling to the drilling head.

Vehicles and movements associated with the HDDs

Mobilisation and demobilisation

- An HDD rig, including its setting up and subsequent removal, would require several HGVs or tractors and trailers, depending on access conditions and HDD length.

Please note, the final vehicle movements will be specific for the HDD size/locations and dependent on the access requirements.

Ongoing deliveries, (subject to detailed design, and on a case-by-case basis),

- Approximately one tractor and trailer carrying water tank per hour
- Approximately one tractor and trailer carrying HDD rods per hour
- Approximately one to two pickup trucks (or similar) making engineering site visits per day
- Approximately one van/pickup truck to transport working gang per day
- One welfare unit for the working gang, which may be a van, per day

Duration of the works

Completion of each HDD will be subject to detailed design works, and likely to take approximately four to six weeks. This includes about three to four weeks of drilling and one to two weeks to pull the cable duct back. The timings are indicative and may vary depending on the size and complexity of the HDD. A such, they will not be fully known until the detailed design works are carried out to establish the requirements.

Contractors will likely work Monday – Friday from 7am to 7pm and Saturday until mid-afternoon, except during duct pullback which is a 24-hours-a-day activity (once duct pullback begins, the operation must be continuous until it is complete, to avoid a potential collapse in the previously reamed hole). However, the access route shall not be used out-of-hours, other than in emergency.

Proposed working hours are detailed within the planning application and will be subject to any specific requirements detailed within the approved planning application.

7. Installation of other cable laying techniques

These works will be very dependent on the exact cable laying method used, of which there are three.

The open cut method consists of excavating a trench for the installation of the cable and assumes the same methodology as culvert installation (see above).

For the pipe jacking method (a trenchless technology method for installing a prefabricated pipe through the ground), and the thrust boring method (another trenchless boring method used where excavations are undesirable), we assume two to three months works duration, with excavation plant required. However, these two methods have fewer daily movements than HDDs.