The Great Grid Upgrade

North Humber to High Marnham

NHHM-AEC-CNS-CPR-0001

North Humber to High Marnham

Volume 6: Environmental Statement

Document 6.4 Environmental Statement Chapter 4 - Description of the Project

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4. Description of the Project

4.1 Introduction

4.1.1 This chapter provides a description of the North Humber to High Marnham Project (the Project).

4.1.2 The Project is a new 400 kilovolt (kV) electricity transmission connection of approximately 90 kilometres (km) in overall length between two proposed new substations: the 400 kV Birkhill Wood Substation and 400 kV High Marnham Substation.

4.1.3 The proposed new substations are subject to separate planning applications. For more information, see **Application Document 5.4 Consents and Licences Required Under Other Legislation**.

4.1.4 The Project comprises:

- Approximately 90 km of new overhead line (Route Code 4AF) between the proposed new 400 kV Birkhill Wood Substation and 400 kV High Marnham Substation;
- Replacement and re-alignment of a section of the existing 400 kV overhead line (Route Code 4ZQ) between Brantingham and east of Broomfleet;
- Replacement and re-alignment of a section of the existing 400 kV overhead line (Route Code ZDA) between Ealand and west of Keadby;
- Line entry connections to a proposed new 400 kV Birkhill Wood Substation;
- Line entry connections to a proposed new 400 kV High Marnham Substation; and
- The Project would include other required works, for example, temporary diversions for works on existing overhead line routes, temporary access roads, highway works, temporary works compounds, work sites and ancillary works. The Project would also include utility diversions and drainage works. There would also be land required for environmental mitigation, offsetting, compensation and Biodiversity Net Gain (BNG).

4.1.5 This chapter contains the following sections:

- Section 4.2 describes the location of the Project;
- Section 4.3 describes the good design principles that have been embedded into the design of the Project;
- Section 4.4 describes the infrastructure proposed;
- Section 4.5 describes environmental mitigation;
- Section 4.6 describes the Biodiversity Net Gain proposals;
- Section 4.7 describes the methods proposed for constructing the Project's infrastructure;

- Section 4.8 describes the operation of the Project;
- Section 4.9 describes the maintenance requirements;
- Section 4.10 describes the decommissioning of the Project; and
- Section 4.11 provides a description of the Project as proposed in each Route Section.

4.1.6 This chapter should be read in conjunction with the following chapters:

- **Application Document 6.1 Chapter 1 Introduction**;
- **Application Document 6.3 Chapter 3 Main Alternatives Considered**; and
- **Application Document 6.5 Chapter 5 Environmental Impact Assessment Approach and Methodology**.

4.1.7 This chapter is supported by the following figures:

- **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**;
- **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**;
- **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**; and
- **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

4.1.8 This chapter should be read in conjunction with the following plans and drawings:

- **Application Document 2.4 Works Plans**;
- **Application Document 2.5 Traffic Regulation Order Plans**;
- **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**;
- **Application Document 2.7 Elevation Drawings**;
- **Application Document 2.12 Typical Design Drawings**; and
- **Application Document 2.13 Trees and Important Hedgerows to be Removed or Managed Plans**.

4.1.9 This chapter is supported by the following appendices:

- **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**;
- **Application Document 6.4.A2 Appendix 4.2 Indicative Bridge and Culvert Schedule**;
- **Application Document 6.4.A3 Appendix 4.3 Indicative Public Right of Way, Road, Railway and Rights of Navigation Crossing Schedule**; and
- **Application Document 6.4.A4 Appendix 4.4 Indicative Third Party Schedule**.

Comments Raised in the Scoping Opinion

4.1.10 As set out in **Application Document 6.1 Chapter 1 Introduction**, this Environmental Statement (ES) has been informed by **Application Document 6.5.A2 Appendix 5.2 Scoping Opinion** published by the Secretary of State in September 2023.

4.1.11 A Scoping Report for the Project was issued to the Planning Inspectorate on 21 August 2023 (**Application Document 6.5.A1 Appendix 5.1 Environmental Impact Assessment Scoping Report**) and a Scoping Opinion was received from the Planning Inspectorate on behalf of the SoS for the Department for Energy Security and Net Zero on 29 September 2023 (**Application Document 6.5.A2 Appendix 5.2 Scoping Opinion**). Table 4.1 sets out the comments raised in **Application Document 6.5.A2 Appendix 5.2 Scoping Opinion** that are relevant to the description of the Project and how these have been addressed in the ES. **Application Document 6.5.A2 Appendix 5.2 Scoping Opinion** takes account of responses from prescribed consultees as appropriate. **Application Document 6.5.A3 Appendix 5.3 Scoping Response Tables** provide responses to the comments made by the prescribed consultees at the scoping stage that relate to the scope of the assessment and how each comment has been considered.

Table 4.1 – Comments raised in the Scoping Opinion relating to the description of the Project

ID	Inspectorate's comments	Response
2.1.1	**Proposed substation connections:** The Scoping Report identifies that the overhead line would connect into two new proposed substations, one located near to the existing Creyke Beck Substation and the other close to the existing High Marnham Substation, each of which would be consented separately. The specific locations of these proposed substations have not yet been determined. The ES should therefore confirm the likely schedule for development of these substations projects and demonstrate where they have been taken into consideration within the assessment.	Following statutory consultation on the Project in 2025, a decision was taken to remove both the proposed 400 kV Birkhill Wood Substation and 400 kV High Marnham Substation and associated works from the Project. Separate planning applications for the 400 kV Birkhill Wood Substation, and 400 kV High Marnham Substation were submitted by National Grid in July and November 2025 to the local planning authorities of East Riding of Yorkshire Council and Bassetlaw District Council, respectively. The planning applications have subsequently been approved in 2026. Both of these substations have been considered in the inter-project cumulative effects assessment presented in **Application Document 6.21 Chapter 21 Inter-project Cumulative Effects**.
2.1.2	**Description of the Proposed Development**: The Scoping Report presents a high-level description of the Proposed Development within a scoping boundary and notes that the design is at an early stage of development. Locations of pylons, site compounds and connections to substations have not yet been determined but are proposed to be within the scoping boundary presented. At the point an application is made, the description of the	The Scoping Boundary has now been refined to form the Order Limits, taking into account **Application Document 6.5.A2 Appendix 5.2 Scoping Opinion**, feedback received from both rounds of non-statutory consultation, statutory consultation, stakeholder engagement, environmental surveys and further design and assessment of the Project. The proposed locations of the pylons are shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** and indicative heights and footprints for

ID	Inspectorate's comments	Response
	Proposed Development should be sufficiently detailed to include the design, size, capacity, technology, and locations of the different elements of the Proposed Development. This should include the footprint and heights of the structures (relevant to existing ground levels), as well as land-use requirements for all elements and phases of the development. The description should be supported (as necessary) by figures, cross sections, and drawings which should be clearly and appropriately referenced.	each are presented in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**. The proposed locations of site compounds and temporary works required to construct the Project are shown in **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**. Indicative design drawings for both the permanent structures and elements of the temporary works have been provided; these are set out in **Application Document 2.12 Typical Design Drawings**
2.1.3	**Limits of Deviation/flexibility:** The Scoping Report notes that the ES will include Limits of Deviation to allow flexibility in the development of the design. Alternative pylon designs, line swap overs, and methods for installation of the overhead line and cabling are not yet confirmed and the Inspectorate considers that these options have potential for very different environmental effects. The Applicant should make every attempt to reduce the range of options and explain clearly in the ES which elements of the Proposed Development have yet to be finalised and provide the reasons. At the time of application, any Proposed Development parameters should not be so wide ranging as to represent effectively different developments. The parameters should use the maximum envelope within which the built development may be undertaken to ensure a worst-case assessment. The ES should also identify the parameters that have been assumed as the worst-case scenario for each aspect scoped into the assessment and ensure that interactions between aspects are taken into account relevant to those scenarios. The development parameters should be clearly defined in the draft Development Consent Order (dDCO) and in the	The Scoping Boundary and the range of options has now been refined to form the Order Limits taking into account **Application Document 6.5.A2 Appendix 5.2 Scoping Opinion**, feedback received from both rounds of non-statutory consultation, statutory consultation, stakeholder engagement, environmental surveys and further design and assessment. The development parameters are defined in **Application Document 3.1 Draft Development Consent Order**. This chapter describes the Project and details where flexibility is required. The Limits of Deviation (LoD) are described in section 4.4 and the horizontal (lateral) LoD is illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**. As set out in section 5.7 of **Application Document 6.5 Chapter 5 Environmental Impact Assessment Approach and Methodology**, the assessments presented in this ES have assessed a design envelope in line with the Rochdale Envelope section of Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessment (Planning Inspectorate, 2026). In line with this advice the parameters established for the Project are sufficiently detailed to enable a proper assessment of the likely significant environmental effects and the

ID	Inspectorate's comments	Response
	accompanying ES. The Applicant, in preparing an ES, should consider whether it is possible to robustly assess a range of impacts resulting from a large number of undecided parameters. The description of the Proposed Development in the ES must not be so wide that it is insufficiently certain to comply with the requirements of Regulation 14 of the EIA Regulations.	identification of necessary mitigation. Section 5 in each of the **Application Documents 6.6 to 6.19** sets out the basis of assessment and how each topic assessment has taken into account the flexibility within the design envelope of the Project. **Application Document 6.3 Chapter 3 Main Alternatives Considered** presents the main alternatives considered in the design of the Project.
2.1.4	**Transient and temporary construction activities:** The ES should describe the phasing or duration of each stage of construction and any potential for construction works to be carried out in more than one location simultaneously. Any stages where there would be overlapping construction activities in more than one location should also therefore be assessed. Where temporary construction activities such as creation of bunds for topsoil storage, temporary drainage or fencing are required, these should be considered within the assessment, where there is potential for significant effects to occur.	Section 4.7 of this chapter describes the phasing and indicative duration of construction. The individual topic chapters have assessed the impact of temporary construction activities (where these are scoped into their assessments).
2.1.5	**Use of culverts:** The Inspectorate draws the Applicant's attention to the Environment Agency's consultation response (Appendix 2 of [the] Opinion) regarding its position in relation to watercourse culverting.	No culvert crossings of main rivers are proposed. Where a temporary construction access track is proposed to cross a main river, a clear span bridge has been proposed. This is set out in **Application Document 6.4.A2 Appendix 4.2 Indicative Bridge and Culvert Schedule**.
2.1.6	**Tunnels and trenchless methods of construction:** Where potential cable routes are proposed to be laid in tunnels or through other methods of trenchless excavation (such as Horizontal Directional Drilling) as mitigation for significant effects, the Applicant should ensure that these measures are appropriately secured in the draft dDCO and ES. Where such methods are employed, the potential	As a result of further assessment and appraisal, there are no sections of undergrounding proposed on the proposed 400 kV overhead line route. There is a requirement to divert existing utilities including distribution network operator (DNO) and telecommunication overhead lines, which would involve undergrounding of these assets. This is described in section 4.7 of this chapter

ID	Inspectorate's comments	Response
	consequential environmental effects of these techniques (risks from release of drilling fluids, additional land-take requirements) should also be considered within the assessment.	and assessed where relevant within the topic chapters.
2.1.7	**Working widths for cable laying:** Table 4.2 identifies that up to six cable trenches 1.5 m wide would be required for cable laying. It is not clear however why the associated cable corridor is therefore 120 m wide. The ES should provide appropriate drawings and cross sections to demonstrate the likely working methods for cable laying and thus the need for the temporary and permanent land-take required.	These parameters were identified in the **Application Document 6.5.A1 Appendix 5.1 Environmental Impact Assessment Scoping Report** specifically in relation to possible requirements for the undergrounding of the proposed 400 kV overhead line. However, as a result of further assessment and appraisal, no sections of undergrounding of the proposed overhead line are proposed. Details of how third-party services would be undergrounded, including the different parameters required for such works, are set out in section 4.7 of this chapter.
2.1.8	**Landscaping / planting:** Where landscape measures or landscape planting is identified, these should be illustrated in appropriate plans within the ES. The ES should provide details of the proposed landscape planting strategy as well as any monitoring proposed, and any assumptions made regarding vegetation growth rates.	Environmental mitigation areas including areas of landscape planting are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**. **Application Document 7.8 Outline Landscape and Ecology Management Plan** provides details of the proposed planting mix for each area and the assumed growth rates.
2.1.9	**Night-time construction works:** Within the 'Doncaster Landscape Character Assessment and Capacity Study' subsection of Table 6.5, it states that no overnight work is anticipated. Yet Table 15.3 states that night-time construction work may be required at static sites where certain activities cannot be stopped once started. The ES should contain a description of any works that are likely to be required during nighttime construction activities and be consistent throughout in its reporting of night-time construction works.	The proposed construction working hours are set out in section 4.7. Night-time working is not proposed as standard but there are some specific operations proposed that may take place outside the proposed core working hours; these are set out in section 4.7. The assessments presented in this ES are consistent and have considered the effects of operations undertaken within the proposed core working hours and those which may take place outside them, as appropriate.
2.1.10	**Lighting – Night-time working**: There are inconsistencies within the Scoping Report regarding night-time working	Night-time working is not proposed as standard as part of the core construction working hours. There are some specific

ID	Inspectorate's comments	Response
	(see ID 2.1.9 above) Tables 7.5 and 7.5 both scope in effects of night-time lighting, based on the potential for significant effects. Conversely, Paragraph 7.8.5 states that no significant effects are anticipated from night-time lighting during construction and operation. The Inspectorate requests that the Applicant clarify its position regarding this matter and that the ES is consistent.	operations proposed that may take place outside the proposed core working hours, and these are set out in section 4.7. The assessments presented in this ES are consistent and have considered the effects of operations undertaken within the proposed core working hours and those which may take place outside them including where lighting may be used, as appropriate.
2.1.11	**Phases:** The Scoping Report refers to the construction, operation, maintenance, and decommissioning phases. A description of the proposed maintenance activities is set out in Section 4.5 of the Scoping Report. The Scoping Report is inconsistent in the way it addresses maintenance, referring to both the 'maintenance phase' and 'operation/maintenance'. In some instances, this results in a lack of clarity in what activities or aspects of the Proposed Development the Applicant is seeking to scope in or out of the assessment. The Inspectorate is of the view that maintenance activities form part of the operational phase, and any associated effects should be assessed as operational effects and considered alongside other operational effects where relevant, unless a clear justification for why this is not appropriate is provided.	The operation of the Project includes the physical infrastructure and the transmission of electricity through that infrastructure. Maintenance activities are activities undertaken periodically during the operation of the Project. Some of these would require additional temporary infrastructure such as matting for access tracks and could result in impacts over and above the operation of the Project, such as temporary habitat loss. For those reasons the descriptions of operation, provided at section 4.8, and maintenance, at section 4.9, have been kept separate. The effects of both operation and maintenance have been considered as part of the assessment. Keeping operation and maintenance separate has ensured the potential temporary effects associated with maintenance activities are clearly set out. For clarity, the description of maintenance has been split into routine maintenance, and repair and refurbishment, and where these are scoped into the topic chapters this has been made clear.
2.1.12	**Duration of effects:** Where the Applicant proposes to scope a matter from the EIA based on activities/impacts lasting for 'a short period of time' or 'short duration' or 'short term' only, the Inspectorate will require a defined timeframe for each assessment is required to ascertain that no LSE will arise. The ES should ensure it is consistent in using such terminology.	**Application Document 6.5 Chapter 5 Environmental Impact Assessment Approach and Methodology** describes the general methodology that has been applied within this ES. This includes the consideration of duration. **Application Documents 6.6 to 6.19** set out how they have applied the general methodology, taking into account any topic-specific guidance. Where duration is a factor, this is explained within **Application Documents 6.6 to 6.19**, as

ID	Inspectorate's comments	Response
		the potential for duration to contribute to a likely significant effect varies between topics.
2.1.13	**Siting of pylons:** The Applicant should endeavour to fix the siting of each component to reduce uncertainty prior to submission of any application; where this is not possible, the Applicant should justify why pylon locations are not fixed and identify the level of flexibility that is being sought to ensure that the ES assesses a worst-case scenario adopting the parameters-based approach. The Inspectorate notes that a worst case scenario may vary between topic assessments.	The location of the proposed pylons and the horizontal LoD are shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**. A proportionate degree of flexibility has been incorporated into the design of the Project so that any unforeseen issues encountered post-consent can be addressed. A description of the LoD applied is provided in section 4.4. The assessment presented in this ES has taken the flexibility into account. Section 5 of **Application Documents 6.6 to 6.19** sets out the basis of assessment and how each topic assessment has taken into account the flexibility within the design of the Project.
2.1.14	**Ease of reference to figures:** The Inspectorate noted the interchanging use of the terms 'figure' and 'image' used in the Scoping Report to describe Figures 17.1 and 17.2. For ease of reference and clarity, the ES should use consistent terminology when referring to figures, particularly to avoid confusion between images within the text and images supplied as separate figures. Where images are embedded in the text, these should be clearly legible.	Where an image has been included within the ES, this has been labelled as an 'Image'. The figures provided are separate to the text and have been labelled as 'Figures'.
2.1.15	**Supporting information**: The Inspectorate noted that some figures were provided only through accessing documents in the Scoping Report list of references rather than supplied within the report itself. The text also mentions a Figure 11.5 and an Appendix 1.A, but these are not referred to again and are not supplied. The Applicant should ensure that information is easy to find within the ES, and for example, where information is supplied in supporting documentation, it is clearly referenced. Where possible, supporting information should be supplied as a clearly	Each figure and appendix has been given an application document number which has been cross referenced in bold throughout. Each chapter includes a list of those figures and appendices in the introductory section, which should be read in conjunction with the chapter.

ID	Inspectorate's comments	Response
	labelled Appendix to the ES. Appropriate use of contents lists to clearly identify what is contained within volumes of material should also be employed to aid navigation.	

4.2 Location of the Project

Geographic Location

4.2.1 The Project would be located in the East of England across the Humber and East Midlands regions. The Project would be located in an area that is predominantly rural, with large parts of the land under arable use. The city of Kingston-upon-Hull, and the towns of Beverley, Crowle, Scunthorpe, Epworth, Haxey, Gainsborough and Retford are located within 5 km of the Order Limits. There are multiple villages and individual properties within or near to the Project.

4.2.2 The Project would be located within three local authority areas as illustrated on **Application Document 6.1.F1 Figure 1.1 Project Location and Route Sections**. These are:

- East Riding of Yorkshire Council;
- North Lincolnshire Council; and
- Bassetlaw District Council which forms part of the two-tier local government authority area of Nottinghamshire, where Nottinghamshire County Council is the upper tier authority.

Route Sections

4.2.3 The Project has been sub-divided into six geographical sections for reader accessibility. These are shown on **Application Document 6.1.F1 Figure 1.1 Project Location and Route Sections**. It should be noted that these differ to the 11 Route Sections the Project presented during non-statutory and statutory consultations which were presented to aid consultees in providing feedback.

4.2.4 The Route Sections are illustrated on **Application Document 6.1.F1 Figure 1.1 Project Location and Route Sections** and comprise:

- Route Section A between the proposed Birkhill Wood Substation and the River Ouse;
- Route Section B between the River Ouse and Crowle;
- Route Section C between Crowle and North Moor (M180);
- Route Section D between North Moor (M180) and the River Idle;
- Route Section E between the River Idle and Darlton; and
- Route Section F between Darlton and the proposed High Marnham Substation.

4.3 Good Design Principles

Design Approach and Standards

4.3.1 **Application Document 5.10 Design Approach Document** sets out the approach to the design of the Project.

4.3.2 The Project has been designed in line with the National Grid options appraisal process (National Grid, 2012) as outlined in **Application Document 6.3 Chapter 3 Main Alternatives Considered** and described in **Application Document 5.9 Design Development Report**. The Project has been designed to comply with existing National Grid standards and relevant external guidance and processes, such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines (International Commission on Non-Ionizing Radiation Protection, 1998) for reducing effects in relation to electric and magnetic fields. The Project will comply with relevant design safety standards including the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS) which set out the criteria and methodology for planning and operating the National Electricity Transmission System. National Grid policies and processes, which contain details on design standards required to be met when designing, constructing, operating and maintaining assets such as those proposed on the Project, will be adhered to.

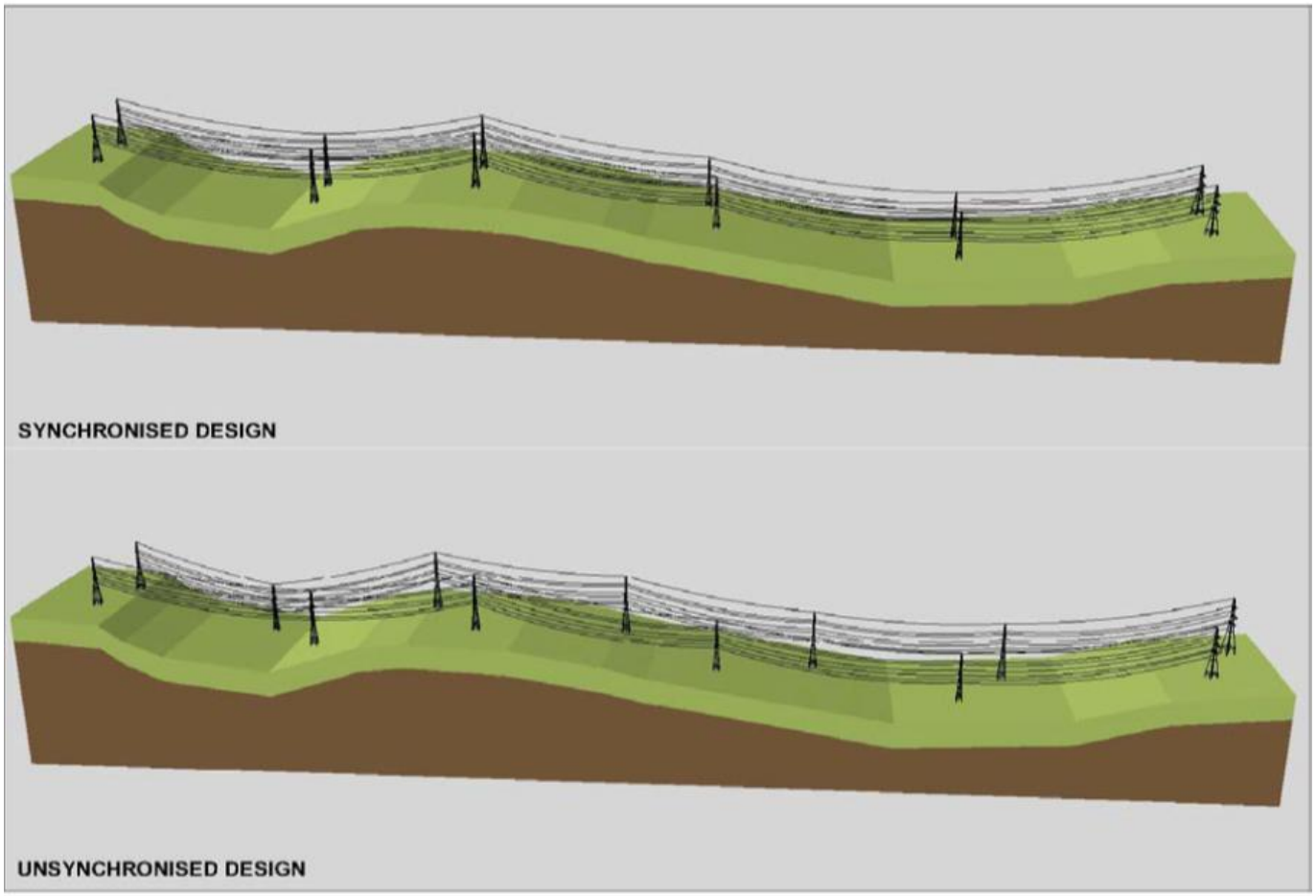
4.3.3 Throughout the development of the Project, measures have been embedded into its design to avoid or reduce the potential for environmental effects. These measures are set out in **Application Document 7.3 Register of Environmental Actions and Commitments**.

4.3.4 Building on the overarching design approach and embedded mitigation measures, the following sections describe the specific principles and considerations that have influenced the design of the Project.

Approach to Synchronicity

4.3.5 Where sections of the existing and the proposed overhead lines would run close or parallel to each other, the siting of the new pylons relative to the existing pylons becomes particularly important in visual terms. If the pylons and sag of the conductor in each span were substantially out of step, then the visual ‘flow' of the two lines would be discordant, potentially resulting in greater visual effects than a synchronised design. This effect is illustrated in Image 4.1.

Image 4.1 – Synchronicity



4.3.6 This visual effect can be reduced or avoided if new pylons are located adjacent to the existing pylons and are of a similar height, synchronising the rise and fall of the adjacent lines across the landscape.

4.3.7 There are no policies or guidance documents that specifically refer to the synchronising or pairing of pylons when routeing parallel overhead lines. However, when considering routeing of transmission lines, National Grid employs the Holford Rules (National Grid, 1959) as the basis for the approach.

4.3.8 The following note on Rule 6 of the Holford Rules (National Grid, 1959) states:

'*In all locations minimise confusing appearance. Arrange wherever practicable that parallel or closely related routes are planned with tower types, spans and conductors forming a coherent appearance; where routes need to diverge, allow where practicable sufficient separation to limit the effects on properties and features between the lines*.'

4.3.9 National Grid considers that achieving a coherent appearance includes the pairing or synchronising of pylon locations where practicable.

4.3.10 The following conclusions are made on the definition of synchronisation when referring to two parallel 400 kV overhead lines using approximately 50 m high pylons:

- Synchronised – Pylons are considered to be synchronised when they are located directly perpendicular to each other, or are almost perpendicular, within a maximum deviation of 20 m from the centres of the two pylons.
- Broadly Synchronised – Pylons are considered to be broadly synchronised when they sit almost perpendicular to each other, within a maximum horizontal deviation (up and down the alignment) of between 20 m and 50 m from the centre of the pylons up or down the line. Being broadly synchronised still achieves a level of coherency between the two lines, as in some views the pylons would still present the impression of being paired, but less so in views perpendicular from the line.
- Anything beyond 50 m from the centre of the pylons up or down the line is not considered to be synchronised or broadly synchronised.

4.3.11 Where the proposed overhead has been routed in parallel or close parallel with the existing 400 kV overhead lines, the design has taken into consideration synchronisation where appropriate, subject to technical and other environmental factors.

Approach to Materials and Waste

4.3.12 The Project would require the use of new materials during construction such as galvanised steel for the pylons, reinforced concrete for the foundations, insulator sets (typically glass, porcelain or polymeric) and aluminium conductors.

4.3.13 The material sources are unlikely to be identified until the detailed design stage of the Project, which would happen post-consent. The nature of the Project means that it is difficult to use secondary (reused/recycled) sources during its construction, as this can affect the operation and the design life of the Project. However, National Grid has existing processes in place to obtain materials from sustainable sources and to use recycled materials where these do not compromise the required design standards and operational life of the Project.

4.3.14 Temporary materials, such as aggregate for access routes and site compounds, works cabins, and security fencing, would be required during construction. Where practicable, temporary materials would be sourced from other construction projects within the region and reused at other construction projects after completion of the Project.

4.3.15 Waste materials would be produced by the Project. The Main Works Contractor(s) would be required to produce a Site Waste Management Plan (SWMP) prior to construction (commitment GG24 in **Application Document 7.3 Register of Environmental Actions and Commitments**). This would set out the measures to reduce the generation of waste in the first place and appropriate measures to reuse and recycle materials where practicable. It would also identify appropriate waste facilities to dispose of materials.

4.3.16 Soil may need to be removed from site in certain circumstances, such as where the soil was found to be contaminated. Soil removal would be managed in an appropriate manner, as set out in the good practice measures within **Application Document 7.5 Outline Soil Management Plan**.

Approach to Energy Consumption

4.3.17 The Project would support the UK's net zero target by reinforcing the electricity transmission network between the North of England and the Midlands and facilitate the connection of planned renewable energy projects such as offshore wind

generation and interconnectors and increase boundary transfer capability. The Project would help meet future energy requirements. For further information please refer to the 'Needs Case' section contained within **Application Document 7.17 Strategic Options Report Including Needs Case**.

4.3.18 The Project would consume energy during manufacture and construction. The Project will consider a range of measures to reduce energy consumption during construction, such as the use of energy-efficient plant and tools. The Project will aim to use a local grid connection for temporary site power, where viable. Where not viable, an alternative sustainable option should be used, such as appropriately sized alternatively fuelled or hybrid generators, where practicable.

4.3.19 **Application Document 7.4 Outline Construction Traffic Management Plan** sets out measures to reduce journeys, such as car sharing and using public transport where practicable. It also sets out commitments regarding use of electric vehicles or vehicles conforming with emission standards ratings. Energy consumption during maintenance and operation would be limited to the energy required to operate the Project. National Grid also has existing processes in place to monitor its energy consumption across the network. If consented, the operational energy requirements would be managed as part of the wider network operation.

4.3.20 The measures outlined above would reduce the energy consumption of the Project during both construction and operation.

4.4 Proposed Infrastructure

Order Limits

4.4.1 The Order Limits are defined as the maximum extent of land within which the Project, as described in this chapter, may be carried out. They include both permanent and temporary land required to construct, operate and maintain the Project. The Order Limits are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Proposed Overhead Line

4.4.2 This section provides a general description of the proposed overhead line infrastructure. A more detailed description of the Project as proposed in each Route Section is provided in section 4.11.

4.4.3 The proposed overhead line would comprise conductors supported by pylons. A typical pylon operating at 400 kV is approximately 50-60 m in height. A typical span distance between pylons is approximately 350 m. In broad terms, there are typically three pylons for every kilometre of overhead line.

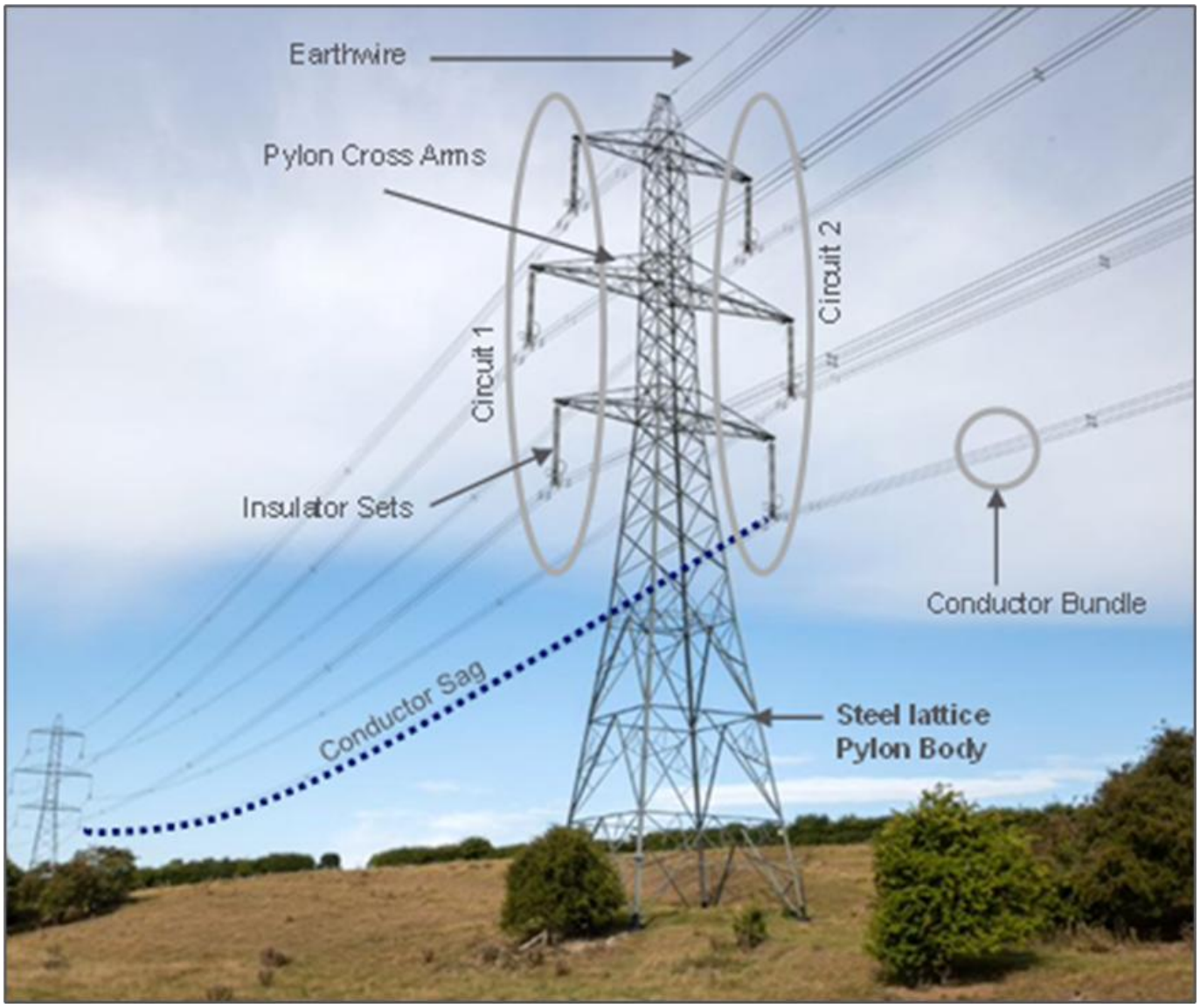
4.4.4 Pylons are in general either: suspension pylons (from which the conductor is simply suspended); or tension (angled) pylons (more robust structures that hold conductors in tension where the alignment of an overhead line changes direction or to maintain tension in long straight sections of the route). An example of a suspension pylon is illustrated on **Application Document 2.12 Typical Design Drawings - Illustrative Suspension Lattice Pylon Sheet 2 of 20** and an example of a tension pylon is illustrated on **Application Document 2.12 Typical Design Drawings - Illustrative Tension Lattice Pylon Sheet 3 of 20**. In some locations, such as on the proposed overhead line entries to the proposed substations, terminal pylons are required.

Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule sets out which pylons are proposed to be suspension pylons and which are proposed to be tension pylons.

4.4.5 The conductors would be connected to the pylon by an insulator assembly consisting of a set of insulators (components made from a material with a high resistance to the flow of electric current such as glass, polymeric, or porcelain) and steel fittings and conductor clamps. Additional fittings, such as spacers and vibration dampers, would be fitted to the conductors. Spacers prevent the conductors from touching each other and vibration dampers prevent oscillations of the conductors from reaching the insulator fittings and minimise effects of fatigue loading. Arcing horns protect insulators from damage due to dangerous electrical conditions, such as overvoltages due to electrical faults or lightning strikes.

4.4.6 The main components of an overhead line are shown in Image 4.2, which shows a typical steel lattice suspension pylon.

Image 4.2 – Components of a typical overhead transmission line



4.4.7 Where the route of the overhead line changes direction, tension pylons are required to accommodate the additional sideways strains, with the insulators tensioning the conductors horizontally to keep conductors aligned. This is illustrated in Image 4.3.

Image 4.3 – Indicative suspension pylon (left) and tension pylon (right)



Proposed pylons

4.4.8 The proposed pylons for the Project would be steel lattice with three arms on either side of a central body. **Application Document 2.12 Typical Design Drawings - Illustrative Lattice Pylons Sheet 4 of 20 and Sheet 5 of 20**, provides an illustration of the type of pylon proposed for the Project alongside illustrations of the existing pylon types. **Application Document 2.12 Typical Design Drawings - Illustrative Lattice Pylon Footprints Sheet 7 of 20** provides an illustration of the footprints of the proposed pylons.

4.4.9 Typical heights for steel lattice pylons operating at 400 kV are around 50-60 m; however, the proposed height of each pylon would depend on the specifics of each location such as topography, land use and crossings. For example, the proposed height of the proposed River Ouse crossing pylons (4AF77 and 4AF78) would be approximately 129 m, subject to detailed design. These pylons need to be tall enough so that the conductors have sufficient clearance to the navigable river and can be sited outside the designated sites and flood defences, increasing the span length and therefore pylon height.

4.4.10 Indicative pylon heights for the Project are provided in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule** and are illustrated on **Application Document 2.12 Typical Design Drawings - Illustrative Min-Max Lattice Pylons Sheet 6 of 20**.

Proposed conductors and insulators

4.4.11 The conductor bundle for the proposed overhead line and sections on the existing 400 kV 4ZQ overhead line which require reconductoring would be Triple Araucaria[1] (700 mm² All Aluminium Alloy Conductor (AAAC)) or alternative technology that performs to the same or a better standard in relation to noise on standard lattice pylons.

4.4.12 The conductor bundle for the proposed replacement and re-alignment of a section of the existing 400 kV ZDA overhead line route between Ealand and west of Keadby would be Twin Rubus[2] (500 mm² AAAC), or alternative technology that performs to the same or a better standard in relation to noise on standard lattice pylons.

4.4.13 Whilst the indicative design has been based on the conductor types stated above, flexibility on conductor type is required at the River Ouse crossing between proposed pylons 4AF76 and 4AF80 as further work would be required during detailed design to confirm the conductor type for this section. The preliminary design considers the use of Triple Araucaria bundle conductor and glass insulators; however, these will need to be confirmed during detailed design stage, as an alternative river crossing conductor of equivalent capacity and reliability may be needed.

4.4.14 Suspension pylons would typically have a single insulator string hanging vertically downwards from each crossarm end to carry the conductor bundle. For tension pylons, the number of insulator strings would typically equal the number of conductors within the bundle (e.g. three insulator strings for a triple conductor bundle), and these would be orientated horizontally outwards from the crossarm ends and take the tension of the conductors.

4.4.15 Insulators can be made of different types of material, but the most common industry standard is either glass, porcelain or polymeric.

Line swap overs

4.4.16 Line swap overs comprise reconfiguration of an existing overhead line to allow the overhead line routes to remain parallel without the need for a line ‘duck-under’. Line swap overs allow for the continuation of a route from a section of new pylons to a section of existing pylons, whilst the parallel route is a continuation of a route from a section of existing pylons to a section of new pylons.

4.4.17 Line swap overs are achieved by removing a section of existing line and forming two unconnected ends, which are then each connected to a new line approaching from either side. A line swap over is illustrated schematically in Image 4.4.

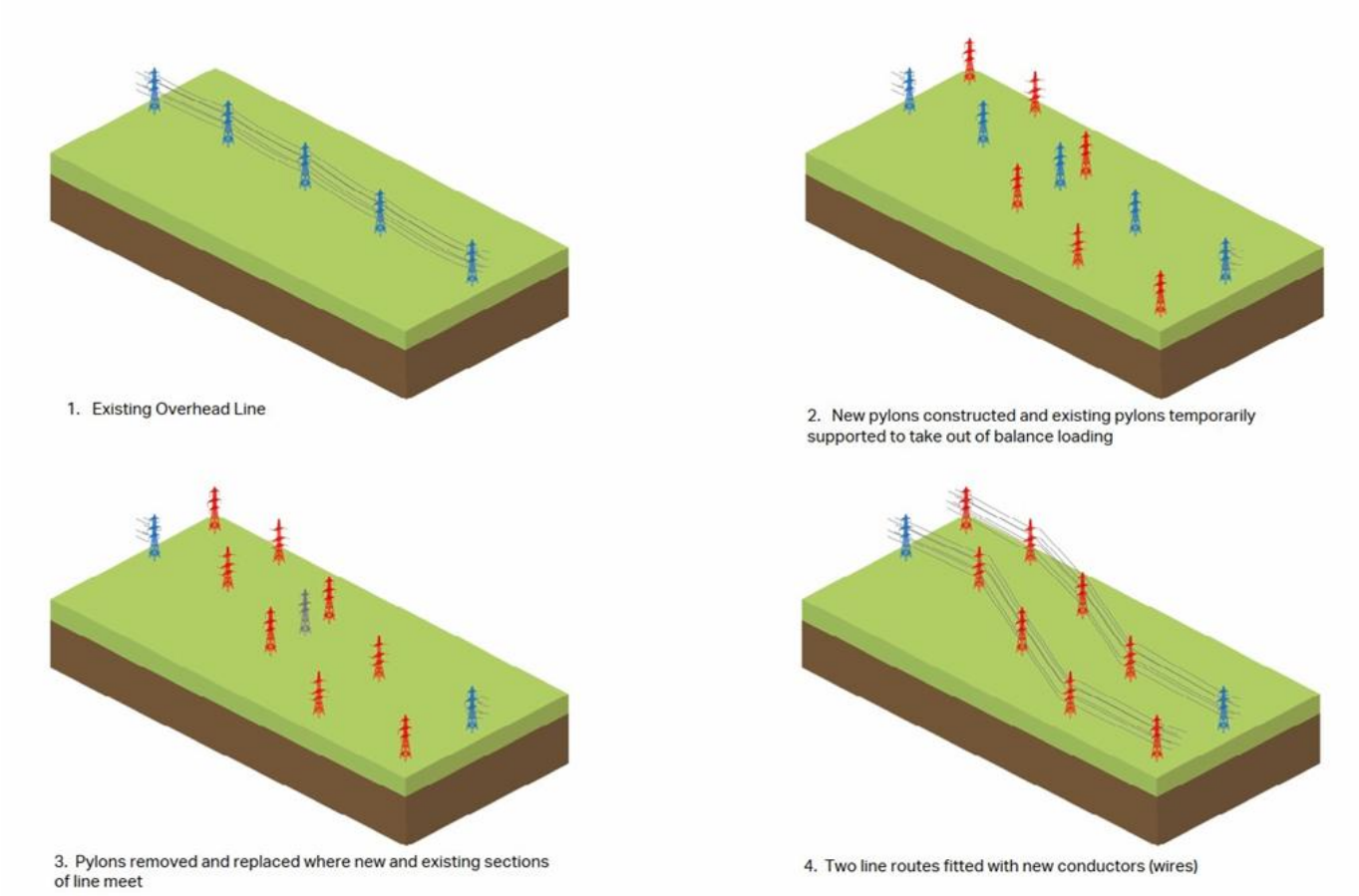
4.4.18 Temporary diversions of localised sections of the existing route may also be required to ensure continuity of supply on the affected routes.

4.4.19 The Project would include two line swap overs in Route Section A. These are described in more detail in section 4.11.

[1] Three conductors in each bundle.

[2] Two conductors in each bundle.

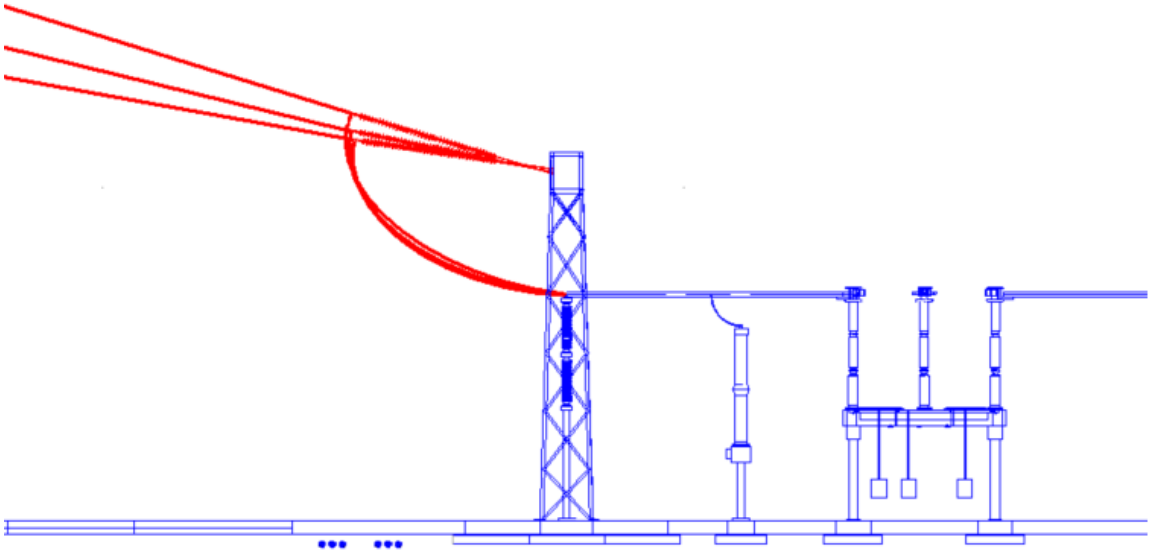
Image 4.4 – Schematic of a line swap over



Substation line entries

4.4.20 Separate planning applications for the 400 kV Birkhill Wood Substation, and 400 kV High Marnham Substation were submitted by National Grid in July and November 2025 to the local planning authorities of East Riding of Yorkshire Council and Bassetlaw District Council, respectively. The planning applications have subsequently been approved in 2026. The Birkhill Wood and High Marnham Substations, and associated gantry structures ((4AF1 and 4AF2) and (4AF259 and 4AF260)) respectively as shown on **Application Document 2.4 Works Plans**, do not form part of this Project. They have been shown for reference only, and are included in the Order Limits for access and to enable the proposed overhead line connections to be constructed. The line entry connections will comprise of conductors and fittings, which would be installed between the substation gantry structures (4AF1 and 4AF2 at Birkhill Wood Substation and 4AF259 and 4AF260 at High Marnham Substation) the pylons positioned immediately adjacent to the substations (4AF3 and 4AF258) and the substation equipment. An indicative diagram of a line entry is shown in **Image 4.5**.

Image 4.5 – Indicative diagram of substation line entries



Limits of Deviation

4.4.21 As recognised in the Planning Inspectorate's Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessment (Planning Inspectorate, 2026), a necessary and proportionate degree of flexibility needs to be incorporated into the design of a development. This flexibility is required so that unforeseen issues encountered after a development has been consented can be addressed.

4.4.22 To allow for this flexibility, Limits of Deviation (LoD) have been developed for the Project components. The LoD provide a maximum distance or measurement of variation within which every component of the Project would be located. LoD have accordingly been applied horizontally and vertically. The LoD as set out below are secured in **Application Document 3.1 Draft Development Consent Order**.

Horizontal

4.4.23 The horizontal LoD are generally 100 m (50 m either side of the centreline). In certain locations this has been reduced to less than 100 m to avoid a particular receptor and, in some locations, the LoD are wider to allow for additional flexibility.

4.4.24 Where the LoD are 100 m, the extent of horizontal movement of any pylon is limited by the span length and conductor swing. Typically, pylons can move 30 m whilst still allowing the conductors to remain within the full 50 m LoD. However, at a maximum span length, the centre of the pylon could move approximately 20 m either side of the centreline subject to topography and local conditions.

4.4.25 The proposed horizontal LoD are shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**, and an example of how the LoD could be utilised is shown on **Application Document 2.12 Typical Design Drawings - Illustrative Overhead Line Limits of Deviation Sheet 9 of 20**.

4.4.26 There is no limit placed on the movement of a pylon along the centreline (longitudinal LoD). The movement along the preferred alignment is constrained by the maximum span the pylon can withstand, the different structural loads acting on the conductors

and the rest of the equipment, and the need to maintain statutory clearances to ground and obstacles whilst not exceeding the vertical LoD described below.

Vertical

4.4.27 The upward vertical LoD for a typical standard lattice pylon are approximately +6 m which would allow for two extension panels (typically +3 m per extension panel but this varies between pylon types). Vertical LoDs are provided for each pylon in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

4.4.28 There are certain locations where bespoke pylons are required, such as at the River Ouse crossing. In these specific locations the vertical LoD would be greater than +6 m.

4.4.29 There is no limit placed on the maximum depth of below ground works. Whilst standard below ground LoD are not proposed, the Project would never go deeper than necessary for technical or environmental reasons as this would add engineering operational complexity and cost.

Use of the Limits of Deviation

4.4.30 While the LoD are self-limiting as described above, the flexibility provided by the LoD is essential to allow for factors that could require the movement of a pylon from the location shown on **Application Document 2.4 Works Plans**. These factors include unforeseen ground conditions, unrecorded significant archaeology, new or increased ecological constraints and landowner requests. It is also possible that other reasons may be identified, such as to respond to planning permissions or buildings constructed prior to a Development Consent Order (DCO) being granted.

4.4.31 As such the Project will seek to retain the pylon positions as shown on **Application Document 2.4 Works Plans** unless following detailed design there are engineering, safety, environmental or other reasons to move a pylon within the Limits of Deviation. Should any pylon be repositioned along the length of the proposed overhead line, the subsequent effects on the position of the next pylons along the alignment (i.e. any subsequent repositioning of other pylons) would be limited as far as practicable.

4.5 Environmental Mitigation

4.5.1 Three types of mitigation have been incorporated into the Project and assessment: embedded, control and management, and additional. These are described in **Application Document 6.5 Chapter 5 Environmental Impact Assessment Approach and Methodology**.

4.5.2 **Application Document 7.3 Register of Environmental Actions and Commitments** sets out all mitigation measures categorised by type, and each mitigation measure has been assigned a specific reference. These are referenced where relevant in each ES chapter with any monitoring measures where appropriate.

4.5.3 Areas of additional mitigation have been included within the Order Limits. These areas are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** and described in detail in **Application Document 7.8 Outline Landscape and Ecology Management Plan** and **Application Document 7.13 Flood Risk Assessment** (where they relate to flood compensation). These areas include land for:

- Landscape planting, to reinstate taller vegetation removed to construct the Project which cannot be reinstated under the proposed overhead line, and to mitigate effects on landscape and ecological features;
- Protected species mitigation, to provide habitat for protected species that cannot be avoided through embedded measures;
- Flood compensation;
- Functionally linked land; and
- Veteran tree compensation.

4.6 Biodiversity Net Gain

4.6.1 In recent years, the UK Government has introduced legislation and policy that puts biodiversity at the heart of the planning system. The Department for Environment, Food and Rural Affairs (Defra), describes Biodiversity Net Gain (BNG) as an approach to development that makes sure habitats for wildlife are left in a measurably better state than they were before development (Department for Environment, Food and Rural Affairs, 2026). The statutory requirement for Nationally Significant Infrastructure Projects (NSIPs) to achieve a specified biodiversity gain objective (as set out in a biodiversity gain statement) will be mandatory for applications made from 2 November 2026. The biodiversity gain objective for energy NSIPs, as set out in Nationally Significant Infrastructure Projects: Biodiversity Gain Statement for Energy (Department for Environment, Food and Rural Affairs, 2026), will require that the biodiversity value attributable to a development exceeds the pre-development biodiversity value of the on-site habitat by at least 10%. This is referred to as 10% BNG.

4.6.2 The Project application for development consent is being submitted prior to 2 November 2026 and therefore the provision of 10% BNG is not mandatory. Notwithstanding, the Overarching National Policy Statement for Energy (EN-1) (Department for Energy Security and Net Zero, 2025) states that NSIPs should seek opportunities to provide BNG, including wider environmental gains and benefits to local communities and national policy priorities, where possible, and the Secretary of State should give appropriate weight to environmental net gain and BNG during decision making. However,10% BNG is not a legal requirement for this application for development consent.

4.6.3 National Grid's environmental and social commitments in its Social and Environmental Action Plan (National Grid, 2026) include a commitment to deliver a minimum of 10% BNG with potential for wider environmental and societal benefits for all developments for which planning permission or development consent is required. Therefore, the Project proposes to deliver 10% BNG with potential for wider environmental and societal benefits on a voluntary basis, and substantively follows the guidance set out in Nationally Significant Infrastructure Projects: Biodiversity Gain Statement for Energy (Defra, 2026).

4.6.4 Detail on the Project's approach to voluntary BNG is provided in **Application Document 7.20 Design Development Report - 2025** and **Application Document 7.1 Biodiversity Net Gain Report**.

4.6.5 The Project has identified land adjacent to Treswell Wood Nature Reserve, Wood Lane, Retford as suitable for delivering voluntary BNG and has included this land within the Order Limits as shown in **Application Document 2.3 Land Plans** –

Section E Sheets 11 and 12. The land is located approximately 450 m west of the proposed new overhead line.

4.6.6 The land is immediately adjacent to Treswell Wood Nature Reserve, which is a Site of Special Scientific Interest (SSSI) and is designated because it is one of the best examples of an ash, oak and maple wood in Nottinghamshire. Delivering voluntary BNG on this land would provide a buffer to the SSSI. Buffering[3] is an established approach that protects areas of highest wildlife value from impacts of surrounding, land uses. This also presents the opportunity to provide habitat connectivity and an extended habitat for wildlife, including successfully reintroduced dormouse at Treswell Wood, as well as landscape enhancement.

4.7 Construction

4.7.1 This section describes how the infrastructure described above would typically be constructed and installed.

Construction Programme

4.7.2 Subject to gaining development consent, construction works would be expected to start in 2028. The proposed overhead line would be available for commercial load (operational) by the end of 2031, with reinstatement works continuing into 2032 and potentially 2033. Certain preparatory works and measures may take place in advance of the commencement of construction authorised by the Order. Examples of such works and measures include archaeological trenching, ground investigations and the implementation of environmental mitigation, including protected species mitigation.

4.7.3 The construction schedule will be developed as the Project progresses and will take account of seasonal constraints such as protected species breeding or hibernation seasons, and reducing impacts associated with working within flood zones.

4.7.4 Due to the linear nature of the Project, construction activities would be transient, moving along the length of the working area over time. The construction programme presents only an overview of the main activities for the whole Project, including the following:

- The new 4AF Route between Birkhill Wood and High Marnham Substations;
- The modifications on the existing ZDA Route; and
- The works on the existing 4ZQ Route, including its temporary diversion and line swap over.

4.7.5 An indicative construction programme for the Project is presented in Table 4.2.

[3] Buffering core areas is one of the ‘Lawton Principles’ as set out in Making Space for Nature: A Review of England's Wildlife Sites and Ecological Networks (Lawton, et al., 2010)

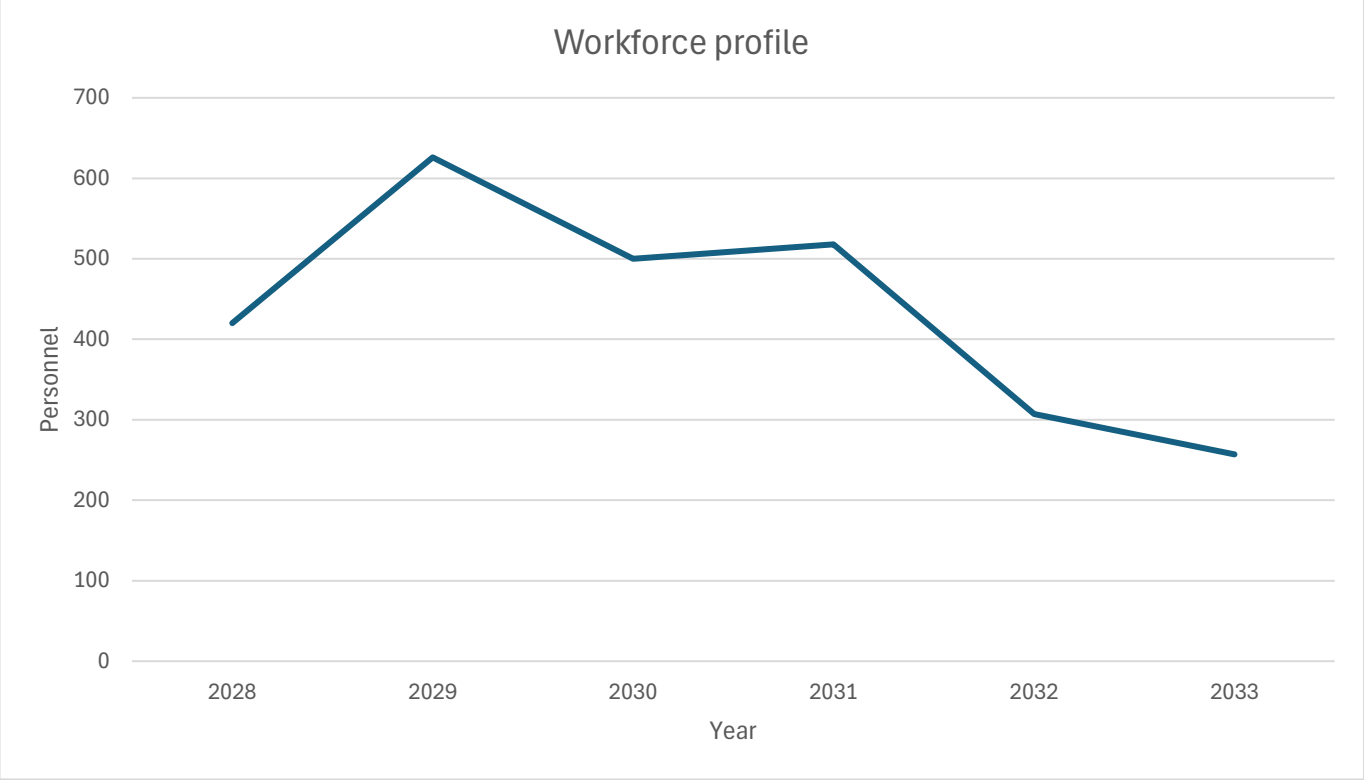
Table 4.2 – Indicative construction programme

Activity	2028				2029				2030				2031				2032				2033			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Site mobilisation		■	■																					
Access & enabling works		■	■	■	■	■	■	■	■	■														
Foundations		■	■	■	■	■	■	■	■	■	■													
Pylon assembly and erection				■	■	■	■	■	■	■	■	■	■											
Stringing					■	■	■	■	■	■	■	■	■	■	■									
Commissioning														■	■									
Project operational																■								
Reinstatement													■	■	■	■	■	■	■	■	■	■		

Construction Workforce

4.7.6 Over the six-year construction phase there would be a maximum peak year where approximately 626 Full Time Equivalent (FTE) employees would be working on the Project. This is illustrated in Image 4.6. Employees would be spread across the various works sites along the 90 km Project.

Image 4.6 – Workforce profile



Construction Working Hours

4.7.7 Core working hours for construction are set out in **Application Document 3.1 Draft Development Consent Order**, and are as follows:

- Monday to Friday, 07:00–19:00; and
- Saturday, Sunday and public holidays, 08:00–17:00.

4.7.8 The core construction working hours exclude start-up and close-down activities, which would take up to one hour before and after the core construction working hours.

4.7.9 Unless otherwise agreed with the local highway authority, no heavy goods vehicle (HGV) deliveries would be made to site outside of the hours of 06:00 to 19:00 Monday to Friday and 07:00 to 17:00 on Saturdays, Sundays and public holidays.

4.7.10 The following typical operations may take place outside of the proposed core working hours:

- Trenchless crossing operations including beneath highways, utilities, pipelines, railway lines, woodlands, nature reserves or watercourses;
- The installation and removal of conductors, pilot wires and associated protective netting (included but not limited to) across highways, railway lines or watercourses;
- The jointing of underground cables;
- The completion of operations commenced during the core working hours which cannot safely be stopped;
- Any highway works or works within the highway where the relevant highway authority has requested such works to be undertaken outside the core working hours;
- The testing or commissioning of any electrical plant installed as part of the authorised development including undertaking of any identified corrective activities;
- The completion of works delayed or held up by severe weather conditions which disrupted or interrupted normal construction activities;
- Activity necessary in the instance of an emergency where there is a risk to persons or property;
- Security monitoring;
- Non-intrusive surveys;
- Intrusive surveys;
- The installation and removal of temporary bridges including the installation of any safety systems;
- Delivery of abnormal indivisible loads; and
- Mechanical and electrical installation works within buildings once erected and enclosed.

Construction Sequencing

4.7.11 The construction of the proposed overhead line would generally follow the sequence outlined below as work progresses along the length of the proposed overhead line:

- Surveys including archaeological investigation;
- Ground investigation;
- Vegetation management and site clearance;
- Installation of construction compounds;
- Widening of public highways;
- Installation of bellmouths and creation of visibility splays;
- Soil stripping (mostly topsoil),
- temporary drainage installation where required;
- Installation of construction access tracks (including culverts and bridges) and demarcated pylon working areas;
- Installation of stockproof fencing and gates or equivalent;
- Installation of pylon foundations (pad and column, mini-pile, tube pile or bespoke);
- Working area and layout of steelwork in preparation for erection;
- Assembly (painting if required) and erection of steelwork;
- Installation of protection measures prior to stringing of conductors, including scaffolding;
- Installation of insulator assemblies on suspension pylons;
- Establishment of an Equipotential Zone (EPZ)[4] at each puller and tensioner site used for the stringing of conductors and earthwire;
- Stringing of conductors and installation of fittings;
- Stringing of earthwire and installation of fittings and bird diverters, if required;
- Installation of insulator assemblies on tension and terminal pylons;
- Installation of pylon signage including safety notice plate and anti-climbing devices;
- Testing of equipment, such as Optical Ground Wire (OPGW);
- Commissioning/energisation;
- Removal of temporary protection measures, such as scaffolding;
- Removal of construction equipment and reinstatement of ground and restoration of soils;

[4] An Equipotential Zone (EPZ) on overhead lines is a safety control method used during conductor installation or replacement to ensure that workers and all conductive equipment in the working zone are kept at the same electrical potential. This eliminates dangerous touch and step voltages and reduces the risk of electric shock.

- Removal of construction access tracks and bellmouths; and
- Removal of construction compounds and ground reinstatement.

4.7.12 Activities such as surveys, archaeological investigation, ground investigation, construction of bellmouths and construction access tracks could commence without the full construction compounds in place. Nominal office and welfare facilities would suffice for an initial period until the full construction compounds were available.

Vegetation Clearance and Assumptions

4.7.13 Vegetation clearance may be undertaken prior to or during any of the activities identified above. This would be in accordance with any ecological requirements within **Application Document 7.3 Register of Environmental Actions and Commitments** and **Application Document 7.8 Outline Landscape and Ecology Management Plan** secured Schedule 2 of the draft DCO (**Application Document 3.1 Draft Development Consent Order**).

4.7.14 Vegetation clearance is required to ensure the Project can be safely constructed and operated. Vegetation clearance generally falls into four categories described below:

- 'Not affected' Individual trees, groups of trees, woodland and sections of hedgerows not affected if the Project were to be implemented.
- 'Potentially affected' – Individual trees, groups of trees, woodland and sections of hedgerows unlikely to be affected by the Project if the design as shown on **Application Document 2.4 Works Plans** were to be implemented but that might be affected/managed or removed should the flexibility afforded by the Limit of Deviation be utilised or accesses/working areas moved within the afforded flexibility within the Order Limits.
- 'Affected managed' – Individual trees, groups of trees, woodland and sections of hedgerows that would be managed through pruning, coppicing, pollarding or a reduction in height for construction and / or operation of the Project.
- 'Removed' – Individual trees, groups of trees, woodland and sections of hedgerows that need to be removed for construction and / or operation of the Project.

4.7.15 These are shown on **Application Document 2.13 Trees and Important Hedgerows to be Removed or Managed Plans** and have been assessed within the relevant chapters of this ES.

4.7.16 The following assumptions have been applied other than where there is a specific commitment within the **Application Document 7.3 Register of Environmental Actions and Commitments** for an individual tree, group of trees or hedgerow. Distances are provided in ranges where there is variation in span length between pylons.

Proposed overhead line

Tree canopies and stems

- Depending on span length any tree canopies or stems up to a distance of 25 m either side of the proposed overhead line centreline would be 'removed'..

- Depending on span length and the associated extent of removal required, any tree canopies or stems from 21 m and up to 33 m either side of the proposed overhead line centreline would be ‘affected managed’..
- Depending on span length and should the flexibility afforded by the LoD be used, any tree canopies or stems from 29 m and up to 50 m either side of the proposed overhead line centreline would be ‘potentially affected’..
- Any tree canopies or stems beyond 50 m of the proposed overhead line centreline would be ‘not affected’.

Hedgerows

- Depending on span length any hedgerows up to a distance of 33 m either side of the proposed overhead line centreline would be ‘affected managed’.
- Depending on span length and should the flexibility afforded by the LoD be used any hedgerow from 29 m up to 50 m of the proposed overhead line centreline would be ‘potentially affected’.
- Any hedgerow over 50 m from the proposed overhead line centreline would be ‘not affected’.

Construction access

4.7.17 Vegetation including tree canopies and stems and hedgerows could be removed in the following areas:

- Highway widening;
- Bellmouths;
- Construction access tracks (stone);
- Construction access tracks (trackway);
- Bridge working areas; and
- In bespoke locations along other construction access routes where there is no existing gap in the vegetation.

4.7.18 Vegetation including tree canopies and stems and hedgerows could be affected managed in the following areas:

- Visibility splays; and
- Any canopy overhang in areas for some elements of highway widening, bellmouths and construction access tracks (stone) any of the areas listed as removed above.

4.7.19 Vegetation including tree canopies and stems and hedgerows could be potentially affected in the following areas:

- Any canopy overhang in areas for elements of highway widening, construction access tracks (trackway), bridge working areas and in bespoke locations along other construction access routes where there is no existing gap in the vegetation.

Working areas

4.7.20 Vegetation including tree canopies and stems and hedgerows would be removed in the following areas:

- Pylon working areas;
- Construction compounds;
- Crossing protection (working area);
- Stringing position (within the EPZ);
- Drainage areas;
- Flood compensation areas; and
- Elements of the third-party modification works (removal of exiting assets and installation of new assets).

4.7.21 Vegetation including tree canopies and stems and hedgerows would be affected managed in the following areas:

- Stringing positions (outside of the EPZ);
- Crossing protection (within the netting span); and
- Third party modification works (canopy overhang).

4.7.22 Vegetation including tree canopies and stems and hedgerows would be potentially affected in the following areas:

- Any canopy overhang in areas for elements of flood compensation areas, third party modification works, species mitigation areas and other bespoke areas where appropriate.

Construction Compounds

4.7.23 Construction activities would typically begin with the preparation and installation of temporary construction compounds. These areas would be demarcated and secured by temporary fencing appropriate to the location. Gated entrances would be installed to secure each site. Once secured, the upper layers of soil would be stripped and stored appropriately before finishing with a geotextile membrane and appropriate surface.

4.7.24 Temporary construction compounds would be established early in the construction programme. Site cabins (standard modular units) may be up to double storey and may be raised to take account of potential flood risk.

4.7.25 The proposed temporary construction compounds have been sited away from residential receptors where possible. They would be located close to Primary Access Routes (PARs) and the core works they support. The temporary construction compounds are likely to include grey water harvesting for toilet flushing and electric charging for plant and vehicles.

4.7.26 A typical layout of a construction compound is illustrated on **Application Document 2.12 Typical Design Drawings - Illustrative Construction Compound (Main) Sheet 19 of 20** and typically includes the following:

- Security gate house;
- Plant and construction vehicle parking;
- Site office parking area;
- Site offices and welfare facilities;
- Fencing;
- Lighting;
- Working yard and laydown area;
- Storage area;
- Wheel wash;
- Collection, storage and disposal of surface water, in addition to water from within the compound including grey and foul water;
- Soil bund;
- Spoil storage area;
- Power supplies (where feasible, alternatively fuelled generators and/or a local grid connection will be used); and
- Fuel storage.

4.7.27 Smaller satellite compounds would be required at specific working areas along the route to ensure provision of welfare, storage, and mess room facilities for site operatives. A typical layout of a satellite compound is shown on **Application Document 2.12 Typical Design Drawings - Illustrative Construction Compound (Satellite) Sheet 18 of 20**.

4.7.28 The locations of the proposed construction compounds are shown on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Highway Widening

4.7.29 In certain locations, works to the public highway would be required to install temporary passing places, upgrade surfaces or widen carriageways. Areas of potential highway widening are shown on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Installation of Bellmouths and Creation of Visibility Splays

4.7.30 Where new accesses or widening of existing accesses from the public highway are required, bellmouths would be installed. The locations of the proposed bellmouths are shown on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**. The installation of bellmouths may require re-alignment or protection of existing underground services and the creation of visibility splays to create a line of sight for the safe use of the bellmouth. Within the visibility splay, modifications would be required based on local conditions, the road's speed rating, and whether traffic management

measures are in place. These modifications may include cutting vegetation to a specified height, relocating street furniture, or removing visual obstacles. A typical bellmouth is illustrated on **Application Document 2.12 Typical Design Drawings - Illustrative Access Bellmouth and Visibility Splay Sheet 12 of 20**.

4.7.31 Bellmouths typically take approximately 15 days to be constructed, which may comprise the following (non-exhaustive) activities: clearing vegetation, preparing the site, excavating and storing associated ground material, installing geotextile membrane, spreading and compacting stone, installing drainage, compacting blacktop, and installing gates and fences.

4.7.32 An example of a bellmouth is illustrated in Image 4.7.

Image 4.7 – Example of a bellmouth



Construction Traffic Routes

4.7.33 Construction traffic routes are the public roads upon which construction vehicles would travel to site. The proposed construction traffic routes and the types of vehicles proposed to use each route during the construction of the Project are shown on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**.

4.7.34 The construction traffic routes have been split into Primary Access Routes (PARs), these PARs are also illustrated on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**. **Application Document 6.14 Chapter 14 Traffic and Transport** provides predicted volumes of traffic on each PAR during the construction of the Project.

4.7.35 All Heavy Goods Vehicle (HGV) traffic related to the construction of the Project would use these construction traffic routes, utilising primarily A-roads, before then going onto the construction access tracks via dedicated bellmouths. Light Goods Vehicle (LGV) traffic used to construct the Project would use the wider network, but still on the defined PARs, and this would primarily be for the transportation of staff to work sites. **Application Document 7.4 Outline Construction Traffic Management Plan** secured though Schedule 2 of **Application Document 3.1 Draft Development Consent Order** details how use of the PARs would be controlled.

Public Rights of Way and Rights of Navigation

4.7.36 A number of Public Rights of Way (PRoW) and Rights of Navigation would be affected by the construction of the Project. The existing PRoWs and rights of navigation intersecting the Project are shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**. Discussions with PRoW

officers at the relevant local planning authorities, port authorities and the Canal & River Trust have been held to discuss the management of PRoWs and rights of navigation, including managing, diverting and/or temporarily closing PRoWs and rights of navigation. Management of PRoWs and rights of navigation during construction is detailed within **Application Document 7.6 Outline Public Right of Way Management Plan** and shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

Topsoil Stripping

4.7.37 Topsoil may need to be stripped from the bellmouths, construction access tracks, site compounds and pylon working areas. The topsoil would be stored carefully to one side; typically, topsoil would be stored in bunds. Temporary drainage would be installed as required, with environmental protection measures (such as silt fences) installed where necessary.

Drainage

Existing land drainage

4.7.38 Where required subject to detailed design, pre-construction field drainage would be installed in working areas to:

- Help prevent possible waterlogging of working areas and therefore the need for temporary dewatering during construction;
- Enable the landowner's current drainage system to continue working throughout construction;
- Help prevent damage to the soil structure;
- Aid recovery from construction activities; and/or
- Help prevent any future drainage problems.

4.7.39 Landowners would be consulted on the design of the land drainage proposals. The design would reduce risk so that the drains do not act as pathways for contamination or cause flooding off-site. The Lead Local Flood Authorities and Internal Drainage Boards would also be consulted on drainage design where necessary. Following construction, the land would be reinstated to its former condition (unless otherwise agreed with the landowner) including installation of a replacement drainage scheme where appropriate.

4.7.40 A specialised drainage contractor(s) would review the drainage designs and provide advice to National Grid and the Main Works Contractor(s) during all relevant construction and reinstatement activities. Permanent records of the land drainage locations would be made and passed to the landowners/occupiers.

4.7.41 **Application Document 7.3 Register of Environmental Actions and Commitments** describes a number of commitments linked to sustaining existing land drainage infrastructure.

Temporary drainage during construction

4.7.42 Temporary drainage would be required during construction to manage rainfall runoff and water encountered during excavation and the installation of working areas and compounds, where appropriate. The drainage design would include a variety of potential measures to address silt runoff. Construction of sustainable drainage systems (SuDS) would be used if necessary and where appropriate.

Installation of Construction Access Tracks (Including Culverts and Bridges) and Pylon Working Areas

4.7.43 A single width construction access track (haul road) would typically be 4 m wide, and typically up to 8 m wide at passing places, which, coupled with the area for soil storage and drainage between the track and the fence line, would give a typical swathe of 12 m. They would be stone laid on a geotextile membrane. A typical layout of a stone construction access track is shown on **Application Document 2.12 Typical Design Drawings - Illustrative Stone Access Road Sheet 13 of 20**. Other accesses may also be used comprising interlocking panels, depending on ground conditions and the duration and type of use. A typical layout of an interlocking panel access track is shown on **Application Document 2.12 Typical Design Drawings - Illustrative Interlocking Panel Access Sheet 15 of 20**. The Main Works Contractor(s) once appointed may adopt different construction methods, such as soil stabilisation (subject to local conditions) or transport techniques that would not result in materially new or different effects to those assessed in this ES.

4.7.44 The stone construction access tracks would be constructed using secondary or primary aggregates. The total amount of aggregate material that would be needed for the construction of the stone construction access tracks (including bellmouths) and pylon working areas is set out in Table 4.3. On completion of construction, the construction access tracks and pylon working areas would be removed, and aggregates taken to an appropriate facility which could include recycling, or onward use, for example as secondary aggregate in the construction industry.

4.7.45 It is estimated that stone construction access tracks would be constructed at a rate of approximately 100 m of track per day (per construction team).

4.7.46 Culvert installations would be required for construction access tracks to cross ditches and watercourses. The size and depth of a culvert would depend on the dimensions of the crossing and the sensitivity and importance of the watercourse. To maintain the flow of a watercourse during installation of the culvert, a pump would be used on-site. An illustrative design for a culvert is shown on **Application Document 2.12 Typical Design Drawings - Illustrative Culvert Details for Watercourse Crossings Sheet 16 of 20** and the locations of the proposed temporary culverts are detailed in **Application Document 6.4.A2 Appendix 4.2 Indicative Bridge and Culvert Schedule**.

4.7.47 Should culverts not be suitable for a particular crossing, due to either the sensitivity of the watercourse or engineering requirements, a temporary bridge would be installed.

4.7.48 Temporary bridges would need to accommodate mobile cranes; their requirements would be assessed on a site-by-site basis. Most bridge crossings would be of a short span and flat deck construction; however, Bailey-style bridges may also be used. All bridges would be clear span, and the foundations would be placed clear of the main channel of the watercourse, where feasible.

4.7.49 Once the foundations are in place, the temporary bridge would be fitted. Although the installation method would depend on the type of bridge being installed, a typical bridge would be delivered in sections. Each bridge component would be assembled on-site and lifted into position by suitable construction machinery. With the bridge in position, decking panels would be lifted and fixed into position. An illustrative design for a temporary bridge is shown on **Application Document 2.12 Typical Design Drawings - Illustrative Bridge Details for Watercourse Crossings Sheet 17 of 20**, and the location of the proposed temporary bridge crossings are detailed in **Application Document 6.4.A2 Appendix 4.2 Indicative Bridge and Culvert Schedule**.

4.7.50 It is estimated that a new culvert would take approximately 8 days to install, and a new bridge would take approximately 25 days to install. A period of 28 days will be required after installation of bridge foundations to allow any concrete to cure before the bridge is erected. No physical works are envisaged during this period, therefore is typically omitted from the works duration.

4.7.51 Pylon working areas would typically be 60 m by 60 m for a suspension pylon and 70 m by 70 m for a tension pylon. They would be either stone laid on a geotextile membrane, or formed of interlocking panels, depending on ground conditions and the duration and type of use. Soil stabilisation techniques could be considered subject to local conditions. An indicative pylon working area is shown on **Application Document 2.12 Typical Design Drawings - Illustrative Lattice Pylon Working Area Sheet 10 of 20**, and the locations of the pylon working areas are shown on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

4.7.52 It is estimated that a stone pylon working area would take approximately 8 days to be constructed.

Installation of Pylon Foundations (Pad and Column, Mini Pile or Tube Pile)

4.7.53 The foundations for the pylons would either be pad and column, mini pile or tube pile (or bespoke if required). The selection of foundation type would be identified at the detailed design stage by the Main Works Contractor(s) following intrusive ground investigation surveys. Illustrative pylon foundations are shown on **Application Document 2.12 Typical Design Drawings - Illustrative Lattice Pylon Foundations Sheet 8 of 20**.

4.7.54 The installation of pad and column foundations would take approximately 20 to 26 working days per pylon, and the installation of piled foundations would take approximately 36 days per pylon. A period of 28 days will be required after foundation installation to allow any concrete to cure before the pylon can be erected. No physical works are envisaged during this period, therefore is typically omitted from the works duration.

Standard pad and column foundations

4.7.55 For lattice suspension pylons, pad and column foundations are typically used. For tension and terminal pylons, larger and deeper pad and column foundations are required as these account for deviation angles, more demanding loading considerations and higher safety factors.

4.7.56 The following works are required to install these foundations:

- Excavations are required for each pylon leg;
- Shuttering is then inserted and braced to act as excavation support and as concrete formwork (mould);
- Design reinforcement is bent to shape where required and inserted into the mould which is then filled with concrete;
- The concrete is left to harden (set);
- The excavated hole is backfilled to ground level; and
- Any remaining subsoil is removed from site.

4.7.57 Typical site machinery for pad and column foundation construction consists of an excavator, concrete wagons and trailers.

Piled foundations

4.7.58 In areas with poorer ground conditions that are unsuitable for pad and column foundations, vertical steel tube pile foundations or bored mini pile foundations can be used. These are connected by a pile cap at or below ground level.

4.7.59 The type of pilled foundation used would depend on the ground conditions and access constraints, the main types of piled foundations are as follows:

- Mini-piled foundations consist of up to 300 mm diameter piles. They are undertaken where heavier machinery cannot access.
- Continuous Flight Auger (CFA) piling is where a hollow-stem auger is drilled into the ground to the required depth and concrete is pumped into the hole as the auger is removed. Steel reinforcement is then pushed into the wet concrete and allowed to set.
- Sectional Flight Auger (SFA) piling is identical to CFA piling but is undertaken where headroom is limited to less than the desired pile depth as it is broken into sections which are welded together. Typically a smaller and lighter piling rig is available in comparison to CFA.
- Driven piling utilises a piling hammer supported by a piling rig, where steel tube piles are driven into the ground to the desired depth. Driven piling rigs vary depending on the design requirements and ground conditions.

4.7.60 Once the piles are cast in place, the pile cap is installed in an identical construction plan as a pad and column foundation.

Assembly and Erection of Steelwork

4.7.61 Lattice pylons comprise many separate steel members. These would be delivered to site in bundles by HGVs. The steelwork for the pylons would be bolted together on the ground, and each pylon would be assembled in sections beginning with each of the four steelwork legs being fastened to the stubs (exposed steelwork coming out the foundations).

4.7.62 Pylons for 400 kV overhead lines are typically assembled by means of a telehandler, which is also used to erect the pylon extensions at ground level. The rest of the

assembled sections of the pylon are normally lifted into position using a mobile crane. Linesmen help guide the sections into place and bolt the pylon together; this is illustrated in Image 4.8. Varying lifting capacities of the mobile cranes would be required depending on the pylon types, extensions and site conditions.

Image 4.8 – Erection of steelwork



Crossing Protection Prior to Stringing of Conductors

Protective scaffolds

4.7.63 Traffic flow may need to be maintained beneath the proposed overhead line crossings of roads, railways, waterways, footpaths and other rights of way during the installation, maintenance or removal of conductors. Where traffic flow needs to be maintained, it must be kept safe. Similarly, at crossings of other power lines, which need to remain energised and *in situ* during work on conductors of the upper line, it is essential to provide safe working conditions. To provide these safe conditions a standard type of nylon net cradle guard supported by scaffolding structures would be

placed either side of the crossing to provide this protection. **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works** illustrates the proposed locations of the protective scaffolds.

4.7.64 The cradle guard comprises tubular scaffold structures each side of the crossing with steel wire ropes slung between them to support a nylon mesh net. The guard netting extends at least 5 m outside the outer conductor on each side.

4.7.65 The height of the netting and support ropes needs to be able to accommodate additional sag that may occur from ice or snow accumulating on the netting or the conductors should they fall onto the net.

4.7.66 For double circuit working, the scaffold structures are positioned parallel to the feature that is crossed, so that the span over the feature is kept as short as possible. For work on one circuit with the other circuit live, it is often necessary to position the scaffold structures at right angles to the line under the dead circuit.

4.7.67 The heights, dimensions and safety distances to be maintained depend on the obstacle being protected and are covered by various technical specifications.

Scaffold access arrangements

4.7.68 The scaffold accesses are illustrated in **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Scaffold pads

4.7.69 The ground conditions of all scaffold positions need to be assessed for stability of support for the load/weight of the scaffold structure. Where the ground conditions would not support the weight of the scaffold, a support pad would need to be designed and installed. The pad may be in the form of access trackway or stone pad.

Scaffold land-take

4.7.70 The scaffold working area is the area of land required for the scaffold, its anchorage system, and material storage and build area. The size of the land-take depends on the size of the scaffold and its anchorage system. The land-take area will be fenced off with suitable fencing. An illustrative scaffold is shown in **Application Document 2.12 Typical Design Drawings - Illustrative Scaffold Protection for Overhead Line Conductor Stringing Sheet 20 of 20**.

Scaffold anchorage systems

4.7.71 The scaffolds are designed to support the nylon net cradle and any conductors that may rest/fall upon them. Therefore, they need to be anchored securely to stop them overturning. The anchors are set to the front and rear (set back at approximately 45 degrees) of the scaffold.

4.7.72 The preferred method is to use ground anchors which are a system of metal plates or stakes driven into the ground, usually up to 4 m deep. Where due to ground conditions, presence of existing utilities or lack of available space, ground anchors cannot be used, concrete blocks can be used instead. The concrete blocks can be set behind or internal to the scaffold.

Scaffold deliveries

4.7.73 Delivery of scaffold materials is usually by Hiab lorry, however in more remote locations a tractor and trailer may be required. Due to the lower capacity of the tractor and trailer, this would require multiple trips.

Protection of the public

4.7.74 All measures will be taken to protect the public and the environment in the vicinity of the works. Due consideration shall be made for pedestrians, road users, landowners, livestock, occupiers of the site of work and its surrounding area.

4.7.75 Where scaffolds are to be constructed in areas requiring stockproof fencing, the fencing would be erected before materials are delivered to site.

Anti-climbing and danger notices

4.7.76 Anti-climbing devices would be provided around all structures. The anti-climbing device would take into consideration the specific site conditions.

4.7.77 All structures would be fitted with danger warning plates in accordance with The Electricity Safety, Quality and Continuity Regulations 2002 (HM Government, 2002), at intervals of not more than 6 m along all faces immediately above the anti-climbing device. A minimum of one plate per face would be fitted.

4.7.78 Anti-climbing devices would be fitted as soon as reasonably practicable and no scaffold would be left unattended without an anti-climbing device fitted.

Netting the temporary scaffold guard

4.7.79 When the scaffold structures have been built either side of an item (e.g. road, railway, pole line), the catenary wires and net cradle need to be installed. This is done by taking pilot ropes across the item being protected and then pulling the catenary wires and nets into position.

4.7.80 The purpose of the scaffold guard is to allow the undisturbed use or operation of the item being protected. This is achieved by taking short-term out-of-hours possession, road closures, or outages as agreed with the item owner.

Installation of Insulators

4.7.81 Insulators are usually raised to the crossarms using a rigging arrangement known as square rig, which consists of ropes and blocks that allow a tractor winch to lift them from the ground up to the crossarm. The insulators would be fastened to the crossarms of the pylons, with running wheels hung from the end of the insulators to carry the pilot wires in preparation for installing the conductors.

Establishment of Machine Sites for Conductor Stringing

4.7.82 The conductors are usually installed from tension pylon to tension pylon, often termed a ‘section’, with machine sites required at either end of the section.

4.7.83 The machine sites for conductor stringing would normally be located within the pylon conductor stringing positions, sited on earthed interlocking aluminium panels laid directly on the ground surface to act as an EPZ as well as reducing disturbance to the underlying soils.

4.7.84 Two working areas are established at each end of a stringing section: the pulling position and the tensioning position. These sites work together to pull new conductors through the section of pylons while maintaining the correct tension to avoid damage by controlling the line speed and loading.

4.7.85 The winch system would be positioned at the pulling position to draw the conductor along the route from the tensioner end through the section of pylons towards the puller. Empty steel drums would also be located at the pulling position to reel in the pilot bonds.

4.7.86 The tensioner machine would be positioned at the tensioning position, which maintains the correct conductor tension while pulling out the conductor from the full drums also located at this site. This controls the load and speed of the pull and prevents the conductor from making contact with the ground. Machine sites for conductor stringing are shown in Image 4.9. An indicative conductor stringing position is illustrated on **Application Document 2.12 Typical Design Drawings - Illustrative Lattice Pylon Conductor Stringing Positions Sheet 11 of 20**, and the proposed locations are shown on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Image 4.9 – Machine sites for conductor stringing



Conductor Stringing

4.7.87 The conductors would be delivered to tensioning positions on large cable drums. Depending on the conductor type, each completed drum could weigh up to 8 tonnes although larger and heavier drums are possible depending on the supplier and the length of conductor. The conductor drums would typically be delivered to the main construction compound (or satellite compound), and from there to the stringing areas.

4.7.88 Light pilot bonds would typically be pulled at ground level, typically by tractor, and over temporary scaffolding protecting assets such as roads and railway lines, at which point the pilot bonds are then manually passed over the structure by workers and reconnected to the tractor, along the length of the section between the stringing positions. Some vegetation management will be required. In some locations, drones or other methods may be used to take the pilot bonds over a structure. The pilot wires would be lifted and fed through running wheels on the crossarms of all the pylons in the section and then attached to the winch at the pulling position. The light pilot wires are used to pull through heavier, stronger pilot wires, which are in turn

used to pull conductors through from their drums. The tensioning machine would keep the wires off the ground and prevent the conductors running freely when the winch pulls the pilot wire. Once the conductor is fully 'run out', it would be fastened at its finished tension and height above ground by linesmen working from platforms suspended beneath the conductors on the pylons. Additional fittings such as spacers, vibration dampers and arcing horns would then be fitted.

4.7.89 To counter out-of-balance loading at the tension pylons at the end of a conductor stringing section, temporary backstays anchored to concrete blocks would normally be installed for safety. These would be removed as the conductor stringing process starts on the next section. Temporary backstays might also be required at other locations such as where new conductor connects to existing conductor, at temporary diversions, and at temporary spans.

4.7.90 A drone or helicopter may be used to construct the proposed overhead line where their use offers the opportunity to reduce the number of vehicle movements, shorten the duration of an activity or overcome constraints. Helicopters or drones could also be used to support the proposed overhead line stringing to install the pilot cables, particularly for types of crossing where conventional methods may not be suitable, such as over large rivers. Efficiencies (time and vehicle movements) are achieved by the helicopter or drone being able to install the main bond on a single flight, whereas more traditional methods require an initial lightweight bond to be installed to pull through two or three progressively stronger bonds. This method would typically take two days to install the seven pilot bonds required (typically one pilot per phase plus the earthwire) compared with potentially several weeks for more traditional methods.

Dismantling of Existing Pylons

4.7.91 As described in section 4.4, a number of existing pylons need to be dismantled to facilitate the line swap overs and the ZDA crossing. Fittings such as dampers and spacers would be removed from the conductors. The conductors would be cut into manageable lengths or winched onto drums in a reverse process to that described for construction. The conductor, fittings and insulator assemblies would be removed from the pylons and lowered to the ground.

4.7.92 Each pylon would most likely be dismantled by crane, with sections unbolted and lowered to the ground for further dismantling and removal from site. Depending on the access and space available, it may be possible to cut the pylon legs and then pull the pylon to the ground using a tractor. The pylon could then be cut into sections on the ground. Unless there is a compelling need to completely remove the foundations, they would be removed to approximately 1 m depth, sufficient for safe agricultural use of the land, with subsoil and topsoil reinstated. All waste would be removed from site and recycled in line with waste disposal regulations at the time.

Third-Party Services

4.7.93 In order to construct and operate the Project safely and efficiently, sections of existing overhead or underground third-party services (for example low voltage power lines, or telecommunication lines) would be modified (diverted, removed, undergrounded) or protected. This is largely where they interface with the Project, for example with proposed overhead line crossings, or at site access point locations (bellmouths). These sections are included within the Order Limits and form part of the Project.

4.7.94 The works would most likely be undertaken by the asset owners prior to construction of the relevant section of the Project; however, the draft DCO (**Application Document 3.1 Draft Development Consent Order**) would grant National Grid the power to undertake this work, subject to agreement with the asset owner. The proposed works are illustrated on **Application Document 6.4.F4 Figure 4.4 Third Party Works**. The following sections set out the principles that would be applied to the works, and which have been assessed in the topic chapters.

4.7.95 The specific methods for modifying existing third-party services would need to be confirmed and agreed with the asset owner prior to any works being carried out. Typically this would include temporary access over existing field surfaces, likely using existing access gates or interlocking panels where necessary. Most of the work would be done in advance of the National Grid access tracks being in place, however, where one was already in place and if it were appropriate to do so, these could be used. Typically, these modifications to third-party assets would include placing the asset underground which could include the use of open cut trenching through agricultural fields, for example, or trenchless techniques such as Horizontal Directional Drill (HDD) to cross roads or other existing infrastructure. Other modification works could include the diversion or installation of wood pole overhead lines. These crossings are listed in **Application Document 6.4.A4 Appendix 4.4 Indicative Third Party Schedule**. Generally, any redundant wood poles would be removed completely, however, where this is problematic (e.g. due to concreted foundations, rocky ground, or environmental constraints), the wooden pole may be cut below ground level. In all cases, once the modification to the third-party asset is operational, any redundant infrastructure (including poles, conductors, insulators, fittings) would be removed from site and the disturbed foundation area reinstated.

Removal of Construction Equipment, Reinstatement of Ground and Restoration of Soils

4.7.96 Once the proposed overhead line is constructed, the construction access tracks and working areas at the pylon site would be removed and the ground reinstated to their previous condition. Other surfaces would be reinstated, and accesses would be restored to the condition they were in at the commencement of the works, unless agreed otherwise.

Road Closures and Diversions

4.7.97 Temporary road closures would be required to facilitate the construction (installation and removal) of bellmouths, highway widening works, third-party modifications and crossing protection for conductor stringing. These are illustrated on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

Water Usage, Abstractions, Discharges and Dewatering

4.7.98 It is currently assumed that no discharges (other than treated and restricted surface water runoff) to surface waters are required for the Project during construction. The only exception to this is within the Source Protection Zone as shown on **Application Document 6.12.F4 Figure 12.4 Hydrogeology and Hydrogeological Receptors**, where in accordance with commitment GH12 of **Application Document 7.3 Register of Environmental Actions and Commitments** it will not be permitted to

discharge to the ground or adjacent ditch, which will require removal of the water through artificial means.

4.7.99 It is also assumed that there would be no new temporary or permanent abstractions and that the water supply needs of the Project during construction would be sourced from mains water supply or, in remote locations where mains water may not be available, water would be tankered in. With regard to grey water generated from welfare facilities, it is assumed that this would be discharged to the public sewer or, where this is not practicable, collected and tankered off-site to a licensed disposal facility. **Application Document 6.11.A2 Appendix 11.2 Water Resources Assessment** sets out a water resources assessment for the Project in line with Anglian Water's Non-Domestic Water Requests Policy (Anglian Water, 2026).

4.7.100 Where excavation of soil is required, for example at the base of the pylons and for the cable trenches for third-party services, and where water is encountered in the excavation, it would be pumped out using an appropriate pump and a sump made in the subsoil using the excavator. The water would be pumped from the sump and allowed to filter through silt traps. The assessment assumes that there may be the need for temporary short-term dewatering, such as removal of rainwater or surface water when undertaking soil excavation. It is anticipated these would be local discharges to ground where feasible (after using settlement tanks).

4.7.101 Where this is not practicable in localised areas, any discharge to surface water would be undertaken in accordance with relevant consents.

4.7.102 Dewatering at locations where the works intersect with the water table and actively lower it for 100 days or more, could require a permit. Permits relating to temporary dewatering (abstraction) may be required at the third-party service trenchless crossings. If the abstracted groundwater is discharged immediately to a soakaway, the abstraction would be exempt from an abstraction licence. If the water is not immediately discharged to a soakaway, it would be exempt when the abstraction is:

- Less than 100 m^3 per day and located more than 500 m from a designated site or 250 m from a spring, well or borehole; or
- Less than 50 m^3 per day and located less than 500 m from a designated site or 250 m from a spring, well or borehole.

4.7.103 In all other cases, a licence would be required. Once the discharge duration, volume and water quality have been assessed, a decision would be made in conjunction with the Environment Agency as to whether an abstraction licence and/or discharge permit is required.

4.7.104 The discharge would be exempt from a discharge permit if it is a groundwater discharge where the water quality meets the Drinking Water Standards and is of less than 30 days duration. It would also be exempt if it is a surface water discharge of clean water, without suspended solids, and is for a duration of less than three months.

Assumptions on Materials and Waste During Construction

Materials during construction

4.7.105 The nature of the Project means that it is not practicable to use secondary sources during construction, as this can affect the operation and the design life of the Project. However, National Grid has existing processes in place to source materials from

sustainable sources and to use recycled materials where these do not compromise the required design standards and operational life, where practicable.

4.7.106 The material sources are unlikely to be identified until the detailed design and procurement stage of the Project, which would happen post-consent. Table 4.3 outlines an estimate of the main materials and quantities that are anticipated based on the Project alignment, as shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Table 4.3 – Approximate key material quantities anticipated for the Project

Material	Estimated quantity
Concrete for foundations of new pylons	32,100 tonnes
Steel for pylons	8,700 tonnes
Overhead line conductors (aluminium)	4,073 tonnes
Overhead line fibre optic cable (mix of aluminium, steel and fibres)	94 tonnes
Stone for haul roads, compounds, work areas, highway widening and bellmouths etc.	1,124,932 tonnes

Waste during construction

4.7.107 Waste materials would be produced during construction. The Overarching National Policy Statement for Energy (EN-1) (paragraphs 5.15.2 and 5.15.3) (Department for Energy Security and Net Zero, 2025) states that the waste hierarchy must be applied when managing waste and that disposal of waste should only be considered where other waste management options are not available. Table 4.4 describes the main wastes anticipated on the Project and whether they are likely to be recycled or reused based on experience of similar projects.

Table 4.4 – Approximate key waste quantities anticipated from the Project

Waste	Estimated quantity	Proposed hierarchy
Steel from dismantled 400 kV pylons	119 tonnes	Assume recycled
Removed foundations of dismantled 400 kV pylons (concrete)	48 tonnes	Assume recycled
Stone for construction access tracks, compounds, work areas and bellmouths	1,124,932 tonnes	Assume recycled
Displaced soil from pylon bases	19,000 tonnes	Assume reused on-site where suitable

4.7.108 It is assumed that any soil excavated from the Project (e.g. displaced from pylon foundations or third-party service cable ducts) would be reused on-site where soil is suitable for reuse (for example, not contaminated and giving consideration to land holdings and applicable biosecurity measures). This could be through the backfilling of foundations removed during 400 kV overhead line removal or for landscaping. It is assumed that all soil could be reused on-site; however, if it arises that excess soil cannot be reused on-site, this soil would be taken off-site to an appropriate facility.

4.7.109 The Main Works Contractor(s) would produce a SWMP prior to construction. This will set a framework to reduce the generation of waste in the first place and appropriate measures to reuse and recycle materials where practicable. The SWMP would identify appropriate waste facilities for disposal of materials.

4.8 Operation

4.8.1 During operation, the Project would transmit electricity between the proposed new Birkhill Wood Substation and the proposed new High Marnham Substation and on to the remainder of the national electricity transmission system.

4.8.2 The Project would be operated remotely in the same way as National Grid operates the rest of the network.

4.9 Maintenance

Routine Maintenance

4.9.1 The proposed overhead line would be subject to annual inspection from the ground by foot patrol, small van, or by air, using drone/helicopter to check for visible faults or signs of wear. The inspections confirm when refurbishment is required and also identify if plant/tree growth or third-party developments are at risk of affecting safety clearances.

4.9.2 The proposed overhead line could support telecommunication equipment such as small mobile telephone antennae and would contain optical fibres within the earthwire. If this were to be the case, independent companies would require access for maintenance purposes using pickup trucks and vans. Access for the optical fibres will usually be at the joint box positions located just above the anti-climbing devices on certain pylons. The position and frequency of joint boxes is subject to design by the Main Works Contractor(s).

4.9.3 Access for vegetation management, telecommunications and fibre optic maintenance would be along operation and maintenance access routes as illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**. These routes demarcate rights of access that utilise existing access into fields rather than a physical access track, however, temporary interlocking track mat panels may be required along these routes during some maintenance activities.

Repair and Refurbishment

4.9.4 The proposed overhead line would be made up of a variety of materials, including concrete and steel for the foundations, steelwork for the pylons and aluminium for the conductors. All of these materials have an expected lifespan which would vary depending on how the proposed overhead line was used and where it is located. Typically, pylon steelwork and foundations have a life expectancy of approximately

80 years, while insulators, conductors and their components have a life expectancy of approximately 40 years. Vibration dampers and spacers have a life expectancy of approximately 25 to 40 years. The lifespan of the proposed overhead line may be longer than the anticipated 80 years, depending on its condition, the environment to which it is exposed, refurbishments and transmission network requirements.

4.9.5 Maintenance activity carried out on lattice pylons involves climbing the pylon to access the equipment (e.g., conductors). Temporary access works may be required in order to reach pylons.

4.9.6 Minor repairs or modifications may be required from time to time for local earthwire damage, addition of jumper weights, local conductor damage, broken insulator units, damaged or broken spacers, broken or damaged vibration dampers, and damaged or broken anti-climbing devices. Minor repairs would be programmed locally by a maintenance team using pickup trucks and vans to access sites along routes agreed with landowners. Access may require interlocking track mat panels.

4.9.7 Refurbishment would usually be carried out in two stages because the proposed overhead line has two circuits, one on each side of the pylon. This means that work can be undertaken on one side only, so that the other side can be kept 'live'. Once all the work has been completed on the first side, the circuit would be re-energised and the opposite side switched off, so that the work could be carried out on the other side, if required.

4.9.8 Refurbishment work could involve:

- Replacement of pylons;
- Replacement of conductors and earthwires;
- Replacement of insulators, and steelwork that holds the conductors and insulators in place;
- Insulator fittings, conductor fittings, pylon signage;
- Painting or replacement of the pylon steelwork;
- Replacement of telecommunication equipment (by separate companies); and
- Foundation repairs/upgrades.

4.9.9 The refurbishment works would require temporary access tracks, a small compound and potentially scaffolding to protect roads and other features during the work.

4.9.10 Vans are used to carry workers in and out of site, and trucks are used to bring new materials and equipment to site and remove old equipment. Temporary works including installation of access routes and installation of scaffolding to protect roads, railways and footpaths would be required as necessary for the proposed overhead line refurbishment (as per the initial construction requirements).

4.10 Decommissioning

4.10.1 The design life of the Project is at least 80 years, but with regular maintenance is likely to extend further. There are currently no specific plans to decommission the Project. It is expected that the transmission of electricity would continue for as long as there is a business case for doing so and that any decommissioning activity would occur decades into the future. To date, relatively few transmission projects have

been decommissioned since the main expansion of such infrastructure in the 1950s and 1960s.

4.10.2 At the time, should decommissioning take place, the regulatory framework, good industry practices and the future baseline could have altered. In line with **Application Document 3.1 Draft Development Consent Order**, should decommissioning be required, a written scheme of decommissioning including an environmental assessment undertaken in accordance with the laws and regulations applicable at the time would be submitted to the relevant local planning authority. As such, and in line with **Application Document 6.5.A2 Appendix 5.2 Scoping Opinion** decommissioning has been scoped out of the assessment.

4.10.3 The pylons comprise open, lattice structures which can be easily dismantled. Decommissioning sections of the proposed overhead line would follow the same methods set out in paragraphs 4.7.91 and 4.7.92, under the 'Dismantling of Existing Pylons' heading above, which describes the removal of sections of the existing 400 kV overhead lines during construction of the Project.

4.11 Description of the Project in Each Route Section

Route Section A Between the Proposed Birkhill Wood Substation and the River Ouse

Proposed overhead line

4.11.1 The proposed overhead line in this Route Section is shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** (Sheets 1 to 11) and the pylons detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

4.11.2 The first pylon in this Route Section is proposed pylon 4AF3 and the last pylon in this Route Section is proposed pylon 4AF76.

4.11.3 From the proposed Birkhill Wood Substation, the proposed overhead line is routed west for approximately 1.8 km passing to the south of Jillywoods and crossing the A164 Beverley Road to proposed pylon 4AF9. From proposed pylon 4AF9 the proposed overhead line is routed southwest for approximately 3.3 km to the north and west of the settlement of Skidby and crossing Little Weighton Road to proposed pylon 4AF19.

4.11.4 From proposed pylon 4AF19 the proposed overhead line is routed southwest for approximately 6.1 km in close parallel with the existing 4ZQ 400 kV overhead line to the south of the settlement of Little Weighton, crossing Riplingham Road and Lambwell Hill and to the north of Brantingham Dale Site of Special Scientific Interest to proposed pylon 4AF37.

4.11.5 Between proposed pylons 4AF37 and 4AF48 the proposed overhead line is swapped onto pylons on the existing 4ZQ 400 kV overhead line. This is referred to as a line swap over. Line swap overs are described in section 4.4.

4.11.6 To facilitate this line swap over, 16 new pylons would be constructed to the south of the existing 4ZQ 400 kV overhead line alignment from the proposed pylon 4ZQ79A through to proposed pylon 4ZQ64, crossing the A63 and routeing to the south of the settlement of Ellerker crossing Brough Road and Sands Lane. A new section of

conductor would be installed diverting the existing 4ZQ 400 kV overhead line route onto the 16 new pylons.

4.11.7 From proposed pylon 4AF48 the new pylons would swap back to being installed in close parallel to the north of the existing 4ZQ 400 kV overhead line alignment for a further 9.3 km to the north of the settlement of Broomfleet. The route would cross Ings Lane, the Selby to Hull railway line, Carr Lane, Landing Lane, the Market Weighton Canal, Tongue Lane and Staddlethorpe Broad Lane to the end of this Route Section at Blacktoft Lane.

Environmental mitigation

4.11.8 Within Route Section A, areas of environmental mitigation have been included for:

- Landscape planting;
- Flood compensation;
- Protected species mitigation; and
- Veteran tree compensation.

4.11.9 These are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** and are described in detail in **Application Document 7.8 Outline Landscape and Ecology Management Plan**.

Maintenance access

4.11.10 The proposed maintenance access routes in Route Section A are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Temporary construction works

Construction access

4.11.11 The proposed construction traffic routes are illustrated on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**.

4.11.12 Within Route Section A, the following have been identified as all-vehicle construction traffic routes:

- A1079 (PAR 1);
- A1079 Beverley Bypass west (PAR 2)
- A164 - north of A1079 (PAR 3)
- A164 Beverley Road - between A1079 and Dunflat Road (PAR 4)
- A short section of Dunflat Road (PAR 5);
- A164 (PAR 6);
- A section of Little Weighton Road (PAR 8);
- Riplingham Road (PAR 10);
- Rowley Road (PAR 11);
- Lambwell Hill (PAR 13);

- A63 (PAR 22);
- A1034 Beverley Road (PAR 17 and PAR 18);
- Sections of Willow Flats (PAR 126);
- Brough Road (PAR 24);
- Brantingham Road (PAR 23);
- Ellerker Road (PAR 21);
- Sands Lane (PAR 158);
- Norfolk Bank Lane (PAR 128);
- Ellerker Lane (PAR 127);
- Ings Lane/Main Street (PAR 26B);
- Carr Lane (PAR 27);
- Wallingfen Lane (PAR 130);
- Common Road (PAR 129);
- Tongue Lane (PAR 28);
- B1230 Main Road (east) (PAR 29);
- B1230 Main Road (west) (PAR 156);
- Thornton Dam Lane/Scalby Lane (PAR 132); and
- Staddlethorpe Broad Lane (PAR 131).

4.11.13 Within Route Section A, the following have been identified as light-vehicle-only construction traffic routes:

- Sections of Westoby Lane (PAR 14);
- Brick Dike Lane (PAR 15);
- B1230 Hunsley Road (PAR 16);
- Beverley Road (PAR 20);
- Dale Road (PAR 125);
- Ings Lane (PAR 26); and
- Landing Lane (PAR 159).

4.11.14 In Route Section A, 33 bellmouths are proposed; these are summarised below:

- Bellmouth BM-001[5] is located south off the A1079 (PAR 1) and bellmouth BM-002 is located east off the A164 (PAR 6). Both of these would provide construction access to proposed pylons 4AF3 to 4AF8.

[5] This bellmouth is also consented under the Town and Country Planning Act application for the proposed Birkhill Wood Substation.

- Bellmouth BM-003 south off Dunflat Road (PAR 5) and BM-005 (PAR 8) north off Little Weighton Road would provide construction access to proposed pylons 4AF9 through to 4AF15.
- Bellmouth BM-006 south off Little Weighton Road (PAR 8) and BM-007 southeast off Rowley Road (PAR 11) would provide construction access to proposed pylons 4AF16 through to 4AF27.
- Bellmouth BM-008 south off Rowley Road (PAR 11) would provide construction access to proposed pylon 4AF28.
- Bellmouth BM-009 (PAR 13) east off Lambwell Hill would provide construction access to proposed pylon 4AF29.
- Bellmouth BM-010 (PAR 13) west off Lambwell Hill and bellmouth BM-013 northeast off Ellerker Road (PAR 21) would provide construction access to proposed pylons 4AF30 to 4AF36 and 4ZQ79A to 4ZQ75 as well as modification works to some existing pylons between these two bellmouths. Crossover bellmouths BM-011 and BM-012 southeast and northwest off Dale Road (PAR 125) would provide access for light goods vehicles only, off Dale Road (PAR 125), but all traffic could cross Dale Road (PAR 125) between these bellmouths to access the continuous temporary access road on either side.
- Bellmouth BM-016 east off Brough Road (PAR 24) would provide construction access to proposed pylons 4ZQ74 and 4ZQ73.
- Bellmouth BM-018 west off Brough Road (PAR 24) and bellmouth BM-021 south off Ings Lane (PAR 128) would provide construction access to proposed pylons 4ZQ72 to 4ZQ65 and 4AF48 to 4AF49 as well as modification and dismantling works to some existing pylons between these two bellmouths. Crossover bellmouths BM-019 and BM-020 are located east and west off Sands Lane (PAR 158) with a short section of construction traffic route for all vehicles to take access to existing pylon 4AF46 and facilitate the installation of crossing protection.
- Bellmouth BM-017 would provide construction access to the temporary main construction compound to the north of Whin Moor Lane as well as an alternative access to proposed pylons 4ZQ72 to 4ZQ65 and 4AF48 to 4AF49 as well as modification and dismantling works to some existing pylons between these two bellmouths.
- Bellmouth BM-022 west off Ings Lane (PAR 128) and bellmouth BM-014 east off Carr Lane (PAR 27) would provide construction access to proposed pylons 4ZQ64 and 4AF50 to 4AF57 as well as modification and dismantling works to some existing pylons between these two bellmouths. There is a short section of all-vehicle traffic along a section of Ings Lane (PAR 126B) between bellmouths BM-026 and BM-027 to avoid taking the temporary access road across a residential access.
- Bellmouth BM-029 northeast off Carr Lane (PAR 27) would provide construction access to proposed pylon 4AF58.
- Bellmouth BM-030 west off Carr Lane (PAR 27) and bellmouths BM-033 and BM-102 both east off Tongue Lane (PAR 28) would provide construction access to proposed pylons 4AF59 through to 4AF65 with crossover bellmouths (BM-031 and BM-032) on Landing Lane (PAR 159).

- Bellmouth BM-034 west off Tongue Lane (PAR 28) would provide access to the proposed satellite construction compound adjacent to Tongue Lane.
- Bellmouth BM-035 west off Tongue Lane (PAR 28) and bellmouth BM-036 east of Staddlethorpe Lane (PAR 131) would provide construction access for proposed pylons 4AF66 through to 4AF69.
- Bellmouth BM-037 southwest off Staddlethorpe Lane (PAR 131) and crossover bellmouths BM-038 and BM-069 north and south off Blacktoft Lane would provide construction access to proposed pylons 4AF70 to 4AF77.

Highway widening

4.11.15 Sections of highway widening are proposed along A1079[6] (PAR 1), Rowley Road (PAR 11), Lambwell Hill (PAR 13), Ellerker Lane (PAR 127), Norfolk Bank Lane (PAR 128), Ings Lane (PAR 26B), Wallingfen Lane (PAR 130), Common Road (PAR 129), Carr Lane (PAR 27), Tongue Lane (PAR 28) and Staddlethorpe Broad Lane (PAR 131). These are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Temporary road closures and diversions

4.11.16 Temporary road closures would be required on the following roads. Where these roads are PARs, the PAR number has been provided in brackets:

- A164 (PAR 6) for crossing protection;
- Dunflat Road (PAR 5) for bellmouth construction;
- Little Weighton Road (PAR 8) for bellmouth construction and crossing protection;
- Riplingham Road (PAR 10) for third-party modification works and crossing protection;
- Rowley Road (PAR 11) for bellmouth construction, highway widening and crossing protection;
- Lambwell Hill (PAR 13) for bellmouth construction, highway widening, third-party modification works and crossing protection;
- Dale Road (PAR 125) for bellmouth construction and crossing protection;
- Ellerker Road (PAR 21) for bellmouth construction and crossing protection;
- A63 (PAR 22) for crossing protection;
- Ellerker Lane (PAR 127) for highway widening;
- Brough Road (PAR 24) for crossing protection;
- Norfolk Bank Lane (PAR 128) for highway widening;
- Sands Lane (PAR 158) for bellmouth construction, third-party modification works and crossing protection;

[6] This section of highway widening is also consented under the Town and Country Planning Act application for the proposed Birkhill Wood Substation.

- Ings Lane (PAR 26 and 128) for bellmouth construction, highway widening, third-party modification works and crossing protection;
- Main Street (PAR 26B) for bellmouth construction and highway widening;
- Wallingfen Lane (PAR 130) for highway widening;
- Common Road (PAR 129) for highway widening;
- Carr Lane (PAR 27) for bellmouth construction, highway widening and crossing protection;
- Landing Lane (PAR 159) for bellmouth construction and crossing protection;
- Tongue Lane (PAR 28) for bellmouth construction, highway widening and crossing protection;
- Staddlethorpe Broad Lane (PAR 131) for bellmouth construction, highway widening and crossing protection; and
- Blacktoft Lane for bellmouth construction and crossing protection.

4.11.17 In this Route Section, road closures are expected to be for no more than ten days for bellmouth construction, seven weeks for road widening, six weeks for third-party modification works and up to two days for crossing protection. The proposed diversion routes are shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

4.11.18 There are two roads in this Route Section where a diversion route is not available. These are:

- Sands Lane (PAR 158); and
- Landing Lane (PAR 159).

4.11.19 **Application Document 7.4 Outline Construction Traffic Management Plan** sets out measures to facilitate vehicular access to residential properties, business and agricultural accesses during the proposed road closures.

Public rights of way and rights of navigation temporary closures and diversions

4.11.20 The management proposed during the construction of the Project for each of the PRoWs and rights of navigation in this Route Section is set out in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.21 Proposed temporary closures/extents of stopping up and diversions are illustrated on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans - Section A** and are set out below.

4.11.22 Within this Route Section, temporary closures with diversions are proposed for the following PRoWs during the construction of the Project:

- Woodmansey Footpath No.7 (WOODF07);
- Skidby Bridleway No.4 (SKIDB04);
- Rowley Footpath No.12 (ROWLF12);
- Rowley Footpath No.3 (ROWLF03);
- Rowley Footpath No.15 (ROWLF15);

- Ellerker Footpath No.4 (ELLRF04);
- Broomfleet Footpath No.5 (BROOF05); and
- Broomfleet Footpath No.10 (BROOF10).

4.11.23 Within this Route Section, temporary closures with an alternative route available via the existing highway network are proposed for the following PRoWs during the construction of the Project:

- Ellerker Footpath No.2 (ELLRF02);

4.11.24 Within this Route Section, a temporary closure with no diversion is proposed for Rowley Bridleway No.13 (R0WLB13). This PRoW is already in the process of being permanently diverted for the proposed Birkhill Wood Substation, therefore no further diversion is required.

4.11.25 Within this Route Section temporary short term closures with management/access control are proposed for all other PRoWs that intersect with the Order Limits during the construction of the Project, these are detailed in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.26 A temporary closure of the Market Weighton Canal is proposed to install and remove the temporary bridge and crossing protection. Whilst it is a navigable waterway there are currently no rights of navigation on it.

Construction compounds

4.11.27 Three construction compounds are proposed in Route Section A. A main compound is proposed to the south of the proposed overhead line, south of the settlement of Ellerker. Two satellite compounds are proposed, one to the southeast of the proposed Birkhill Wood Substation and the other adjacent to Tongue Lane just north of the Broomfleet Tileworks. These are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Conductor stringing

4.11.28 There are 27 stringing positions proposed within this Route Section at the terminal pylon 4AF3 and at the location of the other tension pylons as detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**. Temporary crossing protection for conductor stringing is proposed either side of highways, the railway line, Market Weighton Canal and a third-party service crossed by the proposed overhead line in this Route Section. Construction panel accesses for crossing protection (where these are separate from construction access tracks) would be taken off the highway utilising existing access points where possible. The proposed location of the stringing positions, crossing protection and construction panel access to the crossing protection are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Third-party works

4.11.29 Within Route Section A, there are DNO connections proposed to each of the three construction compounds. These are illustrated on **Application Document 6.4.F4 Figure 4.4 Third Party Works**. For proposed main construction compound M-1, two alternative power supply connections to the proposed as shown on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

- NPG-09A from the west – there is currently uncertainty whether capacity of the network would be sufficient for this this connection; or
- NPG-09B from the east.

4.11.30 Within Route Section A, the proposed overhead line crosses 11 existing 11 kV and two existing 33 kV overhead lines. Sections of these existing low voltage and telecommunication overhead lines are proposed to be undergrounded or diverted where the proposed overhead line would cross these assets. The existing 33 kV overhead line to the east of the A164 would be oversailed by the proposed overhead line. The locations of these are shown on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

Route Section B Between the River Ouse and Crowle

Proposed overhead line

4.11.31 The proposed overhead line in Route Section B is shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** (Sheets 11 to 16) and the pylons detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

4.11.32 The first pylon in this Route Section is proposed pylon 4AF77 and the last pylon is proposed pylon 4AF114.

4.11.33 From the start of Route Section B at Blacktoft Lane, the proposed overhead line is routed in a general southerly direction crossing the River Ouse and Main Street Ousefleet between the settlements of Ousefleet and Whitgift. The proposed overhead line remains broadly parallel with the existing overhead line; however, the proposed overhead line deviates from being in close parallel between proposed pylons 4AF76 and 4AF84 in order to avoid oversailing properties within the settlement of Ousefleet and Hall Garth moated site scheduled monument. From proposed pylon 4AF84, the proposed overhead line is routed south, to the west of and in close parallel with the existing 4ZQ 400 kV overhead line. The route passes to the west of the settlements of Adlingfleet and Garthorpe and east of the settlement of Luddington, crossing Cow Lane, Pasture Lane, Garthorpe Road, Carr Lane and Meredyke Road to proposed pylon 4AF101.

4.11.34 From proposed pylon 4AF101 the proposed overhead line turns and is routed southwest around the north of Keadby Wind Farm and away from being in close parallel with the existing 4ZQ 400 kV overhead line. Through this section the proposed overhead line passes to the south of the settlements of Luddington and Eastoft, crossing Pasture Lane and Carr Lane to proposed pylon 4AF114. Here, the proposed overhead line turns to route south to the end of this Route Section just before proposed pylon 4AF115.

4.11.35 In Route Section B, proposed pylons 4AF77 and 4AF78 would be bespoke pylons to facilitate the crossing of the River Ouse. These proposed pylons would be similar in height to the existing river crossing pylons on the 4ZQ overhead line. Indicative pylon heights are provided in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

Environmental mitigation

4.11.36 Within Route Section B, areas of environmental mitigation have been included for:

- Landscape planting;
- Protected species mitigation;
- Flood compensation; and
- Functionally linked land.

4.11.37 These are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**. Landscape planting, protected species mitigation and functionally linked land offsetting are described in detail in **Application Document 7.8 Outline Landscape and Ecology Management Plan** and the flood compensation areas are described in detail in **Application Document 7.13 Flood Risk Assessment**.

Maintenance access

4.11.38 The proposed maintenance access routes in Route Section B are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Temporary construction works

Construction access

4.11.39 The proposed construction traffic routes are illustrated on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**.

4.11.40 Within this Route Section, the following have been identified as all-vehicle construction traffic routes:

- A161 (PAR 31, PAR 32, PAR 33, PAR 37 and PAR 44);
- B1392 (PAR 4);
- B1392 Eastoft Road (PAR 136);
- Meredyke Road (West) (PAR 135);
- Carr Lane (PAR 42);
- Washinghall Lane (PAR 41); and
- A short section of Pasture Lane (PAR 160).

4.11.41 Within this Route Section, the following have been identified as light-vehicle-only construction traffic routes.

- Sections of High Street (PAR 36);
- Main Street (PAR 35);
- Pennyhill Cottages (PAR 34);
- Luddington Road (PAR 38);
- Carr Lane (PAR 39); and
- B1392 (PAR 40, PAR 133 and PAR 134).

4.11.42 In Route Section B, 16 bellmouths are proposed; these are summarised below:

- Bellmouth BM-039 south from Blacktoft Lane would provide construction access to proposed pylon 4AF77. This pylon would be accessed via bellmouth BM-037 west off Staddlethorpe Broad Lane (PAR 131) in Route Section A and the crossover bellmouths BM-038 and BM-039 north and south off Blacktoft Lane.
- Bellmouths BM-042 and BM-043 east off the A161 Kings Causeway (PAR 33) and bellmouth BM-050 north off Meredyke Road (West) (PAR 135) would provide construction access to proposed pylons 4AF78 to 4AF98. There are four sets of crossover bellmouths in this section, BM-040 and BM-041 north and south off Main Street Ousefleet (PAR 34), BM-044 and BM-045 north and south off Pasture Lane (PAR 160), BM-046 and BM-047 north and south off Luddington Road (PAR 38), and BM-048 and BM-049 east and west off Carr Lane (PAR 39). An alternative set of crossover bellmouths (BM-040A and BM-041A) further east off Main Street Ousefleet (PAR 34) would be used instead of bellmouths BM-040 and BM-041 depending upon the results of trial trench investigations to the south of Main Street Ousefleet.
- Bellmouth BM-051 south off Meredyke Road (West) (PAR 135) and bellmouth BM-057 east off Washinghall Lane (PAR 41) would provide construction access to proposed pylons 4AF99 to 4AF111. Bellmouth BM-056 southeast off Carr Lane (PAR 42) would provide a third construction access point for this section of proposed pylons.
- Bellmouth BM-058 west off Washinghall Lane (PAR 41) would provide construction access to proposed pylons 4AF112 to 4AF114. These would also be accessed via bellmouth BM-059 north off Bonnyhale Dale Road (PAR 46) which is within Route Section C.

Highway widening

4.11.43 Within Route Section B, sections of highway widening are proposed along Meredyke Road (West) (PAR 135), Carr Lane (PAR 42) and Washinghall Lane (PAR 41). These are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Temporary road closures and diversions

4.11.44 Temporary road closures would be required on the following roads. Where these roads are PARs, the PAR number has been provided in brackets:

- Pennyhill Cottages (PAR 34) for crossing protection;
- Narrow Lane for third-party modification works;
- Pasture Lane (PAR 160) for bellmouth construction and crossing protection;
- Luddington Road (PAR 38) for bellmouth construction and crossing protection;
- Carr Lane (PAR 39) for bellmouth construction, third-party modification works and crossing protection;
- Meredyke Road (West) (PAR 135) for bellmouth construction, highway widening and crossing protection;

- Carr Lane (PAR 42) for bellmouth construction and highway widening; and
- Washinghall Lane (PAR 41) for bellmouth construction, highway widening and crossing protection.

4.11.45 In this Route Section, road closures are expected to be for no more than ten days for bellmouth construction, two weeks for road widening, five weeks for third-party modification works and less than a day for crossing protection. Diversion routes are shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

4.11.46 There are two roads in this Route Section where a diversion is not available. These are:

- Narrow Lane; and
- Pasture Lane (PAR 160).

4.11.47 **Application Document 7.4 Outline Construction Traffic Management Plan** sets out measures to facilitate vehicular access to residential properties, business and agricultural accesses during the proposed road closures.

Public rights of way and rights of navigation temporary closures and diversions

4.11.48 The management proposed during the construction of the Project for each of the PRoWs and rights of navigation in this Route Section is set out in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.49 Proposed temporary closures/extents of stopping up and diversions are illustrated on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans - Section B** and are set out below.

4.11.50 Within this Route Section, temporary closures with diversions are proposed on the following PRoWs during the construction of the Project:

- Former Parish of Ousefleet Bridleway No.1 (OUSEB01);
- Former Parish of Ousefleet Bridleway No.2 (OUSEB02);
- Former Parish of Adlingfleet Bridleway No.1 (ADLFB01)
- RESTRICTED BYWAY LUDD5A; and
- FOOTPATH LUDD9.

4.11.51 Within this Route Section temporary short term closures with management/access control are proposed for all other PRoWs that intersect with the Order Limits during the construction of the Project, these are detailed in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.52 Due to the span length, it would not be possible to install crossing protection across the River Ouse which is a navigable waterway, therefore the rights of navigation on this waterway would need to be temporarily stopped with management/access control for up to ten weeks so that that conductors could be safely strung.

Construction compounds

4.11.53 One construction compound is proposed in Route Section B, a satellite compound to the south of the settlement of Ousefleet. This is illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Conductor stringing

4.11.54 There are ten stringing positions proposed within Route Section B at the locations of the tension pylons, as detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**. Temporary crossing protection for conductor stringing is proposed either side of the highways crossed by the proposed overhead line in Route Section B. Construction panel accesses for crossing protection (where these are separate from construction access tracks) would be taken off the highway utilising existing access points where possible. The proposed locations of the stringing positions, crossing protection and construction panel accesses to the crossing protection are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Third-party works

4.11.55 Within Route Section B, there is a DNO connection proposed to the satellite construction compound. This is illustrated on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

4.11.56 Within Route Section B, the proposed overhead line crosses five existing 11 kV overhead lines. Sections of these existing low voltage and telecommunication overhead lines are proposed to be undergrounded or diverted where the proposed overhead line would cross these assets. The locations of these are shown on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

Route Section C Between Crowle and North Moor (M180)

Proposed overhead line

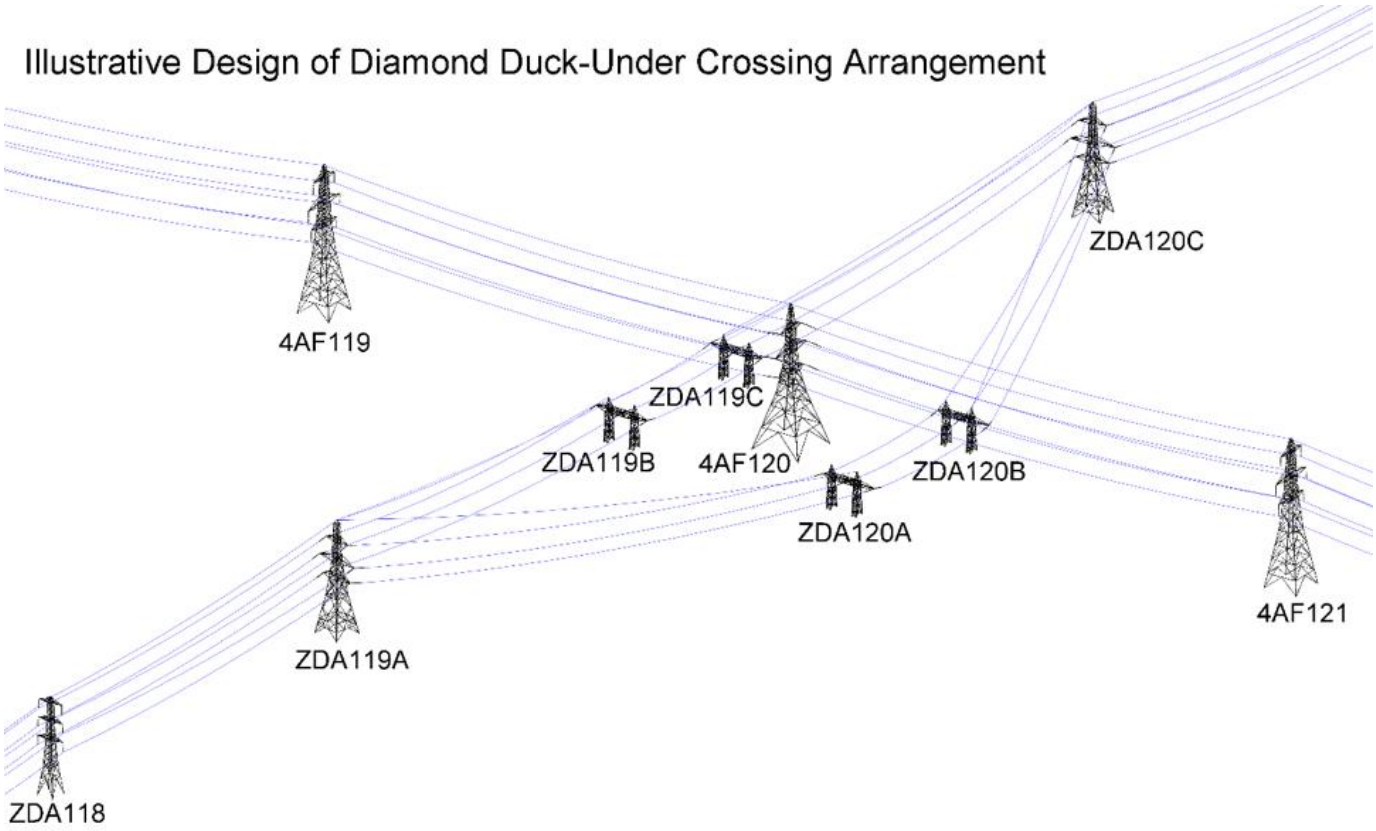
4.11.57 The proposed overhead line in Route Section C is shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** (Sheets 16 to 19), and the pylons detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

4.11.58 The first pylon in the Route Section is proposed pylon 4AF115 and the last pylon is proposed pylon 4AF128.

4.11.59 From just north of proposed pylon 4AF115, the proposed overhead line is routed broadly south to the east of Crowle for approximately 6.4 km. The route crosses Outgate, the existing ZDA 400 kV overhead line, the Sheffield and South Yorkshire Navigation and the A18 to the end of Route Section C between proposed pylons 4AF128 and 4AF129 to the north of the M180.

4.11.60 Within Route Section C, the proposed overhead line crosses the existing ZDA 400 kV overhead line between Keadby and Crowle. To facilitate this crossing, the existing ZDA overhead line would be split into two routes of lowered overhead line between proposed pylons ZDA119A and ZDA120C beneath the proposed overhead line. This is to give the required clearance between the proposed and existing lines. Six new pylons are proposed and approximately 520 m of existing ZDA overhead line, including two pylons, would be removed. This type of crossing is referred to as a ‘diamond duck under’ and is illustrated in **Image 4-10**.

Image 4.10 – Illustrative design of the diamond duck under crossing arrangement



Environmental mitigation

4.11.61 Within Route Section C, areas of environmental mitigation have been included for:

- Landscape planting; and
- Protected species mitigation.

4.11.62 These are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** and are described in detail in **Application Document 7.8 Outline Landscape and Ecology Management Plan**.

Maintenance access

4.11.63 The proposed maintenance access routes in Route Section C are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Temporary construction works

Construction access

4.11.64 The proposed construction traffic routes are illustrated on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**.

4.11.65 Within Route Section C, the following have been identified as all-vehicle construction traffic routes:

- A161 (PAR 44, PAR 50 and PAR 53);
- Outgate East (PAR 137);

- Bonnyhale Dale Road (PAR 46);
- A18 (PAR 52, PAR 51 and PAR 157); and
- Keadby Power Station internal roads (PAR 49).

4.11.66 Within Route Section C, the following have been identified as light-vehicle-only construction traffic routes:

- Sections of the B1392 (PAR 134);
- Outgate West (PAR 45);
- Main Street (PAR 47); and
- Bonnyhale Road (PAR 48).

4.11.67 In Route Section C, ten bellmouths are proposed; these are summarised below:

- Bellmouth BM-059 north off Bonnyhale Dale Road (PAR 46) would provide construction access to proposed pylons 4AF115 to 4AF118 within this Route Section.
- Bellmouth BM-074 east off Washinghall Lane (PAR 41) is on the section boundary between Route Section B and Route Section C and would provide access from Washinghall Lane to the Keadby Power Station internal roads which connect into the A18 (PAR 51) and north to bellmouths BM-057 and BM-058 discussed in Route Section B above.
- Bellmouth BM-063 east off Bonnyhale Dale Road (PAR 46) would provide access from Bonnyhale Dale Road to the Keadby Power Station internal roads which connect into the A18 (PAR 51).
- Bellmouth BM-060 south off Outgate East (PAR 137) and bellmouth BM-064 north off the Keadby Power Station internal roads (PAR 49) would provide construction access to proposed pylons 4AF119 to 4AF123 and works to the existing ZDA overhead line.
- Bellmouth BM-062 north off Outgate East (PAR 137) would provide construction access to existing pylon ZDA116.
- Bellmouths BM-065 and BM-066 north off the A18 (PAR 51) would provide construction access to proposed pylons 4AF124 and 4AF125 as well as access to proposed pylons to the north of the Sheffield and South Yorkshire Navigation and North and South Soak Drains via the Keadby Power Station internal roads.
- Bellmouth BM-015 east off A161 (PAR 53) would provide construction access to proposed pylon 4AF126.
- Bellmouth BM-068 south of the A18 (PAR 157) would provide construction access to proposed pylons 4AF127 and 4AF128 within this Route Section as well as proposed pylons 4AF129 to 4AF133 within Route Section D.

Highway widening

4.11.68 Within this Route Section, sections of highway widening are proposed along Outgate East (PAR 137), Bonnyhale Dale Road (PAR 46) and a section of the Bonnyhale Road (PAR 49). These are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Temporary road closures and diversions

4.11.69 Temporary road closures would be required on the following roads. Where these roads are PARs, the PAR number has been provided in brackets:

- Outgate East (PAR 137) for bellmouth construction, highway widening, third-party modification works and crossing protection;
- Bonnyhale Dale Road (PAR 46) for bellmouth construction and highway widening;
- South Cross Moors Road for crossing protection;
- Keadby Power Station internal roads (PAR 49) for bellmouth construction, highway widening and crossing protection; and
- A18 (PAR 51) for crossing protection.

4.11.70 In this Route Section, road closures are expected to be for no more than five days for bellmouth construction, two weeks for road widening, eight days for third-party modification works and less than a day for crossing protection. Diversion routes are shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

4.11.71 **Application Document 7.4 Outline Construction Traffic Management Plan** sets out measures to facilitate vehicular access to residential properties, business and agricultural accesses during the proposed road closures.

Public rights of way and rights of navigation temporary closures and diversions

4.11.72 The management proposed during the construction of the Project for each of the PRoWs and rights of navigation in this Route Section is set out in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.73 Proposed temporary closures/extents of stopping up and diversions are illustrated on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans - Section C** and are set out below.

4.11.74 Within this Route Section, temporary closures with alternative routes available during the construction of the Project are proposed on:

- BRIDLEWAY CROW13.

4.11.75 Within this Route Section temporary short term closures with management/access control are proposed for all other PRoWs that intersect with the Order Limits during the construction of the Project, these are detailed in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.76 Sheffield and South Yorkshire Navigation would need to be temporarily stopped up to install and remove the crossing protection.

Construction compounds

4.11.77 One construction compound is proposed in Route Section C, a main compound to the south of Bonnyhale Dale Road (PAR 46). This is illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Conductor stringing

4.11.78 There are seven stringing positions proposed within Route Section C at the location of the tension pylons, as detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**. Temporary crossing protection for conductor stringing is proposed either side of the highways, the railway line, the Sheffield and South Yorkshire Navigation, River Torne and South Engine Drain which are crossed by the proposed overhead line in Route Section C. Construction panel accesses for crossing protection (where these are separate from construction access tracks) would be taken off the highway utilising existing access points where possible. The proposed locations of the stringing positions, crossing protection and construction panel access to the crossing protection are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Third-party works

4.11.79 Within Route Section C, there is a DNO connection proposed to the main construction compound. This is illustrated on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

4.11.80 Within Route Section C, the proposed overhead line crosses two existing 11 kV overhead lines. Sections of these existing low voltage and telecommunication overhead lines are proposed to be undergrounded or diverted where the proposed overhead line would cross these assets. The locations of these are shown on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

Route Section D Between North Moor (M180) and the River Idle

Proposed overhead line

4.11.81 The proposed overhead line in Route Section D is shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** (Sheets 19 to 24), and the pylons detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

4.11.82 The first pylon in this Route Section is proposed pylon 4AF129 and the last pylon is proposed pylon 4AF171.

4.11.83 From the start of Route Section D in North Moor, between proposed pylons 4AF128 and 4AF129, the proposed overhead line is routed southeast crossing the M180, passing to the west of the settlement of Beltoft and east of the settlement of Belton. The proposed overhead line crosses Belton Road, Gurry Lane, Epworth Road and Sand Road to proposed pylon 4AF140.

4.11.84 From proposed pylon 4AF140, the proposed overhead line is routed southwest in close parallel with the existing 4TM and ZDA 400 kV overhead lines to the east of the settlements of Epworth and Low Burnham to proposed pylon 4AF152, crossing Newlands Lane and Melwood Hill. From proposed pylon 4AF152 the proposed overhead line passes to the west of the settlement of Owston Ferry and east of the settlements of East Lound and Graizelound. The proposed overhead line remains broadly parallel with the existing overhead lines, deviating away from being in close parallel, crossing Burnham Road and East Lound Road between proposed pylons 4AF152 and 4AF155 in order to avoid residential properties.

4.11.85 The proposed overhead line comes back into close parallel with the existing overhead line at proposed pylon 4AF156 before diverting away from close parallel to the southwest, crossing Ferry Road, Warping Drain, Gunthorpe Road, Stockwith Road, a railway line, Tindale Bank Road and the River Idle to the end of this Route Section just to the north of proposed pylon 4AF172.

Environmental mitigation

4.11.86 Within Route Section D, areas of environmental mitigation have been included for:

- Landscape planting;
- Flood compensation; and
- Protected species mitigation.

4.11.87 These are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** and are described in detail in **Application Document 7.8 Outline Landscape and Ecology Management Plan**.

Maintenance access

4.11.88 The proposed maintenance access routes in Route Section D are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Temporary construction works

Construction access

4.11.89 The proposed construction traffic routes are illustrated on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**.

4.11.90 Within Route Section D, the following have been identified as all-vehicle construction traffic routes:

- A161 (PAR 54, PAR 61, PAR 65, PAR 71, PAR 74 and PAR 76);
- M180 (PAR 144);
- King Edward Street (PAR 55);
- Bracon (PAR 56);
- Belton Road (PAR 57);
- Blow Row (PAR 60);
- Rectory Street (PAR 62);
- Melwood Hill (North) (PAR 63);
- Newland Lane (PAR 64B);
- B1396 Tower Hill (PAR 70);
- Brackenhill Road/East Lound Road (PAR 69);
- Ferry Road/Main Street (PAR 72);

- Stockwith Road (PAR 73); and
- Tindale Bank Road (PAR 75).

4.11.91 Within Route Section D, the following have been identified as light-vehicle-only construction traffic routes:

- Hollingsworth Lane (PAR 58);
- Greengate (PAR 138);
- Newland Lane (PAR 64);
- Melwood Hill (South) (PAR 59);
- Epworth Road North (PAR 149);
- Burnham Road East (PAR 151);
- Burnham Road (West) (PAR 66);
- Epworth Road South (PAR 150);
- Church Street (PAR 152);
- Church Walk (PAR 67); and
- East Lound Road (PAR 68).

4.11.92 In Route Section D, 21 bellmouths are proposed; these are summarised below:

- Bellmouth BM-068 south off the A18 (PAR 157) in Route Section C would provide construction access to proposed pylons 4AF129 to 4AF133 within this Route Section.
- Bellmouth BM-069 north off Belton Road (PAR 57) would provide construction access to proposed pylons 4AF134 and 4AF135.
- Bellmouth BM-070 south off Belton Road (PAR 57) and bellmouth BM-078 east and north off Melwood Hill (North) (PAR 63) would provide construction access to proposed pylons 4AF136 to 4AF148. This includes a short section of construction traffic route on Newland Lane (PAR 64B) between bellmouths BM-075 north off Newland Lane and BM-077 southwest off Newland Lane. Bellmouth BM-073 south off Newland Lane would provide construction access to pylon 4AF145. Crossover bellmouths BM-071 and BM-072 are located east and west off Hollingsworth Lane (PAR 58). An alternative bellmouth (BM-110) further north off Melwood Hill (North) (PAR 63) would be used instead of bellmouth BM-078 depending upon the results of arachnological trial trench investigations.
- Bellmouth BM-079 east off Melwood Hill (North) (PAR 63) and bellmouth BM-082 north off Brackenhill Road/East Lound Road (PAR 69) would provide construction access to proposed pylons 4AF149 and 4AF154. Crossover bellmouths BM-080 and BM-081 are located north and south off Burnham Road (West) (PAR 66).
- Bellmouth BM-083 south off Brackenhill Road/East Lound Road (PAR 69) and bellmouth BM-084 north off Ferry Road/Main Street (PAR 72) would provide construction access to proposed pylons 4AF155 to 4AF158.
- Bellmouth BM-085 south off Ferry Road/Main Street (PAR 72) and bellmouth BM-086 east off Stockwith Road (PAR 73) would provide construction access to proposed pylons 4AF159 to 4AF161.

- Bellmouth BM-087 east off Stockwith Road (PAR 73) would provide construction access to proposed pylon 4AF162.
- Bellmouth BM-088 west off Stockwith Road (PAR 73) and bellmouth BM-089 east off the A161 (PAR 74) would provide construction access to proposed pylons 4AF163 to 4AF166.
- Bellmouth BM-091 north off Tindale Bank Road (PAR 75) would provide construction access to proposed pylons 4AF167 and 4AF168.
- Bellmouth BM-092 south off Tindale Bank Road (PAR 75) would provide construction access to proposed pylons 4AF169 to 4AF171.

Highway widening

4.11.93 Within this Route Section, sections of highway widening are proposed along Belton Road (PAR 57), Newland Lane (PAR 64B), Melwood Hill (PAR 63), Brackenhill Road/ East Lound Road (PAR 69), Ferry Road/Main Street (PAR 72), Stockwith Road (PAR 73) and Tindale Bank Road (PAR 75). These are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Temporary road closures and diversions

4.11.94 Temporary road closures would be required on the following roads. Where these roads are PARs, the PAR number has been provided in brackets:

- M180 (PAR 144) for crossing protection;
- Belton Road (PAR 57) or highway widening and crossing protection;
- Hollingsworth Lane (PAR 58) for bellmouth construction, third-party service modification works and crossing protection;
- Newland Lane (PAR 64B) for bellmouth construction, highway widening and crossing protection;
- Melwood Hill (North) (PAR 63) for bellmouth construction, highway widening, third-party modification works and crossing protection;
- Burnham Road (West) (PAR 66) for bellmouth construction and crossing protection;
- Brackenhill Road/East Lound Road (PAR 69 and PAR 68) for bellmouth construction, highway widening and crossing protection;
- Ferry Road/Main Street (PAR 72) for bellmouth construction, highway widening, third-party modification works and crossing protection;
- Gunthorpe Road for crossing protection;
- Stockwith Road (PAR 73) for bellmouth construction, highway widening, third-party modification works and crossing protection;
- A161 (PAR 74) for bellmouth construction and crossing protection; and
- Tindale Bank Road (PAR 75) for bellmouth construction, highway widening, third-party modification works and crossing protection.

4.11.95 In this Route Section, road closures are expected to be for no more than ten days for bellmouth construction, two weeks for road widening, two weeks for third-party

modification works and less than a day for crossing protection. Diversion routes are shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

4.11.96 There are two roads in this Route Section where a diversion is not available. These are:

- Newland Lane (PAR 64B); and
- Burnham Road (West) (PAR 66).

4.11.97 **Application Document 7.4 Outline Construction Traffic Management Plan** sets out measures to facilitate vehicular access to residential properties, business and agricultural accesses during the proposed road closures.

Public rights of way and rights of navigation temporary closures and diversions

4.11.98 The management proposed during the construction of the Project for each of the PRoWs and rights of navigation in this Route Section is set out in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.99 Proposed temporary closures/extents of stopping up and diversions are illustrated on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans - Section D** and are set out below.

4.11.100 Within this Route Section, temporary closures with diversions are proposed on the following PRoWs during the construction of the Project:

- RESTRICTED BYWAY BELT2;
- FOOTPATH EPWO60; and
- MistertonFP11.

4.11.101 Within this Route Section temporary short term closures with management/access control are proposed for all other PRoWs that intersect with the Order Limits during the construction of the Project, these are detailed in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.102 The River Idle would need to be temporarily stopped up with management/access control to install and remove the crossing protection. Whilst it is a navigable waterway there are currently no rights of navigation on it.

Construction compounds

4.11.103 One construction compound is proposed in Route Section D, a satellite compound to the south of Tindale Bank Road (PAR 75). This is illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Conductor stringing

4.11.104 There are 11 stringing positions proposed within Route Section D at the locations of the tension pylons, as detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**. Temporary crossing protection for conductor stringing is proposed either side of the M180 and other highways, Warping Drain, the railway line, and the River Idle, which are crossed by the proposed overhead line in Route Section D. Construction panel accesses for crossing protection (where these are separate from construction access tracks) would be taken off the highway utilising existing access points where possible. The proposed locations of the stringing

positions, crossing protection, and construction panel accesses to the crossing protection are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Third-party works

4.11.105 Within Route Section D, there is a DNO connection proposed to the satellite construction compound. This is illustrated on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

4.11.106 Within Route Section D, the proposed overhead line crosses seven existing 11 kV and two existing 33 kV overhead lines. Sections of these existing low voltage and telecommunication overhead lines are proposed to be undergrounded or diverted where the proposed overhead line would cross these assets. The locations of these are shown on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

Route Section E Between the River Idle and Darlton

Proposed overhead line

4.11.107 The proposed overhead line in Route Section E is shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** (Sheets 24 to 33), and the pylons detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

4.11.108 The first pylon in this Route Section is proposed pylon 4AF172 and the last is proposed pylon 4AF247.

4.11.109 From the start of Route Section E, just to the south of the River Idle and north of proposed pylon 4AF172, the proposed overhead line is routed southwest for approximately 3.5 km to the west of the settlement of Misterton, crossing Cornley Road and Cattle Road to proposed pylon 4AF182.

4.11.110 From proposed pylon 4AF182 the proposed overhead line turns to route southeast for approximately 9 km to the west of the settlements of Walkeringham, Beckingham and Saundby and east of the settlements of Gringley on the Hill and North and South Wheatley. The route crosses the Chesterfield Canal, the B1403, Walkeringham Road, the A631, Wood Lane, the A620 Gainsborough Road and a railway line, to proposed pylon 4AF209.

4.11.111 From proposed pylon 4AF209 the proposed overhead line is routed in a southwesterly direction for approximately 3.6 km to the east of the railway and west of Sturton le Steeple. The route crosses over Station Road, Springs Lane, a disused railway line and Dunstone Road to proposed pylon 4AF220, adjacent to Caddow Wood.

4.11.112 From proposed pylon 4AF220 the proposed overhead line routes back in a southeasterly direction for approximately 1.3 km to the west of the settlement of North Leverton with Habblesthorpe, crossing Retford Gate and Retford Road West to proposed pylon 4AF224.

4.11.113 From proposed pylon 4AF224 the proposed overhead line is routed generally south for approximately 8.1 km to the west of South Leverton, Treswell, Woodbeck, East Drayton and east of Darlton. The route crosses Hallowgate Road, Cowsland Road, Forewood Lane, Ashley Lane, Retford Road, Main Street, Retford Road (East Drayton) and Dalton Road to the end of this Route Section at the A57.

Environmental mitigation

4.11.114 Within Route Section E, areas of environmental mitigation have been included for:

- Landscape planting; and
- Species mitigation

4.11.115 These are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** and are described in detail in **Application Document 7.8 Outline Landscape and Ecology Management Plan**.

Biodiversity Net Gain

4.11.116 Within Route Section E, an area for BNG has been included south of Town Street/ Forewood Lane (PAR 108) adjacent to Treswell Wood. This is illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Maintenance access

4.11.117 The proposed maintenance access routes in Route Section E are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Temporary construction works

Construction access

4.11.118 The proposed construction traffic routes are illustrated on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**.

4.11.119 Within this Route Section the following have been identified as all-vehicle construction traffic routes:

- A616 (PAR 76 and PAR 81);
- Carr Lane (PAR 78);
- Cornley Road (PAR 77);
- B1403 (PAR 82, PAR 83 and PAR 85);
- A631 (PAR 86, PAR 87, PAR 88 and PAR 89);
- A620 (PAR 91, PAR 98, PAR 99 and PAR 100);
- Sturton Road (PAR 92);
- Gainsborough Road (PAR 93);
- Station Road (PAR 94);
- Leverton Road (PAR 153);
- Cross Street (PAR 101);
- Retford Road, (PAR 154, PAR 155 and PAR 103);
- Leverton Road/Spital Hill (PAR 104);
- A638 (PAR 105 and PAR 106);

- Grove Road (PAR 110);
- Lady Well Lane (PAR 111);
- Hazelwood Lane (PAR 113);
- Retford Road (PAR 115);
- Laneham Road (PAR 116);
- Cocking Lane (PAR 107);
- Town Street/Forewood Lane (PAR 108);
- Ashley Lane (PAR 114);
- Main Street (PAR 112);
- Retford Road (East Drayton) (PAR 123);
- Top Street/Darlton Road (PAR 124); and
- A57 (PAR 117, PAR 118, PAR 119, PAR 120 and PAR 121).

4.11.120 Within this Route Section, the following have been identified as light-vehicle-only construction traffic routes:

- Sections of Cattle Road (PAR 80);
- Wood Lane (PAR 90);
- Wheatley Road (PAR 95);
- Sturton Road (PAR 96);
- Low Street (PAR 97);
- Springs Lane (PAR 102); and
- Wood Lane/Main Street (PAR 109).

4.11.121 In Route Section E, 29 bellmouths are proposed; these are summarised below:

- Bellmouth BM-093 north off Cornley Road (PAR 77) would provide construction access to proposed pylons 4AF172 to 4AF174.
- Bellmouth BM-094 south off Cornley Road (PAR 77) and bellmouth BM-097 northwest off the B1403 (PAR 85) would provide construction access to proposed pylons 4AF175 to 4AF186. Crossover bellmouths BM-095 and BM-096 are located north and south off Cattle Road (PAR 80) which would provide construction access for light vehicles only along Cattle Road.
- Bellmouth BM-098 southeast off the B1403 (PAR 85) and bellmouth BM-099 north off the A631 (PAR 87) would provide construction access to proposed pylons 4AF187 to 4AF191.
- Bellmouth BM-101 south off the A631 (PAR 87) and bellmouth BM-104 northwest off the A620 (PAR 98) would provide construction access to proposed pylons 4AF192 to 4AF201.
- Bellmouth BM-105 southeast off the A620 (PAR 98) and bellmouth BM-103 west off Gainsborough Road (PAR 93) would provide construction access to proposed pylons 4AF202 to 4AF208.

- Bellmouth BM-106 west off Gainsborough Road (PAR 93) would provide construction access to proposed pylons 4AF209 and 4AF210 and connect with BM-107 northeast off Station Road (PAR 94).
- Bellmouth BM-107 northeast off Station Road (PAR 94) would also provide construction access to proposed pylons 4AF209 and 4AF210.
- Bellmouth BM-108 southwest off Station Road (PAR 94) would provide construction access to proposed pylons 4AF211 to 4AF218.
- Bellmouth BM-113 north off Retford Road (PAR 155 and PAR 103) would provide construction access to proposed pylons 4AF219 to 4AF222 crossing over Retford Gate which is a private track.
- Bellmouth BM-114 south off Retford Road (PAR 155 and PAR 103) and bellmouth BM-111 northeast off Town Street/Forewood Lane (PAR 108) would provide construction access to proposed pylons 4AF223 to 4AF228.
- Bellmouth BM-112 southwest off Town Street/Forewood Lane (PAR 108) and bellmouth BM-109 north off Retford Road (PAR 115) would provide construction access to proposed pylons 4AF229 to 4AF232. Crossover bellmouths BM-055 and BM-061 are located north and south off Ashley Lane (PAR 114), and a small section of this road would be used as a construction traffic route for all vehicles between these bellmouths and the scaffold access just south of proposed pylon 4AF231.
- Bellmouth BM-090 south off Retford Road (PAR 115) would provide construction access to proposed pylons 4AF233 and 4AF234.
- Bellmouth BM-004 north off Main Street (PAR 112) would provide construction access to proposed pylon 4AF235.
- Bellmouth BM-023 south off Main Street (PAR 112) and bellmouth BM-024 north off Retford Road (East Drayton) (PAR 123) would provide construction access to proposed pylons 4AF236 to 4AF240.
- Bellmouth BM-067 south off Retford Road (East Drayton) (PAR 123) and bellmouth BM-025 west off Top Street/Darlton Road (PAR 124) would provide construction access to proposed pylons 4AF241 to 4AF243.
- Bellmouth BM-028 east off Top Street/Darlton Road (PAR 124) and bellmouth BM-052 north off the A57 (PAR 118 and PAR 119) would provide construction access to proposed pylons 4AF244 to 4AF247.

Highway widening

4.11.122 Within this Route Section, sections of highway widening are proposed along Cornley Road (PAR 77). This is illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Temporary road closures and diversions

4.11.123 Temporary road closures would be required on the following roads. Where these roads are PARs, the PAR number has been provided in brackets:

- Cornley Road (PAR 77) for bellmouth construction, highway widening and crossing protection;

- Cattle Road (PAR 80) for bellmouth construction and crossing protection;
- B1403 Fountain Hill (PAR 83) for crossing protection;
- A631(PAR 87) for third-party modification works and crossing protection;
- Wood Lane (PAR 90) for third-party modification works;
- A620 - Gainsborough Road (PAR 98) for crossing protection;
- Station Road (PAR 94) for bellmouth construction and crossing protection;
- Retford Road (PAR 155 and PAR 103) for bellmouth construction, third-party modification works and crossing protection;
- Town Street/Forewood Lane (PAR 108) for bellmouth construction, third-party modification works and crossing protection;
- Ashely Lane (PAR 114) for bellmouth construction, third-party modification works and crossing protection;
- Main Street (PAR 112) for third-party modification works and crossing protection;
- Retford Road (East Drayton) (PAR 123) for bellmouth construction and crossing protection;
- Top Street/Darlton Road (PAR 124) for bellmouth construction, third-party modification works and crossing protection; and
- A57 (PAR 119) for crossing protection.

4.11.124 In this Route Section, road closures are expected to be for no more than ten days for bellmouth construction, six weeks for road widening, five weeks for third-party modification works and less than a day for crossing protection. Diversion routes are shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

4.11.125 There are three roads in this Route Section where a diversion is not available. These are:

- Cornley Road (PAR 77);
- Cattle Road (PAR 80; and
- Wood Lane.

4.11.126 **Application Document 7.4 Outline Construction Traffic Management Plan** sets out measures to facilitate vehicular access to residential properties, business and agricultural accesses during the proposed road closures.

Public rights of way and rights of navigation temporary closures and diversions

4.11.127 The management proposed during the construction of the Project for each of the PRoWs and rights of navigation in this Route Section is set out in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.128 Proposed temporary closures/extents of stopping up and diversions are illustrated on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans - Section E** and are set out below.

4.11.129 Within this Route Section, temporary closures with diversions are proposed on the following PRoWs during the construction of the Project:

- Gringley On The HillFP13;
- BeckinghamFP12;
- SaundbyFP3;
- West BurtonFP8;
- Sturton Le SteepleFP20;
- Sturton Le SteepleBW25;
- South LevertonFP8;
- South Leverton|FP21;
- South LevertonFP11;
- TreswellBW11; and
- East DraytonFP3.

4.11.130 Within this Route Section, temporary closures with alternative routes available during the construction of the Project are proposed on:

- Cuckoo Way.

4.11.131 Within this Route Section, a temporary closure with no diversion (at the request of the local planning authority) is proposed for MistertonBOAT18.

4.11.132 Within this Route Section temporary short term closures with management/access control are proposed for all other PRoWs that intersect with the Order Limits during the construction of the Project, these are detailed in **Application Document 7.6 Outline Public Right of Way Management Plan**.

4.11.133 The navigational rights on the Chesterfield Canal would need to be temporarily stopped to install and remove the temporary bridge and crossing protection during the construction of the Project.

Construction compounds

4.11.134 Two construction compounds are proposed in Route Section E, a main construction compound to the north off the A631 (PAR 87) and a satellite compound to the north of Retford Road (PAR 155). These are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Conductor stringing

4.11.135 There are 16 stringing positions proposed within Route Section E, at the locations of the tension pylons, as detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**. Temporary crossing protection for conductor stringing is proposed either side of the highways, Chesterfield Canal, the railway line and disused railway line which are crossed by the proposed overhead line in Route Section E. Construction panel accesses for crossing protection (where these are separate from construction access tracks) would be taken off the highway utilising existing access points where possible. The proposed locations of the stringing positions, crossing protection and construction panel accesses for the crossing

protection are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Third-party works

4.11.136 Within Route Section E, there are DNO connections proposed to the main and satellite construction compounds. These are illustrated on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

4.11.137 Within Route Section E, the proposed overhead line crosses 11 existing 11 kV and two existing 33 kV overhead lines. Sections of these existing low voltage and telecommunication overhead lines are proposed to be undergrounded or diverted where the proposed overhead line would cross these assets. The locations of these are shown on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

Route Section F Between Darlton and the Proposed High Marnham Substation

Proposed overhead line

4.11.138 The proposed overhead line in Route Section F is shown on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** (Sheets 33 to 34), and the pylons detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**.

4.11.139 The first pylon in this Route Section is proposed pylon 4AF248 and the last pylon is proposed pylon 4AF258.

4.11.140 From the start of Route Section F at the A57, the proposed overhead line is routed southeast for approximately 3.1 km to the east of Darlton. The route crosses Fledborough Beck, Far Road, the disused railway to west of the Marnham Railway Yard Local Wildlife Site and Fledborough to Harby Dismantled Railway Local Wildlife Site, to proposed pylon 4AF256. From proposed pylon 4AF256 the proposed overhead line is routed east for a further 0.5 km to the proposed High Marnham Substation.

Environmental mitigation

4.11.141 Within Route Section F, areas of environmental mitigation have been included for:

- Landscape planting.

4.11.142 These are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design** and are described in detail in **Application Document 7.8 Outline Landscape and Ecology Management Plan**.

Maintenance access

4.11.143 The proposed maintenance access routes in Route Section F are illustrated on **Application Document 6.4.F1 Figure 4.1 Proposed Project Design**.

Temporary construction works

Construction access

4.11.144 The proposed construction traffic routes are illustrated on **Application Document 6.4.F2 Figure 4.2 Construction Traffic Routes**.

4.11.145 Within this Route Section the following have been identified as all-vehicle construction traffic routes:

- Sections of Main Street (PAR 122); and
- Fledborough Road (PAR 139).

4.11.146 No roads within Route Section F have been identified as light-vehicle-only construction traffic routes.

4.11.147 In Route Section F, four bellmouths are proposed; these are summarised below:

- Bellmouth BM-053 south off the A57 (PAR 118 and PAR 119) and bellmouth BM-076 west off Fledborough Road (PAR 139) would provide construction access to proposed pylons 4AF248 to 4AF255 within this Route Section.
- Bellmouth BM-054 west off Fledborough Road (PAR 139) would provide construction access to proposed pylon 4AF256.
- Bellmouth BM-100 east off Fledborough Road (PAR 139) would provide construction access to proposed pylons 4AF257 and 4AF258.

Highway widening

4.11.148 There are no sections of highway widening proposed in this Route Section.

Temporary road closures and diversions

4.11.149 Temporary road closures would be required on the following roads. Where these roads are PARs, the PAR number has been provided in brackets:

- Far Road for third-party modification works; and
- Fledborough Road (PAR 139) for third-party modification works and crossing protection.

4.11.150 In this Route Section, road closures are expected to be for no more than one week for third-party modification works and less than a day for crossing protection. Diversion routes are shown on **Application Document 2.6 Access Rights of Way and Public Rights of Navigation Plans**.

4.11.151 **Application Document 7.4 Outline Construction Traffic Management Plan** sets out measures to facilitate vehicular access to residential properties, business and agricultural accesses during the proposed road closures.

Public rights of way and rights of navigation temporary closures and diversions

4.11.152 Within this Route Section, temporary closures with diversions are proposed on the following PRoWs during the construction of the Project:

- FledboroughFP7.

4.11.153 Within this Route Section temporary short term closures with management/access control are proposed for all other PRoWs that intersect with the Order Limits during the construction of the Project, these are detailed in **Application Document 7.6 Outline Public Right of Way Management Plan**.

Construction compounds

4.11.154 One construction compound is proposed in Route Section F, a satellite compound to the west of Fledborough Road (PAR 139). This is illustrated **on Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Conductor stringing

4.11.155 There are four stringing positions proposed within Route Section F, at the locations of the tension pylons, as detailed in **Application Document 6.4.A1 Appendix 4.1 Indicative Pylon Schedule**. Temporary crossing protection for conductor stringing is proposed either side of the highways, railway line and disused railway line which are crossed by the proposed overhead line in Route Section F. Construction panel accesses for crossing protection (where these are separate from construction access tracks) would be taken off the highway utilising existing access points where possible. The proposed locations of the stringing positions, crossing protection and construction panel accesses to the crossing protection are illustrated on **Application Document 6.4.F3 Figure 4.3 Temporary Construction Works**.

Third-party works

4.11.156 Within Route Section F, there is a DNO connection proposed to the satellite construction compound. This is illustrated on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

4.11.157 Within Route Section F, the proposed overhead line crosses three existing 11 kV overhead lines. Sections of these existing low voltage and telecommunication overhead lines are proposed to be undergrounded or diverted where the proposed overhead line would cross these assets. The locations of these are shown on **Application Document 6.4.F4 Figure 4.4 Third Party Works**.

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