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Yorkshire GREEN Project

Corridor and Preliminary Routeing and Siting Study

(YG-NSC-00001)

National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

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ABBREVIATIONS

AIL	Abnormal Indivisible Load
CROW	Countryside and Rights of Way
CSEC	Cable sealing end compound
ECML	East Coast Main Line
EPS	European Protected Species
ESO	Electricity System Operator
FEED	Front End Engineering Design
FES	Future Energy Scenarios
FRA	Flood Risk Assessment
GCN	Great Crested Newt
GIS	Geographical Information Systems
GREEN	Green Energy Enablement
HGV	Heavy Goods Vehicle
LCA	Landscape Character Assessment
LCT	Landscape Character Types
MPA	Mineral Planning Authority
NCA	National Character Area
NCN	National Cycle Network
RAF	Royal Air Force
RSPB	Royal Society for the Protection of Birds
SGT	Super Grid Transformer
SINC	Site of Importance for Nature Conservation
SQSS	Security and Quality of Supply Standard
SSSI	Special Site of Scientific Interest

GLOSSARY OF KEY TERMS

Term	Definition
Cable Sealing End Compound (CSEC)	Electrical infrastructure used as the transition point between overhead lines and underground cables. A compound on the ground acts as the principal transition point.
Corridor	A broad area, within which a new overhead line could be routed.
Double tee	A connection from both circuits on either side of the same structure, creating a third and fourth circuit on another structure.
East Coast Main Line (ECML)	Electrified railway between London and Edinburgh.
Electricity System Operator	Body required to support and guide the future development of the electricity transmission system in Britain.
Electricity transmission system	The electricity transmission system is made up largely of 400kV, 275kV and 132kV assets connecting separately owned generators, interconnectors, large demands fed directly from the transmission system, and distribution systems. The 'transmission' classification applies to assets at 132kV or above in Scotland or offshore. In England and Wales, it relates to assets at 275kV and above. The electricity transmission system is designed to make sure there is sufficient transmission capacity to ensure that the system can be operated in an economic and efficient way by the ESO, ensuring power can be moved from where it is generated to demand centres across Britain. This planning and development of the electricity transmission system is governed by the SQSS which ensure that the network is developed and operated securely and is resilient to any foreseeable network faults and disruption.
Future Energy Scenarios (FES)	Published annually by the ESO to indicate future power requirements and where future connections may occur across the network.
National Grid	National Grid operate the national electricity transmission network across Great Britain and own and maintain the network in England and Wales, providing electricity supplies from generating stations to local distribution companies. National Grid does not distribute electricity to individual premises, but its role in the wholesale market is vital to ensuring a reliable, secure and quality supply to all.
Options appraisal	A robust and transparent process used to compare options and to assess the positive and negative effects they may have across a wide range of criteria including environmental, socio-economic, technical and cost factors. The outcome is to identify a Strategic Proposal for the Project.
Options Identification & Selection	Work undertaken to determine the preferred corridor and preliminary routeing and siting options for the Yorkshire Green Energy Enablement (GREEN) Project. It is intended to demonstrate how National Grid's statutory duties, licence obligations, policy considerations, environmental, socio-economic, technical, cost, and programme issues have been considered and provide information on the approach to the identification and appraisal of route corridors and siting locations.
Overhead line	Conductor (wire) carrying electric current, strung from pylon to pylon.
Power control devices	Power control devices are designed to increase or decrease the apparent reactance of a line, thereby pushing power away from or pulling more power towards the circuit on which they are installed on.
Project Need Case	Sets out the reasons why the Project is required.
Pylon	Overhead line structure used to carry overhead electrical conductors, insulators and fittings.

Term	Definition
Reconductoring	The replacement of old conductors (wires), insulators, earthwires, etc on an existing overhead line.
Security and Quality of Supply Standard	The SQSS sets out a coordinated set of criteria and methodologies that the Transmission Licences shall use in the planning and operation of the national electricity transmission system.
Site of Special Scientific Interest (SSSI)	An area of land designated by Natural England as of special interest by reason of its flora, fauna or geological or physiographical features.
Siting Area	An area of land within which a new CSEC or substation could be sited.
Strategic Proposal	The outcome of the strategic options appraisal; the Strategic Proposal is then taken forward to the Options Identification & Selection stage.
Substation	Electrical equipment in an electric power system through which electrical energy is passed for transmission, transformation, distribution or switching.
Underground Cable	An insulated conductor carrying electric current designed for underground installation.
Super Grid Transformer	Used at substations along the electricity transmission system to increase or reduce voltage.
Yorkshire Green Energy Enablement (GREEN) Project (the Project)	The Project is required to reinforce the north to south boundary flow by 2027 enabling National Grid to meet future system demands which include several Green Energy customer connections such as Eastern Link (wind/hydro), Continental Interconnector (Wind) and Hornsea P4 Windfarm (Wind) and the Atlantic Super Connection (Interconnector).

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1. INTRODUCTION

1.1 Overview and Purpose

1.1.1 The Yorkshire Green Energy ENablement (GREEN) Project (hereinafter referred to as the 'Project') is being developed by National Grid and comprises a major reinforcement of the electricity transmission system to provide additional north-south power flows, helping increase power generated from renewables (especially from offshore wind), in addition to new interconnectors in Scotland and the North of England, to reach consumers.

1.1.2 The Project will include the construction of new infrastructure consisting of substations, cable sealing end compounds (CSEC), overhead lines, underground cables, as well as upgrade works to existing infrastructure.

Substation

Electrical equipment in an electric power system through which electrical energy is passed for transmission, transformation, distribution or switching.

1.1.3 The purpose of this report is to present the outcome of the Corridor and Preliminary Routeing and Siting Study undertaken to further define the location of the proposed Project infrastructure within the Study Area[1]. The study focused on the routeing of new overhead lines and siting of the new infrastructure at three locations in the Study Area: north of York (hereinafter referred to as 'York North'), Tadcaster and Monk Fryston (refer to **Figure 1.1**). **Section 1.3** of this report provides a detailed description of the proposed components within the scope of this study and the wider Project.

Cable Sealing End Compound

Electrical infrastructure used as the transition point between overhead lines and underground cables. A compound on the ground acts as the principal transition point.

1.1.4 This report makes recommendations for preferred options for proposed overhead line routes and sites for proposed substations, CSEC and associated infrastructure. These preferred options will be subject to modification following stakeholder engagement, public consultation, further design development and survey work.

[1] The Study Area was defined as part of the Strategic Proposal process undertaken in 2019; several minor amendments have subsequently been made to the Study Area to respond to changes to the Project scope during the back check and review process undertaken in 2020 and this Options Identification & Selection stage.

N

2TW 400kV Overhead Line

YR 400kV Overhead Line

XCP 275kV Overhead Line

XC 275kV Overhead Line

XD 275kV Overhead Line

4YS 400kV Overhead Line

Skelton

Poppleton Substation

City of York

Osbaldwick Substation

Tadcaster

Monk Fryston Substation

LEGEND

- Study Area
- Substation
- 400 kV Overhead Line
- 275 kV Overhead Line
- Trunk Road
- Motorway
- Railway Track

0 2 4 6 8 km

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Scheme: YORKSHIRE GREEN PROJECT

Document Title: FIGURE 1.1 EXTENT OF THE YORKSHIRE GREEN PROJECT

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1.2 Background and Need

1.2.1 The Future Energy Scenarios (FES) produced annually by the Electricity System Operator (ESO) suggest that north to south power flows in the UK will increase significantly in the next ten years due to increased generation capacity connecting to the electricity network at all levels, transmission and distribution. There is particular growth forecast in offshore wind and interconnection capacity in Scotland and the north east of England. To ensure that suitable capacity exists on the network, a number of new and expansion projects (including this Project) will be required in the coming years to meet the increased levels of electricity generation.

1.2.2 In 2019, several strategic options were identified which were deemed to meet the Project Need Case. The strategic options were subject to a strategic options appraisal and a Strategic Proposal was identified for the Project. Further details of this process are shown in the Yorkshire GREEN Project Strategic Proposal Report (2019).

1.2.3 An assessment undertaken in June 2020 identified additional customers not included in FES 2019 and also found that the 2019 Strategic Proposal would not be able to accommodate the required rating of the Project due to overloading at Poppleton and Monk Fryston substations. This triggered the requirement to undertake a back check and review to ascertain whether the 2019 Strategic Proposal remains the overall best option for the Project. The back check and review process resulted in the 2019 Strategic Proposal being revised into six new variant strategic options which were subject to options appraisal; a new Strategic Proposal (summarised below at **Section 1.3** of this report) was then selected to be taken forward to the Options Identification & Selection stage. Further details of the back check and review process are provided in the Yorkshire GREEN Strategic Proposal Back Check and Review (2020).

1.3 Description of the Project

1.3.1 As outlined in **Section 1.1** of this report, the key components of the Project are as follows:

- Construction of proposed substations, CSECs, overhead lines and underground cables.
- Installation of additional equipment at existing sites (Osbaldwick substation and remote end substations) and reconductoring, including steelwork strengthening and potential pylon replacement along the existing XC and XCP 275kV overhead lines.

1.3.2 While the installation of additional equipment and the reconductoring work forms part of the scope of the Project, they have not been considered as part of the options appraisal work summarised in this report. The focus of the options appraisal is the proposed substations, CSECs and overhead lines in York North, Tadcaster and Monk Fryston (**Figure 1.1**). The diagram presented in **Figure 1.2** shows how the proposed components would connect with the existing infrastructure. The following sections summarise the components at each location.

York North

- Two proposed CSECs, each approximately 50m x 40m, to support a double tee off arrangement from the existing 2TW/YR 400kV overhead line north east of Shipton by Beningbrough.
- Proposed underground cables connecting the two CSECs.
- Proposed 400kV overhead line between the tee off point from the existing 2TW/YR 400kV overhead line (see above) and the proposed York North 275kV substation.
- A proposed York North 275kV substation (including Super Grid Transformers (SGT)), covering an area approximately 310m x 230m, north of the existing XCP 275kV overhead line to enable connection into the electricity transmission system.
- Two proposed 275kV overhead lines between the proposed York North 275kV substation and the existing XCP 275kV overhead line.
- A proposed 275kV CSEC, approximately 50m x 40m potentially located within the footprint of the proposed York North 275kV substation (substation footprint would increase to accommodate) to connect a circuit of the proposed 275kV overhead line into the proposed York North 275kV substation.
- Proposed underground cables connecting the CSEC and the proposed York North 275kV substation.

Tadcaster

- Two proposed 275kV CSECs, each approximately 50m x 40m, to support a double tee off arrangement close to the existing XD/XC 275kV overhead line junction.
- Proposed underground cables connecting the two CSECs.

Monk Fryston

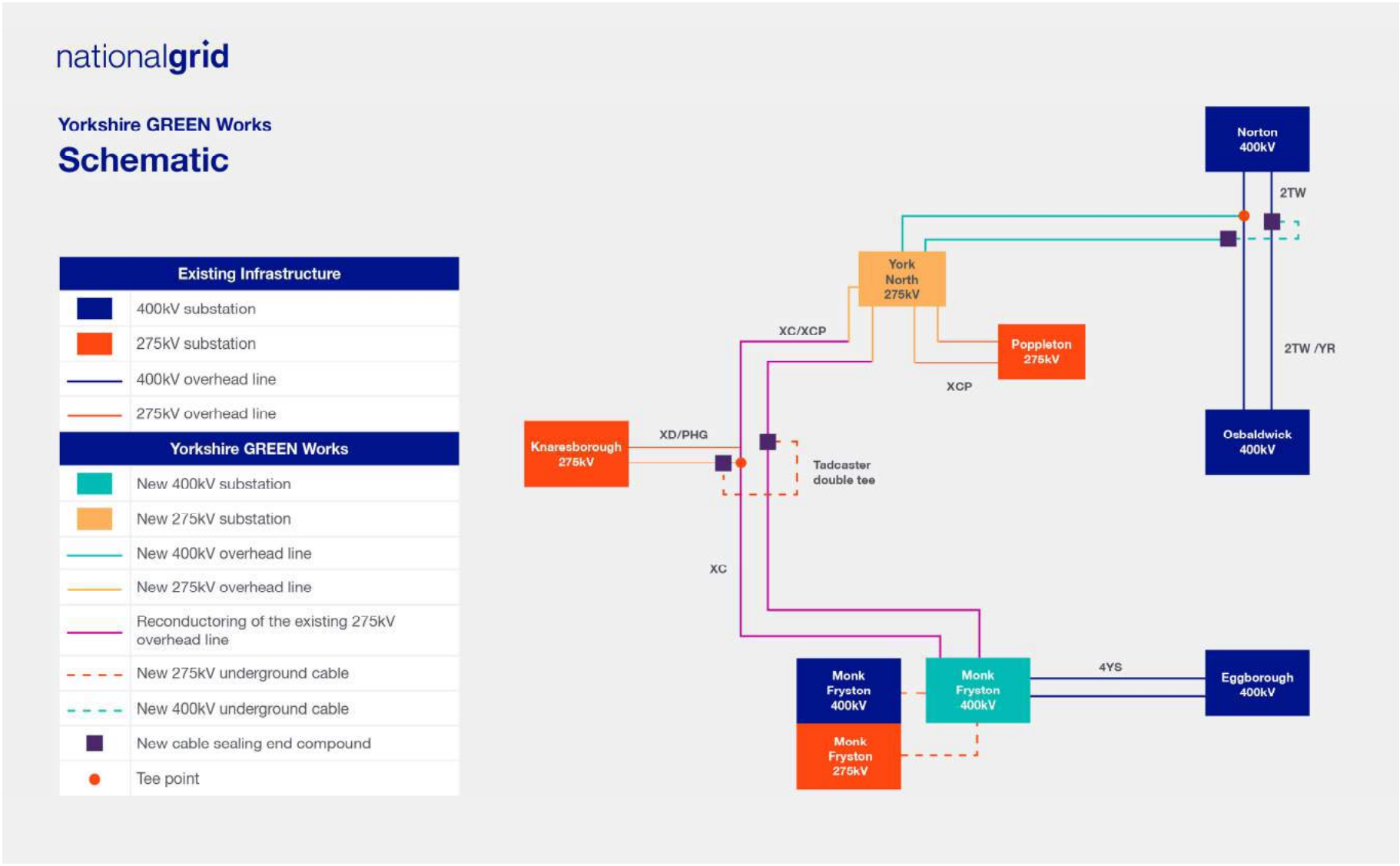
- A proposed Monk Fryston 400kV substation, covering an area approximately 350m x 210m, in close proximity to (and connecting into) the existing Monk Fryston 275kV/400kV substation to enable connection into the electricity transmission system. It is expected that the proposed substation would be similar in height to the existing buildings and infrastructure.
- Associated infrastructure comprising:
    - A proposed 275kV CSEC, approximately 50m x 40m in close proximity to, or potentially located inside the substation compound at the proposed Monk Fryston 400kV substation (substation footprint would increase to accommodate).

- Proposed reconfiguration (including new spans of overhead line) of the existing XC 275kV overhead line to transfer the XC overhead line from the Monk Fryston 275kV substation into the proposed Monk Fryston 400kV substation.
- Proposed underground cables connecting the CSEC and the proposed Monk Fryston 400kV Substation.

1.3.3 A summary of the proposed components that have not been subject to options appraisal, but which form part of the broader Project are summarised below for information only:

- A circuit breaker and an isolator at the existing Osbaldwick 400kV substation (assumed to be on operational land).
- Reconductoring, strengthening and potential pylon replacement of the existing 275kV overhead line routes between Monk Fryston substation and the proposed York North substation.
- Replacement of a suspension pylon with a proposed tension pylon on the existing XD 275kV overhead line at Tadcaster.
- Protection and control changes at all of the remote end substations.

Figure 1.2: Schematic Diagram of the Proposed Works



1.3.4 The focus of the options appraisal summarised in this report is the siting and routeing of key proposed infrastructure; it does not consider the details of potential layouts, permanent access, or any auxiliary works that may be required to connect to the existing infrastructure. Furthermore, the options appraisal does not consider construction works including requirements for construction compounds; temporary construction access; diversions and the installation of temporary structures. These temporary components and activities will be subject to appraisal as the Project progresses to the next stage.

1.4 Structure of this Report

1.4.1 The remainder of the report is structured as follows:

- *Chapter 2: Approach to Routeing and Siting* – sets out the key stages followed in the identification and selection of the options in line with National Grid guidance.
- *Chapter 3: The Study Area* – provides an overview of the baseline conditions for context for each of the three broad areas, namely York North, Tadcaster and Monk Fryston.
- *Chapter 4: York North Options Appraisal* - provides a summary of the option appraisal process for York North (as defined in **Section 1.3** of this report) and the presents the preferred option.
- *Chapter 5: Tadcaster Options Appraisal* - provides a summary of the option appraisal process for Tadcaster and presents the preferred option.
- *Chapter 6: Monk Fryston Options Appraisal* - provides a summary of the option appraisal process for Monk Fryston and presents the preferred option.
- *Chapter 7: Conclusion and Next Steps* – outlines the next steps in the development of the Project.

1.5 The Project Team

1.5.1 The project team comprises:

- National Grid consents team and engineering teams.
- AECOM Limited: Lead environmental supplier managing environmental inputs into the optioneering process, undertaking desk top studies and mapping and author of this report.
- LSTC: Front End Engineering Design (FEED) overhead line contractor reviewing engineering constraints and construction feasibility.
- WPS: FEED substation contractor reviewing engineering constraints and construction feasibility.

2. APPROACH TO ROUTEING AND SITING

2.1 Overview of National Grid's Approach

2.1.1 A staged approach has been adopted to identify potential routeing and siting options for the Project this has considered the potential effects on the environment, the local community, relevant planning policy, other existing and proposed developments as well as technical and engineering design information.

2.1.2 The aim of the approach is to balance consideration of these factors and identify potential Siting Areas for the substations (York North and Monk Fryston), CSECs (York North, Tadcaster and Monk Fryston) and a potential route corridor within which the detailed alignment of the overhead lines could be routed.

2.1.3 **Figure 2.1** presents an overview of National Grid's approach to consenting. The Project is at the Options Identification & Selection stage; a summary of the main objectives of this stage of the consenting process can be seen below.

Figure 2.1: National Grid's Approach to Project Development and Delivery

2.1.4 Each of the options identified for the proposed substation sites, CSEC sites and overhead line routes have been appraised in accordance with National Grid's Option Appraisal Guidance. The guidance has been developed by National Grid to provide a thorough and consistent framework for the appraisal of network reinforcement options and as best practice to inform decision-making. The aim is to ensure that decisions regarding the technology options and/or location of infrastructure projects are based upon a full understanding of the implications of each option, using a wide range of criteria.

2.1.5 **Table 2.1** presents the topics and criteria which are considered as part of National Grid's Option Appraisal Guidance. The environment and socio-economic topics are aligned with applicable requirements of Section 5 of the Overarching National Policy Statement for Energy (EN-1)[2] and Section 2 of the National Policy Statement for

[2] Department of Energy and Climate Change, July 2011. Overarching National Policy Statement for Energy (EN-1).

Electricity Network Infrastructure (EN-5)[3]. At this early development stage of the Project air quality and emissions (Section 5.2 of EN-1); dust, odour, light, smoke, and insect infestation (Section 5.6 of EN-1); noise and vibration (Section 5.11 of EN-1 and Section 2.10 of EN-5) are considered in the context of socio-economic (settlement and population). Waste management (Section 5.14 of EN-1) and electric and magnetic fields (Section 2.10 of EN-5) will be considered as the Project development progresses. Furthermore, coastal change (Section 5.5 of EN-1) is not considered relevant due to the location of the Project.

Table 2.1: National Grid Option Appraisal: Topics and their Constituent Sub-Topics

Environment	Socio-Economics	Technical	Cost
Biodiversity	Local community and recreational receptors	System operation	Capital cost
Physical environment including soils, geology and water (including flood risk)	Local economic receptors	Construction / delivery issues	Lifetime cost
Landscape and visual amenity	Infrastructure	Technology issues	
Historic environment	Land ownership/type	Operational and maintenance issues	
Marine (landfall areas only)	Future development and receptors (including planning applications and allocations and planning policy designations)	Commercial / regulatory / third party issues	

2.1.6 The guidance sets out a methodology designed to evaluate options and record when and why certain options were discounted, parked, or progressed to the next stage and is a tool for demonstrating how different considerations informed both the decision-making process and the design evolution of the Project.

2.1.7 The following guiding principles informed the identification of the preferred options or design:

- Using or adapting existing infrastructure will generally be of benefit/advantage compared with creating new infrastructure.
- Shorter routes will generally be of benefit/advantage compared with longer routes, as smaller scale infrastructure projects are generally likely to have lower environmental, safety, sustainability and cost implications (for comparable technology options).
- Financially less-expensive options, both in terms of capital and lifetime cost, will generally be of benefit/advantage, as these support National Grid's statutory duty

[3] Department of Energy and Climate Change, July 2011. National Policy Statement for Electricity Network Infrastructure (EN-5)

under Section 9 of the Electricity Act 1989 to develop and maintain an '*efficient, co-ordinated and economical*' transmission network.

- Options which avoid or minimise and mitigate impacts on environmental or socio-economic constraints will generally be of benefit/advantage compared with those which have likely significant residual effects, as less environmentally or socially damaging routes support National Grid's statutory duty under Schedule 9 of the Electricity Act 1989 to '*have regard to the desirability of preserving amenity*', and will more readily achieve consent.

2.1.8 The guidance sets out the topics (environment, socio-economic, technical and cost) and sub-topics which should be considered as part of the options appraisal. It acknowledges that where appropriate, sub-topics (and potentially whole topics), may be scoped out if it is evident that there would be no material effects as a result of any of the options (because of the nature of the Project), or if they would not assist in distinguishing between the options (because all options would have the same effect). However, as the cost and technical topics do not refer to receptors, but to inherent features of the project, they are not subject to the same approach to scoping.

2.1.9 The appraisal process comprises the following:

- *The collation of relevant data for each sub-topic* - For this stage of appraisal relevant data comprises desk study information on internationally, nationally, regionally and locally important receptors. No surveys, such as ecological survey work, have taken place other than a site walkover. A list of data obtained to inform the appraisal is provided in **Appendix 2A.** It should be noted that only data relevant to the specific Siting Area and Corridors have been considered.
- *Appraising the potential effects of each option* - For each constraint, the nature of the constraint or receptor, its value or sensitivity and how it could be affected by the option has been considered, including details of how the effect could be avoided or mitigated and what the residual effects would be, noting whether effects are likely to be positive, negative or neutral. The capital and lifetime costs of the options, based on broad assumptions regarding the technology to be used and the likely length or scale of the scheme, have been considered where this was pertinent to decision making.

2.1.10 Following completion of the options appraisal collective discussions by the Project Team have been held to review the appraisal work, challenge judgements made as to the effects of particular options, check understanding and assumptions, and compile an overall view of the relative performance of each option based on the available information. At these discussions each of the options are considered in turn and the extent of any possible environmental or socio-economic impacts or technical issues associated with each option for each of the scoped-in sub-topics is reviewed in order that a shared understanding regarding the emerging preferred option is reached.

2.1.11 A broad overview of the stages undertaken to identify the preferred options of the Project is outlined below, with further details on the approach taken at each stage detailed in the relevant chapters of this report.

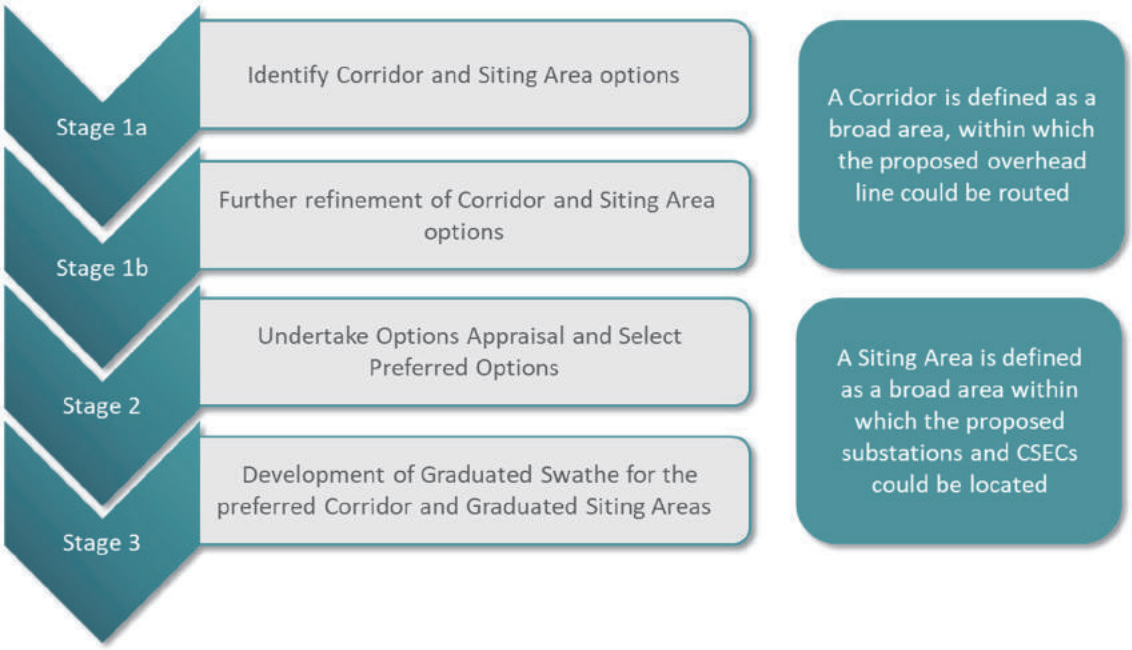
2.2 Route and Site Selection Process

2.2.1 As stated in **Section 2.1** of this report the overarching principle of National Grid's approach is to take a staged process to routeing and siting. This has been applied to the selection of the preliminary routes for the proposed 400kV overhead line and two 275kV overhead lines in York North; siting of the proposed substations at York North and Monk Fryston and the siting of the proposed CSECs on the existing 2TW/YR 400kV overhead line and at Tadcaster at the existing XD 275kV overhead line junction with the existing XC 275kV overhead line.

2.2.2 **Figure 2.2** presents the approach taken by the Project; this was based on the initial identification of Corridors and Siting Areas, which were subject to further refinement through the review and analysis of data available and a site visit attended by specialists for landscape and visual amenity, biodiversity and historic environment.

2.2.3 To support the optioneering process, geographical information system (GIS) web mapping was developed comprising available environmental, socio-economic and technical data within the Study Area. Data was collected from a range of data sources; the datasets are incorporated are listed in **Appendix 2A**.

Figure 2.2: Option Identification and Selection Process



2.3 Overview of Stages of Development

2.3.1 The sections below provide further detail of the process outlined above in **Figure 2.2**.

Stage 1: Identify and Define Corridor and Siting Area Options

2.3.2 This initial stage involved the development of Corridors within which the proposed 400kV overhead line could be routed from the existing 2TW/YR 400kV overhead line to the proposed substation at York North, and the two proposed 275kV overhead lines from the existing XCP 275kV overhead line to the proposed York North substation. The key drivers for the location of the 2TW/YR CSEC Siting Area and the York North substation Siting Area are summarised below:

York North

- The proposed York North substation should be within proximity of the 'East to West' (Skelton to Moor Monkton) section of the existing 275kV XCP overhead line to minimise the length of double circuit 275kV overhead line connections required between the proposed York North substation and the existing XCP overhead line.
- Two proposed CSECs on the 2TW/YR overhead line should be in close proximity to the existing 2TW/YR overhead line to minimise the amount of underground cabling required to connect the proposed CSECs.

Tadcaster

- Two proposed CSECs, one on the existing XD 275kV overhead line and the other on the existing XC 275kV overhead line should be in close proximity to the existing junction and close to existing pylons to limit the extent of underground cabling to connect the two proposed CSECs and to minimise the length of the downleads connecting each proposed CSEC to the pylon.

Monk Fryston

- The proposed Monk Fryston substation and associated infrastructure should be in close proximity to the existing Monk Fryston substation to enable connections to be made efficiently between the two substations to minimise environmental impact and cost.

2.3.3 The development of the Corridors and the Siting Areas took into consideration several high-level mitigation measures in alignment with the Holford and Horlock Rules, where applicable. Furthermore, following consideration of the application of the initial mitigation measures, as outlined in **Table 2.2**, the Corridors and Siting Areas were subject to analysis and review and further refinement with the application of additional or more defined mitigation measures as also outlined in **Table 2.2**. These measures are aligned with the mitigation listed in Section 5 of EN-1 and Section 2 of EN-5, including Section 5.3 of EN-1 and Section 2.7 of EN-5 (Biodiversity and Geological Conservation), Section 5.7 of EN-1 (Flood Risk), Section 5.8 of EN-1 (Historic Environment). All Corridors and Siting Areas were reviewed by National Grid's engineering and design team to confirm technical feasibility prior to being finalised.

2.3.4 At York North, four Corridors (A, B, C and D) and an additional Corridor section (A1) was identified, which provided options to connect with the far western extent of the existing XCP overhead line; and 12 substation Siting Area were identified taking into the account the driver to locate the substation within proximity of the 'East to West' (Skelton to Moor Monkton) section of the existing 275kV XCP. Ten Siting Areas were identified for Tadcaster, with three on the XC 275kV overhead line and seven on the XD 275kV overhead line. Three Areas were identified at Monk Fryston taking into account the need to locate the substation in close proximity to the existing substation.

Table 2.2: Mitigation for the Development of Corridors and Siting Areas

Stage	Corridors	Siting Areas
1 a	• Avoid routeing close to residential areas as far as possible (in alignment with supplementary note of the Holford Rules). • Avoid Grade I and Grade II* listed built heritage. • Avoid designated ancient woodland. • Avoid areas of woodland greater than 350m wide (i.e. where it would not be possible to span across the areas).	• Avoid siting close to residential areas as far as possible. • Avoid Flood Risk Zone 2 and Zone 3. • Avoid clusters of more than five of residential properties. • Avoid Grade I and Grade II* listed built heritage. • Avoid designated ancient woodland. • Avoid areas of significant woodland. • Avoid SINCs
1 b	• Setback 50m from ponds known to support great crested newt (GCN)^^. • Setback 15m from designated ancient woodland^. • Setback from Grade II* and Grade I listed built heritage as per advice of the heritage technical specialist (the setting of assets was evaluated and bespoke buffers were determined) (in alignment with notes on Rule 2 of the Holford Rules).	• Setback 15m from areas of mature woodland (including ancient woodland)^. • Setback 250m from ponds known to support GCN^^. • Setback from Grade II* and Grade I listed built heritage as per advice of the heritage technical specialist (the setting of assets was evaluated and bespoke buffers were determined).
Notes: ^ In accordance with Natural England guidance[4] ^^ Based on professional judgment There are two SINCs within the York North Study Area: Overton Wood (an ancient woodland) and Overton Borrowpit. The existing XCP 275kV overhead line is routed over Overton Borrowpit SINC, which also includes a pylon.		

Stage 2: Undertake Options Appraisal and Selection of Preferred Options

2.3.5 Following agreement of the Corridors and Siting Areas with the Project Team, the areas were subject to an options appraisal with input from a range of technical disciplines including biodiversity, heritage, landscape and visual, socio-economic, flood risk, traffic and access and planning and the engineering team (as summarised in **Sections 4 to 6** of this report). The appraisal, undertaken by the technical disciplines, took into account local, regional and national planning policy, where applicable.

2.3.6 A workshop was held to reach agreement on the Preferred Corridor for the new overhead lines and Preferred Siting Areas for the proposed substations and CSECs; the workshop was attended by representatives from all technical disciplines, the engineering team and representatives from National Grid.

2.3.7 The workshop involved detailed discussions on the different options to collectively agree, which option, on balance, provided the most suitable Siting Area or Corridor.

[4] Natural England, 2014. Ancient woodland, ancient trees and veteran trees: protecting them from development. https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences. Accessed on 15th Dec 2020.

2.3.8 Following agreement of the preferred Corridor and Siting Areas for York North, additional input was provided by the landscape and visual, and biodiversity technical specialists to advise on the preferred overhead line route from Siting Area YN3b (York North substation) to the XCP overhead line factoring in key constraints.

Stage 3: Development of Graduated Swathe for the Preferred Corridor and Graduated Siting Areas

2.3.9 Following agreement of the Preferred Siting Areas and the Preferred Corridor, the Project Team developed a preliminary route alignment for the proposed overhead lines and locations within Preferred Siting Areas for the proposed substations and CSECs, which took into consideration the environmental and socio-economic constraints identified, where present. This included the consideration of the Holford Rules for the preliminary route alignments, with particular regard of rules 1, 2 and 3 to avoid areas of amenity value and while taking this into consideration selecting a direct route. This led to the development of a graduated preliminary route swathe within the Preferred Corridor and graduated preliminary locations with the Siting Areas.

3. THE STUDY AREA

3.1 Introduction

3.1.1 **Figure 1.1** shows the location of the Study Area, which is wholly located within Yorkshire and includes the three key areas of focus for the options appraisal: North York, Tadcaster and Monk Fryston. The following sections provide an overview of each of the three sub Study Areas as defined in **Figure 3.1.**

3.2 York North Study Area

3.2.1 The York North Study Area largely comprises agricultural land, with the City of York approximately 2km to the south east where the Study Area boundary passes close to the settlements of Poppleton and Rawcliffe. Larger settlements are in the eastern extent and include Skelton, Nether Poppleton and Upper Poppleton with populations of 1,549, 2077 and 1997, respectively, based on the 2011 census data[5]. The settlements of Moor Monkton and Nun Monkton are in the western extent and the settlement of Shipton-by-Beningbrough is in the northern extent; the populations of these settlements are 348, 173 and 872, respectively. There are also several hamlets including Overton to the east and Beningbrough to the west, both with a population of less than 100.

3.2.2 The East Coast Main Line (ECML) (traveling from York to Edinburgh) runs through the York North Study Area in a south east to north west direction. There are no trunk roads in the York North Study Area, but there are two A roads connecting with the City of York (A19 and A59). The Way of the Roses National Cycle Network (NCN) crosses the Study Area linking the City of York with Beningbrough Hall (a Grade I listed building owned by the National Trust).

3.2.3 The River Ouse crosses the York North Study Area in a south east to north west direction, with Flood Zone 2 and Flood Zone 3 land either side. The River Ouse is a City of York Site of Importance for Nature Conservation (SINC) candidate[6], although at the time this report was prepared this designation had not been ratified. Other notable watercourses include Moor Gutter, Hurns Gutter and Hurns Drain. There are two areas of ancient woodland, Overton Wood (also designated as a SINC) and Redhouse Wood, located north of the existing XCP overhead line. Clifton Ings and Rawcliffe Meadows Site of Special Scientific Interest (SSSI) is at the south eastern extent of the Study Area immediately east of the existing National Grid Poppleton 275kV substation. Overton Borowpits is a SINC located to the west of Skelton and the east of the ECML railway supporting scrub and species rich fen meadow.

3.2.4 There are several buildings of heritage significance within the Study Area including the Grade I listed Beningbrough Hall, Church of St Giles in Skelton and Church of St Mary's in Nun Monkton. Grade II* properties include the Church of St Everilda in Nether Poppleton, Skelton Manor, Red House School Chapel and the Church of All Saints in Moor Monkton. In addition to the Grade I and Grade II* listed buildings, there are many Grade II buildings located throughout the Study Area.

[5] https://www.ons.gov.uk/census/2011census/2011censusdata. Accessed 25th February 2021.

[6] City of York Council, 2017, Sites of Importance Nature Conservation Review 2017

3.3 Tadcaster Study Area

3.3.1 The existing XD/XC junction is located approximately 1.3km south west of Tadcaster; it is in a rural setting with the A64 approximately 50m south. The existing Bramham 132kV substation is within the boundary of the Tadcaster Study Area to the west of the existing XD/XC overhead line junction. A residential property is approximately 100m east of the XD/XC junction and a further residential property is approximately 500m to the north.

3.3.2 The Tadcaster Study area includes a number of listed buildings, however the only one within 500m of the Siting Areas is a Grade II milestone post (reference: 1132446) located on the A659. All other listed buildings are located more than 1km from the location of the Siting Areas.

3.4 Monk Fryston Study Area

3.4.1 The existing Monk Fryston substation is situated in a rural setting surrounded by fields. Rawfield Lane forms its western boundary. There are two residential properties within close proximity, Pollums House farm (and associated farm buildings) located approximately 500m west and the Grade II listed Monk Fryston Lodge (and associated buildings) approximately 200m to the east.

3.4.2 The A1(M) is both visible and audible from the existing substation boundary. The villages of Monk Fryston and Hillam are approximately 2km to the east of the existing substation and the hamlet of Lumby is approximately 1km to the north. Fairburn is approximately 1km south on the opposite side of the A1(M) and Burton Salmon approximately 1.5km south east.

N

LEGEND

- Study Area
- Substation
- 400 kV Overhead Line
- 275 kV Overhead Line
- York North Study Area
- Tadcaster Study Area
- Monk Fryston Study Area

2TW 400kV Overhead Line

YR 400kV Overhead Line

XCP 275kV Overhead Line

XC 275kV Overhead Line

XD 275kV Overhead Line

4YS 400kV Overhead Line

0 2 4 6 8 km

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FIGURE 3.1
LOCATION OF THREE FOCUSED STUDY AREAS

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4. YORK NORTH OPTIONS APPRAISAL

4.1 Approach to Appraisal

4.1.1 York North comprises three key components and the overall objective of this stage of the options appraisal process has been to identify:

- A potential Siting Area for two proposed CSECs to form the connection off the existing 400kV 2TW/YR overhead line.
- A potential Siting Area for a proposed York North substation in proximity to the existing 275kV XCP overhead line.
- A potential Corridor to route:
  - A proposed 400kV overhead line from the existing 400kV 2TW/YR overhead line to the proposed York North substation.
  - Two proposed 275kV overhead lines from the proposed York North substation to the existing 275kV XCP overhead line.

4.1.2 The appraisal process has considered how to best balance the effects on the environment and local community with technical and engineering feasibility. The approach taken is summarised in **Section 2** of this report.

4.2 CSEC Siting Area Identification

4.2.1 The following factors were considered when identifying potential CSEC Siting Areas, noting that a key requirement is to site the proposed CSEC in close proximity to an existing pylon (refer to **Section 2.3** of this report):

- Land take: The Siting Area requires sufficient space to accommodate the proposed CSEC footprint (approximately 50m x 40m).
- Existing environment: The Siting Area locations sought to avoid known environmental and socio-economic constraints, where possible.
- Guidelines, as adopted, on the Siting and Design of Substations (the Horlock Rules).

4.3 Substation Siting Area Identification

4.3.1 The following factors were considered when identifying potential substation Siting Areas:

- Land take: The Siting Area requires sufficient space to accommodate the proposed substation footprint (approximately 310m x 230m).
- Existing environment: The Siting Area locations sought to avoid known environmental and socio-economic constraints, where possible.
- Guidelines, adopted by National Grid, on the Siting and Design of Substations (the Horlock Rules).

4.4 Overhead Line Routeing Identification

4.4.1 The following factors were considered when identifying the potential routeing of the proposed 400kV overhead line connecting the 2TW/YR overhead line with the proposed York North substation and the proposed two 275kV overhead lines connecting the proposed York North substation with the existing 275kV XCP overhead line:

- Existing environment: The Corridor sought to avoid known environmental and socio-economic constraints, where possible.
- Guidelines, adopted by National Grid, for the Routeing of New High Voltage Overhead Transmission Lines (the Holford Rules).

4.4.2 The location of the associated infrastructure at Monk Fryston factored the consideration of the points raised in **Section 4.1**, **Section 4.2** and **Section 4.3** above.

4.4.3 While pylon dismantling work has not been considered in detail as part of this study it is recognised that, depending on the alignment connecting at York North the two proposed 275kV overhead lines with the 275kV XCP overhead line, the proposals may facilitate the dismantling of a number of existing pylons. This would have a number of beneficial impacts, in particular, those associated with landscape and visual. Pylon dismantling will be confirmed as part of further design work. There is also the potential for the reconfiguration of the existing overhead lines (257kV and 400kV) at Monk Fryston.

4.5 Combination Options

4.5.1 As outlined in **Section 2.2** of this report, four Corridors (A, B, C, and D) and a Corridor section (A1) were identified for the proposed 400kV and 275kV overhead lines (refer to **Figure 4.1**). Four Siting Areas were identified for the proposed CSEC at the existing 2TW/YR overhead line, which correspond with the four principle Corridors. A total of 12 Siting Areas (refer to **Figure 4.2**) were identified for the proposed York North substation.

4.5.2 Given that the proposed components of York North are intrinsically linked, the options appraisal process has considered 21 different combinations as summarised in **Table 4.1** below. Each combination has been subject to review and analysis by environmental, social and technical specialists to determine the most balanced combination.

Table 4.1: Combination Options for York North

Option Reference	Combination Option		
	Corridor	Substation Siting Area	2TW/YR CSEC Siting Area
A.YN1	A	YN1	2TWA
A.YN2a	A	YN2a	2TWA
A.YN2b	A	YN2b	2TWA
A.YN3a	A	YN3a	2TWA

Option Reference	Combination Option		
	Corridor	Substation Siting Area	2TW/YR CSEC Siting Area
A.YN4a	A	YN4a	2TWA
A.A1.YN7	A + A1	YN7	2TWA
A.A1.YN8	A + A1	YN8	2TWA
B.YN2a	B	YN2a	2TWB
B.YN.2b	B	YN2b	2TWB
B.YN3a	B	YN3a	2TWB
B.YN3b	B	YN3b	2TWB
B.YN4a	B	YN4a	2TWB
B.YN4b	B	YN4b	2TWB
B.YN5a	B	YN5a	2TWB
B.YN5b^	B	YN5b	2TWB
B.A1.YN7	B + A1	YN7	2TWB
B.A1.YN8	B+ A1	YN8	2TWB
C.YN4b	C	YN4b	2TWC
C.YN5a	C	YN5a	2TWC
C.YN5b	C	YN5b	2TWC
D.YN6	D	YN6	2TWD

Notes

^ While Corridor B does not provide access to the whole of Siting Area YN5b, it does provide sufficient access to the north west section of the Siting Area to make it a feasible combination.

N

2TW 400kV Overhead Line

YR 400kV Overhead Line

XCP 275kV Overhead Line

XC 275kV Overhead Line

A

B

C

D

A1

LEGEND

- Study Area
- Substation
- 400 kV Overhead Line
- 275 kV Overhead Line

Siting Areas for 2TW Cable Sealing End Compound (CSEC)

- 2TW CSEC Siting Area A
- 2TW CSEC Siting Area
- 2TW CSEC Siting Area C
- 2TW CSEC Siting Area D

Corridor for Overhead Line

- A
- A1
- B
- C
- D

0 0.5 1 1.5 2 km

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FIGURE 4.1
YORK NORTH CORRIDORS AND
CSEC SITING AREAS

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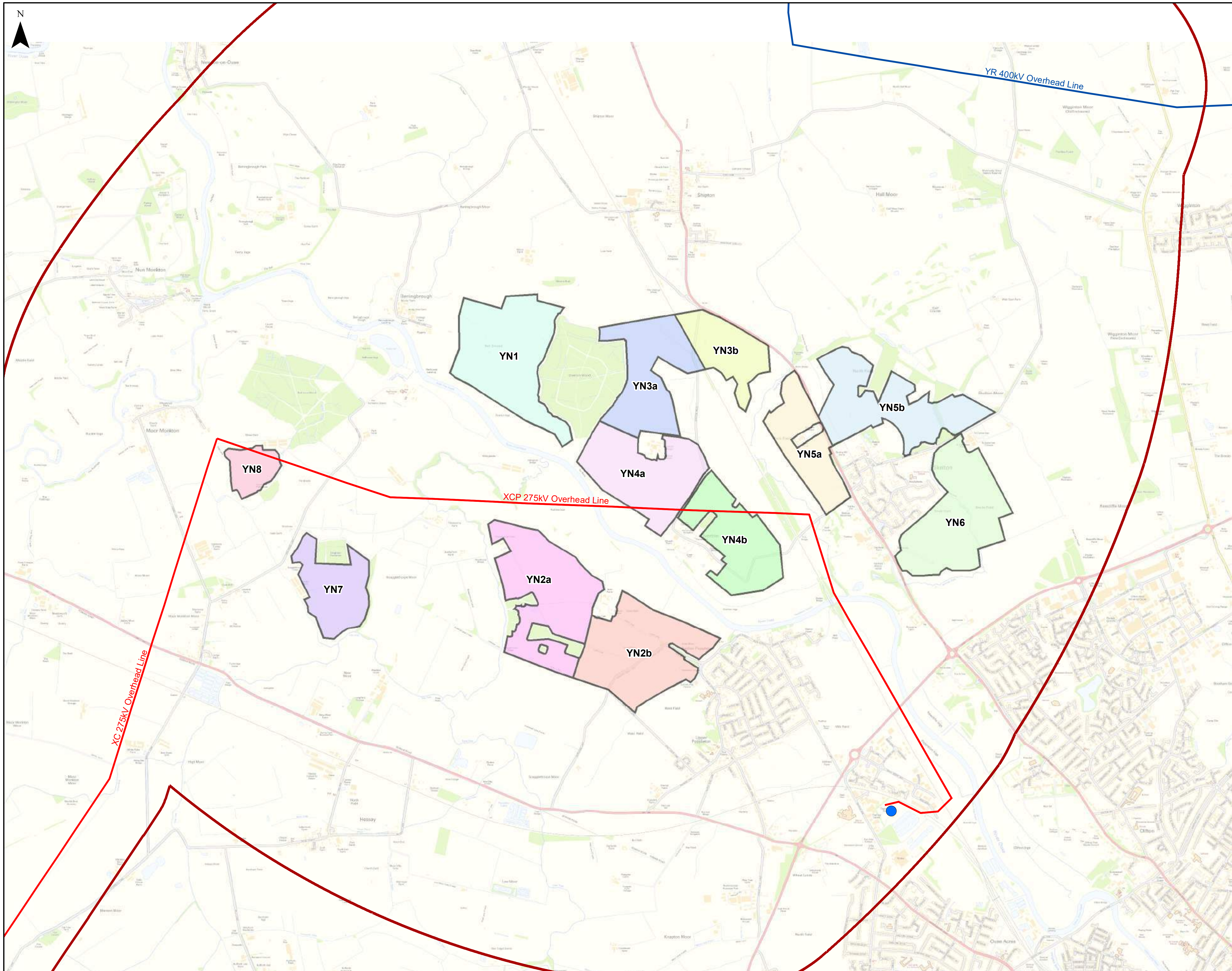

LEGEND

- Study Area
- Substation
- 400 kV Overhead Line
- 275 kV Overhead Line

Siting Areas for York North Substation

- YN1
- YN2a
- YN2b
- YN3a
- YN3b
- YN4a
- YN4b
- YN5a
- YN5b
- YN6
- YN7
- YN8

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FIGURE 4.2
YORK NORTH SUBSTATION
SITING AREAS

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4.6 Screening of York North Options

4.6.1 Following the options appraisal, a screening exercise was undertaken to identify the least preferred options through engagement with all technical specialists and the engineering team. The least preferred options in general corresponded to the most southern routes; the overarching constraints associated with these locations included limited or restricted access to this area; longer and more complex overhead line routes, which increased the landscape and visual impact and crossing the River Ouse and the potential impact this may have on birds.

4.6.2 Planning was considered as part of the options appraisal; however, it was not considered to be a driver for screening out any of the options. The key reason being that, with the exception of Siting Area YN8, all Siting Areas are located within the Green Belt and as identified in the draft York Local Plan within an area of search for minerals and minerals safeguarding[7]. Again, with the exception of small areas of Corridor A and A1, all Corridors are within the Green Belt and areas identified in the draft York Local Plan as areas of search for minerals and a mineral safeguarding. While the importance of the Green Belt is acknowledged, the need to site the Project with designated Green Belt is considered unavoidable to achieving the objectives of the Project. Therefore, the case for very special circumstances will need to be constructed early in the application process (unless those parts of the Project that are located in the Green Belt can be defined as engineering operations). Engagement with the Mineral Planning Authority (MPA) will be necessary to address any concerns about the location of the Project with respect to the mineral safeguarding areas.

4.6.3 In addition, Corridor A is located in close proximity to an Aerodrome Safeguarding Area associated with Royal Air Force (RAF) Linton-on-Ouse in the adopted Hambleton Local Plan[8]. It is recommended that consultation with the RAF is undertaken to consider any potential impacts.

4.6.4

4.6.5 **Table 4.2** presents the options that were screened out ahead of the Preferred Option Workshop with an overview of the key constraints associated with them. It was agreed at the Preferred Option Workshop that the focus of discussions would be on the remaining options as presented in detail in **Section 4.7** of this report.

Table 4.2: Least Preferred York North Options

Combination Option	Reason Considered Least Preferred
A.YN2a	Siting Area YN2a is located south of both the River Ouse and the existing 275kV XCP overhead line. The Siting Area has sufficient space to locate the substation, however it is not considered favourable to enable an optimal layout of the substation. Three major crossings would be required, including the River Ouse. It is expected the overall length of the overhead line would be approximately 8km (combining the 400kV and the 275kV).

7 https://maps.northyorks.gov.uk/connect/analyst/mobile/#/main?mapcfg=mwjp. Accessed 23rd February 2021.

8 It should be noted that draft Hambleton Local Plan, 2019 proposes an extended Aerodrome Safeguarding Area, which would potentially include cover substation Siting Areas, CSEC Siting Areas and Corridors.

Combination Option	Reason Considered Least Preferred
	Access to the Siting Area is limited and access would likely be gained from the A59 via Lords Lane or Red House Lane, which would both require upgrades over a relatively long distance to accommodate construction traffic. Depending on the final alignment of the overhead line within Corridor A, there is the potential for impacts on the setting of designated assets, especially Beningborough Hall Park and Garden (and the listed buildings forming part of the ground), and the concentration of assets at Red House. From a landscape perspective, the length of the overhead line required to reach the Siting Area has made this an unfavourable option with potential impacts on the landscape character of the River Ouse corridor to the south including County level LCT 24, where landscape sensitivity is higher. There is also the potential for landscape and visual impacts to Shipton by Beningbrough and the residents of Woodhouse Farm and New Farm Estate located adjacent to the boundary of Siting Area YN2a. A potential concern for this option from a biodiversity perspective was the crossing of the River Ouse by the 275kV overhead line, which may impact birds using the river corridor and potentially the flood plains and adjacent fields. There is the potential risk of collision with the overhead line, disruption of flight paths and potentially injury / mortality, which is more likely in the vicinity of the River Ouse.
A.YN2b	Siting Area YN2b is located to the south of the River Ouse and the 275kV XCP overhead line. It is located adjacent to the settlement of Upper Poppleton. From a technical perspective the overall length of the overhead line is expected to be longer than A.YN2a at approximately 10km (combining the 400kV and the 275kV). . Four major crossing would be required for this option. Access to the site is heavily constrained by the existing road network; significant upgrades would be required to the local roads to enable construction traffic to access the site. This would have cost, environmental and socio-economic impacts associated with the works. The biodiversity constraints identified for A.YN2a are also valid for A.YN2b. From a landscape and visual perspective this option presents similar constraints to option A.YN2a, but the differentiator for this option is the additional constraint associated with the views from the south (Upper Poppleton and Nether Poppleton), which are located immediately south of the Siting Area. This is the key reason that this location is considered one of the least preferred from a landscape and visual perspective. While there are no designated assets directly impacted by the Siting Areas of the CSECs and the substation, there is the potential of impact on the character of Nether Poppleton Conservation Area, located directly south of Siting Area YN2b. Setting impacts from the substation will be hard to avoid, and the construction near to the western limits of Upper Poppleton will alter the rural character of the settlement, an element which is flagged as key in the Conservation Area Appraisal (City of York Conservation Area 17[9]. Furthermore, depending on the final alignment of the overhead line within Corridor A there is the potential for impacts on the setting of designated assets, especially Beningborough Hall Park and Garden (and the listed buildings forming part of the ground), and the concentration of assets at Red House.
A.A1.YN7	Siting Area YN7 is located to the south of the River Ouse and the existing XCP overhead line. From a technical perspective the substation Siting Area was considered suitable to accommodate the new infrastructure, however the site did not offer the opportunity for optimal layout. The overall length of the overhead line for this option is expected to be approximately 9km (combining the 400kV and the 275kV). Furthermore, three major crossings would be required, including the River Ouse.

[9] https://www.york.gov.uk/downloads/file/940/conservation-areas-17-nether-popplelton. Accessed 15th December 2020

Combination Option	Reason Considered Least Preferred
	Access to Siting Area YN7 is limited with options to either upgrade the existing road network (Red House Lane and or Church Lane) with potential impacts to the existing properties, or to construct a new access road form the A59, situated approximately 600m to the south of the Siting Area. From a landscape perspective, the length of the overhead line required to reach the Siting Area has made this an unfavourable option with potential impacts on the landscape character of the River Ouse corridor to the south including County level LCT 24, where landscape sensitivity is higher. Views from residential and recreational receptors in the south may be particularly adversely affected including views from scattered residential receptors, residents within the small hamlets of Overton and Moor Monkton Moor, the village of Moor Monkton, and other recreational receptors nearby. Views from the settlement of Shipton by Beningbrough may also be adversely affected due to the introduction of a new overhead line wrapping around the east and south of the village. There are potential heritage impacts associated with this option with respect to impacts on the setting of designated assets, especially Beningborough Hall Park and Garden (and the listed buildings forming part of the ground), the concentration of assets at Red House, and the Church of All Saints. The overhead line route would need to cross both the River Ouse and the River Foss. The overall length of the overhead line (approximately 9km) was considered a key issue for biodiversity with potential impacts to birds (e.g. collision, disruption of flight paths, injury / mortality), which was compounded by the number of river crossings which are expected to attract birds.
A.A1.YN8	Siting Area YN8 is located to the south of the River Ouse with the existing 275kV XCP overhead line running directly through it. The majority of other issues identified for Option A.A1.YN7 are also applicable for this option, however, Siting Area YN8 is limited in area, which unlike Siting Area YN7 constrains this option from a technical perspective. The overall length of the overhead line for this option is expected to be approximately 8km (combining the 400kV and the 275kV). Furthermore, three major crossings would be required, including the River Ouse. Access is constrained as described for A.A1.YN7, however longer areas of upgrade works to the existing road network would be required to enable this option to be feasible. Biodiversity and heritage concerns per those described for A.A1.YN7 are also applicable for this option.
B.YN2a	Corridor B has similar technical parameters to A.YN2a (an overall approximate length of overhead line of 8km (combining the 400kV and the 275kV)); the concerns outlined above for A.YN2a are valid for this option. Access into the Siting Area is limited and would require significant upgrade works to the local road network. Biodiversity concerns around the River Ouse identified for option A.YN2a are also applicable for this option.
B.YN2b	While Corridor B offers a slightly shorter route (approximately 9km (combining the 400kV and the 275kV)) for the overhead line when compared to option A.YN2b, the limitation of Siting Area YN2b, associated with access is the key driver for this option to not being considered a feasible option.
B.YN4b	Siting Area YN4b is located north of the River Ouse with the existing 275kV XCP overhead line running directly through it. The Hamlet of Overton is located directly south of Overton Road.

Combination Option	Reason Considered Least Preferred
	In addition, Overton Borrowpits, a designated SINC, is located within Corridor B and in proximity to Siting Area YN4b adjacent to the ECML railway. The SINC comprises two linear borrow pits adjacent the ECML and supports scrub and species rich fen meadow. There is an existing pylon (XCP 275kV overhead line) located within in the SINC. From a technical perspective this option presents a relatively short length of overhead line, approximately 6km (combining the 400kV and the 275kV). However, access is limited and it is expected that new road construction would be required to access the site. The proximity of Siting Area YN4b to the hamlet of Overton is considered a constraint from a settlement and population perspective. Depending on the exact location of the substation within the Siting Area the residents may be subject to disturbance. Siting Area YN4b is located within 200m of the River Ouse and potential concerns remain around the potential impact to birds using the Ouse corridor or the adjacent fields. While the overhead lines would not be routed over the river, the proximity to the river is considered a constraint. From a heritage perspective, there is the potential for setting impacts from the substation to the listed buildings in Overton, and Upper Poppleton on the southern side of the River Ouse.
B.A1.YN7	Siting Area YN7 is located to the south of the River Ouse and the existing 275kV XCP overhead line. From a technical perspective the substation Siting Area was considered suitable to accommodate the new infrastructure, however the site did not offer the opportunity for optimal layout. The overall length of the overhead line for this option is expected to be approximately 10km (combining the 400kV and the 275kV). Overall, the concerns with this option are aligned to those presented for Option A.A1.YN7.
B.A1.YN8	The majority of the issues identified for Option B.A1.YN7 are also applicable for this option, however, Siting Area YN8 is limited in area, which unlike Siting Area YN7 constraints this option from a technical perspective.

4.7 Options Appraisal Summary of Remaining York North Options

Overview of Option A.YN1

4.7.1 The components of Option A.YN1 are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWA, Corridor A and substation Siting Area YN1.

4.7.2 The CSEC Siting Area (2TWA) is located approximately 1km north of Shipton by Beningbrough and spans across a number of medium-scale, flat arable fields. The fields are bounded by a mix of field drains and managed and overgrown hedgerows with frequent hedgerow trees. A small block of deciduous woodland and woodland belts are within the Siting Area.

4.7.3 Corridor A extends west from the 2TW/YR overhead line around Shipton by Beningbrough across arable landscape. The Corridor separates around Overton Wood (designated as an ancient woodland). It crosses several transport routes including the A19 and the ECML.

4.7.4 The substation Siting Area (YN1) is located to the north of the River Ouse and spans across a number of medium-scale arable fields gradually sloping up from the banks of the River Ouse. The fields are bounded by hedgerows with frequent hedgerow trees. This pattern of medium-scale arable fields continues to the north. To the west are small scale fields associated with the small hamlet of Beningbrough, to the east is Overton Wood and a large block of Ancient Woodland, to the south are the banks of the River Ouse.

4.7.5 **Figure 4.3** shows the location of the Corridor and Siting Areas associated with Option A.YN1 and **Table 4.3** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

Shorn Dike
River Kyle
River Ouse
New Parks Beck
Blackrein Beck
27W 400kV Overhead Line
YR 400kV Overhead Line
XCR 275kV Overhead Line
XC 275kV Overhead Line
Mill Sike
River Nidd
Wood Gutter
Hurns Gutter
Pennells Drain
White Sike Drain
Burtree Drain
Burtree Dam
The Foss

Shipton by Beningbrough
Moor Monkton
Nun Monkton
Redhouse Wood
Overton Wood
Overton
Skelton

1150998
1190942
1190840
1293654
1149145
1315980
1293607

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor A
- 2TW CSEC Siting Area A
- York North Substation - Siting Area YN1
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

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FIGURE 4.3
LOCATION OF OPTION A.YN1

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Table 4.3: Option A.YN1 Appraisal Summary

Technical Discipline	Summary of Option A.YN1
Biodiversity	The Siting Areas avoid ecologically designated sites including Overton Wood (designated as a SINC). There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing, as well as a pond with a recorded GCN population in 2TWA, which can also be avoided. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures; however, further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Mitigation for GCN (including provision of terrestrial habitat to replace that lost) will be required if they are present within the ponds, and a European Protected Species (EPS) licence is likely to be required. If a licence is required then as part of the licence there will be a need to explain the need for the project, that there isn't a satisfactory alternative and that GCN will not be harmed. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland.
Physical Environment	This option is relatively constrained with flood zones south of YN1, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a Flood Risk Assessment (FRA).
Landscape and Visual	A new overhead line, substation and CSEC have the potential to impact upon County level Landscape Character Type (LCT) 28 and local level Landscape Character Area (LCA) 26. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the open rural farmland and relatively close to the highly valued, designed parkland of Beningbrough Hall Registered Park and Garden. This option has the potential to impact on the landscape character of the River Ouse corridor to the south including County level LCT 24 and local level LCA 22 and LCA 93, where landscape sensitivity is higher. There is potential for significant adverse effects due to the introduction of a new substation and several additional overhead lines in this landscape, which may result in an increased 'wirescape'. Views from residential and recreational receptors in the south may be particularly adversely affected (including views from people travelling along Beningbrough Lane to visit Beningbrough Hall). A substation at YN1 may be visible on the skyline from scattered residential and other receptors nearby (including the small hamlet of Beningbrough) and south of the River Ouse; as a result, views may be significantly affected. Views from the settlement of Shipton by Beningbrough (located approximately 200m to the west) may be adversely affected due to the introduction of a new overhead line around the north and west of the village. Effects would be limited for the residents in the settlements of Nun Monkton and Moor Monkton, located to the west, due to distance and intervening vegetation which may help to filter some views. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The proximity of Siting Area YN1 has the potential to impact The Yorkshire Ouse Walk routed along the River Ouse banks and the landscape character of the River Ouse corridor The route of this option would need to cross NCN Route 65 (Way of the Roses) once and the Yorkshire Ouse Walk long distance path once; as such there would inevitably be some adverse visual effects on users of these routes. There is potential for impacts on visual amenity of tourists and visitors to the Sidings Hotel, Restaurant and Bar from which views over the railway to the west are promoted. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity (utilising existing screening such as Overton Wood and screen planting to link into existing woodland accord with existing landscape characteristics of host LCA), it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is relatively highly constrained, particularly to the south, however, some opportunities exist for mitigation through more detailed assessment, siting, routeing and construction or installation which would reduce the potential for some significant landscape and visual effects.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. Key issues will be the possible impacts on the setting of designated assets, especially Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds), and the concentration of assets at Red House. Positioning of the substation (preferably away from Beningbrough Hall) and the pylons associated with the new overhead line will be key to limiting setting impacts. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare in this option. There are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from residential properties which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Tourism and Recreation	There are no relevant tourism and recreation resources other than the national cycle network (NCN) which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses and the access land should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	With the exception of small area of Corridor A, this option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. The Aerodrome Safeguarding Area associated with Royal Air Force (RAF) Linton-on-Ouse is located to the west of the Corridor. A section of Corridor A and the whole of Siting Area YN1 are in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise. Minor routeing adjustments may be required to avoid the holiday let permitted under 19/01208/FUL.
Traffic and Access	YN1 is north of the River Ouse and therefore has better road access than substation Siting Areas south of the river; however, a new access road would be required from either Shipton Low Road (approximately 1km in length) or Overton Road (approximately 650m in length), although it is noted that Overton Road is located within a flood risk area and is prone to flooding The Corridor has good access north of the River Ouse (around the A19 and between the A19 and the River Ouse). The bridges across the railway (at Shipton Low Road and Overton Road) may need work to accommodate heavy goods vehicles (HGV) and HGVs/ abnormal indivisible loads (AILs).
Engineering	<u>CSEC</u> Sufficient room to accommodate works Some woodland clearance may be required if the area around pylon 2TW168 is used <u>Overhead Lines</u> Length 400kV overhead line = 3.9km (double circuit)

Technical Discipline	Summary of Option A.YN1
	Length 275kV overhead line = 2.8km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV dismantling towers = 1 Length of 275kV Reconductoring = 32km Major Crossings for 400kV overhead line = 2 Major Crossings for 275kV = 2 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1, within Flood Zones 2 & 3, proximity to watercourse & vegetation YN1 - room to accommodate proposed configuration & straightforward line entries Approx. 0% of 400kV overhead line in Flood Zones 2 & 3 Approx. 75% of 275kV overhead lines in Flood Zones 2 & 3 Longer accesses for 400kV & 275kV overhead lines due to lack of nearby roads More angle towers within 2TW/YR CSEC Area A, greater opportunity to utilise existing assets Opportunity to parallel 275kV overhead lines <u>Substation</u> Sufficient space to accommodate different layouts New access and road improvements required including further survey for bridge over the ECML to ascertain HGV/AIL suitability (see Traffic and Access above)
Cost	Estimated total (capital and lifetime) cost of this option is £239.85m

Overview of Option A.YN3a

4.7.6 The components of Option A.YN3a are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWA, Corridor A and substation Siting Area YN3a.

4.7.7 The description presented above in Option A.YN1 for the CSEC Siting Area and Corridor A are also valid for Option A.YN3a.

4.7.8 Siting Area YN3a, located north of the River Ouse and directly west of the ECML, spans across several medium-scale arable fields with relatively flat landform. The fields are bounded by intensively managed hedgerows with Overton Wood demarking the western boundary. The Way of the Roses National Cycle Route crosses the south eastern corner of the Siting Area.

4.7.9 **Figure 4.4** shows the location of the Corridor and Siting Areas associated with Option A.YN3a and **Table 4.4** provides a description of the relevant environmental and social disciplines along with engineering technical information.

N

River Kyle

Shorn Dike

River Ouse

New Parks Beck

2TW 400kV Overhead Line

YR 400kV Overhead Line

Blackrein Beck

Shipton by Beningbrough

1150998

Mill Sike

1190942

Moor Monkton

River Nidd

Wood Gutter

Redhouse Wood

Nun Monkton

1190840

Overton Wood

1149145

1315980

Pennells Drain

Skelton

Hurns Gutter

XCR 275kV Overhead Line

1293654

Overton

White Sike Drain

Burtree Drain

Burtree Dam

1293607

XCR 275kV Overhead Line

The Foss

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor A
- 2TW CSEC Siting Area A
- York North Substation - Siting Area YN3a
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

nationalgrid

Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 4.4
LOCATION OF OPTION A.YN3A

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	06/01/2021	AB	06/01/2021	AW	06/01/2021

Document Number:	Scale:	Format:	Sheets:	Rev:
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Table 4.4: Option A.YN3a Appraisal Summary

Technical Discipline	Summary of Option A.YN3a
Biodiversity	The Siting Areas avoid ecologically designated sites. There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing, as well as a pond with a recorded GCN population in 2TWA, which can also be avoided. There is potential for wintering birds to be using arable fields adjacent to the River Ouse, commuting along the Ouse and risk of birds colliding with new overhead line. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures; however, further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Mitigation for GCN (including provision of terrestrial habitat to replace that lost) will be required if they are present within the ponds, and an EPS licence is likely to be required. If a licence is required then as part of the licence there will be a need to explain the need for the project, that there isn't a satisfactory alternative and that GCN will not be harmed. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland.
Physical Environment	This option is relatively constrained with flood zones to the west, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a Flood Risk Assessment (FRA).
Landscape and Visual	This option has the potential to impact upon County level Local Character Type (LCT) 28 and local level Local Character Area (LCA) 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the open rural farmland and relatively close to the highly valued, designed parkland of Beningbrough Hall Registered Park and Garden. This option has potential to impact on the landscape character of the River Ouse corridor to the south including County level LCT 24, where landscape sensitivity is higher. There is potential for significant adverse effects due to the introduction of several additional overhead line in this landscape, which may result in an increased 'wirescape'. Views from residential and recreational receptors in the south may be particularly adversely affected, and in particular Overton Grange Farm located directly south. A substation at YN3a may be visible from scattered residential and other receptors nearby (including the small hamlet of Overton (located directly south east) and south of the River Ouse; as a result, views may be significantly affected. Views from the settlement of Shipton by Beningbrough, located approximately 250m east, may be adversely affected due to the introduction of a new overhead line around the north and west of the village. Effects would be limited for the residents in the settlements of Beningbrough (located approximately 200m west) and Nun Monkton due to distance and intervening vegetation which may help to filter some views. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The route of this option would need to cross NCN Route 65 (Way of the Roses) once and a new substation would potentially lie in close proximity to this cycle route. The route this option may also need to cross the Yorkshire Ouse Walk long distance path once. As such there would inevitably be some adverse visual effects on people using these cycle and walking routes. There is potential that the visual amenity of people travelling on the London to Edinburgh Mainline Railway would be affected in the vicinity of the 'Edinburgh 200 miles' railway distance sign, and also the potential for impacts on visual amenity of tourists and visitors to the Sidings Hotel, Restaurant and Bar from which views over the railway to the west are promoted. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity (utilising existing screening such as Overton Wood),, it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is relatively highly constrained; however, some opportunities exist for mitigation through more detailed assessment, siting, routeing and construction or installation which would reduce the potential for some significant landscape and visual effects.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. Key issues will be the possible impacts on the setting of designated assets, especially Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds), and those in the settlement of Shipton by Beningbrough. Positioning of the substation within YN3a, and the pylons associated with the new overhead line, will be key to limiting setting impacts. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare in this option. There are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from residential properties which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability or functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses and the access land should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. The Aerodrome Safeguarding Area associated with Royal Air Force (RAF) Linton-on-Ouse is located to the west of the Corridor. A section of Corridor A and the whole of Siting Area YN3a are in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise. Minor routeing adjustments may be required to avoid the holiday let permitted under 19/01208/FUL
Traffic and Access	Access to YN3a is constrained (no access) from the southern extent of Overton Road due to the 10' 6" height restriction on the bridge beneath the railway at Stripe Lane. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. Overton Road would likely require widening to allow two-way HGV movements or larger HGVs/AILs. Furthermore, it is noted that Overton Road is located within a flood risk area and is prone to flooding. The Corridor has good access north of the River Ouse (around the A19 and between the A19 and the River Ouse).
Engineering	CSEC Sufficient room to accommodate works Some woodland clearance may be required if the area around pylon 2TW168 is used Overhead Lines Length 400kV overhead line = 3.5km (double circuit)

Technical Discipline	Summary of Option A.YN3a
	Length 275kV overhead line = 3.0km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1 Length of 275kV Reconductoring = 34.5km Major Crossings for 400kV overhead line = 2 Major Crossings for 275kV = 0 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1, partially within Flood Zones & in proximity to ECML & Overton Road YN3a - room to accommodate proposed configuration & straightforward line entries Approx. 0% of 400kV overhead line in Flood Zones 2 & 3 Approx. 90% of 275kV overhead lines in Flood Zones 2 & 3 Shorter accesses for 400kV & 275kV overhead lines due to presence of nearby roads No crossing of the River Ouse More angle towers within 2TW/YR CSEC Area A, greater opportunity to utilise existing assets Opportunity to parallel 275kV overhead line Opportunity to parallel 275kV overhead lines with the electrified ECML <u>Substation</u> Sufficient space to accommodate different layouts Adjacent the A19 so minimal new/upgraded access works required, however bridge over ECML may not be suitable for HGVs/AILs and may require further survey (see Traffic and Access above)
Cost	Estimated total (capital and lifetime) cost of this option is £250.05m

Overview of Option A.YN4a

4.7.10 The components of Option A.YN4a are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWA, Corridor A and substation Siting Area YN4a.

4.7.11 The description presented above in Option A.YN1 for the CSEC Siting Area and Corridor A are also valid for Option A.YN4a.

4.7.12 Siting Area YN4a is located north of the River Ouse and cuts around Overton Grange Farm to the north. The area spans across several medium-scale arable fields, which are generally flat with intensively managed hedgerows defining the boundary of the fields. To the north west is Overton Wood and to the south west are smaller scale arable field and pastures associated with the River Ouse corridor. The south east is the small hamlet of Overton and associated small scale fields.

4.7.13 **Figure 4.5** shows the location of the Corridor and Siting Areas associated with Option A.YN4a and **Table 4.5** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

Shorn Dike
River Kyle
River Ouse
New Parks Beck
Blackrein Beck
2TW 400kV Overhead Line
YR 400kV Overhead Line
XCR 275kV Overhead Line
XC 275kV Overhead Line
Mill Sike
River Nidd
Wood Gutter
Hurns Gutter
Pennells Drain
White Sike Drain
Burtree Drain
Burtree Dam
The Foss

Shipton by Beningbrough
Moor Monkton
Nun Monkton
Redhouse Wood
Overton Wood
Overton
Skelton

1150998
1190942
1190840
1293654
1149145
1315980
1293607

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor A
- 2TW CSEC Siting Area A
- York North Substation - Siting Area YN4a
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

nationalgrid

Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 4.5
LOCATION OF OPTION A.YN4A

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	06/01/2021	AB	06/01/2021	AW	06/01/2021

Document Number:	Scale:	Format:	Sheets:	Rev:
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Table 4.5: Option A.YN4a Appraisal Summary

Technical Discipline	Summary of Option A.YN4a
Biodiversity	The Siting Areas avoid ecologically designated sites. There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing, as well as a pond with a recorded GCN population in 2TWA, which can also be avoided. There is potential for wintering birds to be using arable fields adjacent to the River Ouse, commuting along the Ouse and risk of birds colliding with new overhead line. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures; however, further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Mitigation for GCN (including provision of terrestrial habitat to replace that lost) will be required if they are present within the ponds, and an EPS licence is likely to be required. If a licence is required then as part of the licence there will be a need to explain the need for the project, that there isn't a satisfactory alternative and that GCN will not be harmed. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland.
Physical Environment	This option is relatively constrained with flood zones to the south, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the open rural farmland and relatively close to the highly valued, designed parkland of Beningbrough Hall Registered Park and Garden. This option has potential to impact on the landscape character of the River Ouse corridor to the south including County level LCT 24 and local level LCA 22, where landscape sensitivity is higher. There is potential for significant adverse effects due to the introduction of a new substation and several additional overhead lines in this landscape, which may result in an increased 'wirescape'. Views from residential and recreational receptors to the north (Overton Grange Farm) and in the south may be particularly adversely affected. A substation at YN4a may be visible on the skyline from scattered residential and other receptors located within 3km (including Upper Poppleton and Nether Poppleton and the small hamlet of Overton (located directly north of YN4a)) and south of the River Ouse; as a result, views may be significantly affected. Views from the settlement of Shipton by Beningbrough may be adversely affected due to the introduction of a new overhead line around the north and west of the village. Effects would be limited for the residents in the settlements of Beningbrough, Nun Monkton, Moor Monkton and Moor Monkton Moor, due to distance and intervening vegetation which may help to filter some views. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The proximity of Siting Area YN4a has the potential to impact The Yorkshire Ouse Walk routed along the River Ouse banks and the landscape character of the River Ouse corridor. The route of this option would need to cross NCN Route 65 (Way of the Roses) once and a new substation would potentially lie in close proximity to this cycle route. The route of the option may also need to cross the Yorkshire Ouse Walk long distance path once. As such there would inevitably be some adverse visual effects on people using these cycle and walking routes. There is potential that the visual amenity of people travelling on London to Edinburgh Mainline Railway would be affected in the vicinity of the 'Edinburgh 200 miles' railway distance sign, and also the potential for impacts on visual amenity of tourists and visitors to the Sidings Hotel, Restaurant and Bar from which views over the railway to the west are promoted. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity (utilising existing screening such as Overton Wood), it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is relatively highly constrained, particularly to the south, however, some opportunities exist for mitigation through more detailed assessment, siting, routeing and construction or installation which would reduce the potential for some significant landscape and visual effects.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. Key issues will be the possible impacts on the setting of designated assets, including Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds) and the listed building in the settlement of Overton, and the concentration of assets at Red House – both of which will be largely linked to the overhead line. These will, however, be reduced if an overhead line takes a route on the eastern side of Overton Wood. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Setting impacts from the substation would appear to be limited as a result of the lack of designated assets in the area surrounding YN4a, and these might be further reduced by placing the new substation in the northern section of the Siting Area, away from the settlement of Overton. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare in this option. There are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from residential properties which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability or functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses and the access land should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. The Aerodrome Safeguarding Area associated with Royal Air Force (RAF) Linton-on-Ouse is located to the west of the Corridor. A section of Corridor A and the whole of Siting Area YN4a are in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise. Minor routeing adjustments may be required to avoid the holiday let permitted under 19/01208/FUL.
Traffic and Access	Access to YN4a is constrained (no access) from the southern extent of Overton Road due to the 10' 6" height restriction on the bridge beneath the railway at Stripe Lane. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. Overton Road would likely require widening to allow two-way HGV movements or larger HGVs/AILs. Furthermore, it is noted that Overton Road is located within a flood risk area and is prone to flooding. The Corridor has good access north of the River Ouse (around the A19 and between the A19 and the River Ouse).
Engineering	CSEC Sufficient room to accommodate works Some woodland clearance may be required if the area around pylon 2TW168 is used

Technical Discipline	Summary of Option A.YN4a
	Overhead Lines Length 400kV overhead line = 4.5km (double circuit) Length 275kV overhead line = 0.6km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1 Length of 275kV Reconductoring = 33.5km Major Crossings for 400kV overhead line = 2 Major Crossings for 275kV = 0 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1, partially within Flood Zones, potential crossing of River Ouse, proximity of farm YN4a - room to accommodate proposed configuration & straightforward line entries Approx. 0% of 400kV overhead line in Flood Zones 2 & 3 Approx. 10% of 275kV overhead lines in Flood Zones 2 & 3 Shorter accesses for 400kV & 275kV overhead lines due to presence of nearby roads No new overhead line crossings of the River Ouse More angle towers within 2TW/YR CSEC Area A, greater opportunity to utilise existing assets Opportunity to parallel 275kV overhead lines Substation Sufficient space to accommodate different layouts New access and road improvements required including further survey for bridge over the ECML to ascertain HGV/AIL suitability (see Traffic and Access above)
Cost	Estimated total (capital and lifetime) cost of this option is £244.87m

Overview of Option B.YN3a

4.7.14 The components of Option B.YN3a are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWB, Corridor B and substation Siting Area YN3a.

4.7.15 The CSEC Siting Area (2TWA) is located approximately 1km north east of Shipton by Beningbrough and spans across a number of medium-scale, flat arable fields. The fields are bounded by a mix of field drains and managed and overgrown hedgerows with frequent hedgerow trees. A number of properties are located within the boundary of the CSEC Siting Area.

4.7.16 Corridor B extends west from the 2TW/YR overhead line around Shipton by Beningbrough across arable landscape. The Corridor separates around Overton Wood (designated as an ancient woodland). As with Corridor A it crosses several transport routes including the A19 and the ECML and includes a section of Hurns Gutter within its boundary, a tributary to the River Ouse. There are no settlements within Corridor B although it wraps around the small hamlet of Overton in the south. The following settlements lie within approximately 3km to the west: Nun Monkton, Moor Monkton, Beningbrough and Shipton by Beningbrough (which is immediately west). Immediately to the east lie Skelton, Nether Poppleton and Upper Poppleton. Wigginton and residential areas on the outskirts of York (inside the A1237 outer ring road) all lie further away to the east.

4.7.17 Siting Area YN3a, located north of the River Ouse and directly west of the ECML, spans across several medium-scale arable fields with relatively flat landform. The fields are bounded by intensively managed hedgerows with Overton Wood demarking the western boundary. The Way of the Roses NCN crosses the south eastern corner of the Siting Area.

4.7.18 **Figure 4.6** shows the location of the Corridor and Siting Areas associated with Option B.YN3a and **Table 4.6** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

LEGEND

- Study Area
- Overhead Line Corridor B
- 2TW CSEC Siting Area B
- York North Substation - Siting Area YN3a
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

2TW 400kV Overhead Line
YR 400kV Overhead Line
Blackrein Beck
Shipton by Beningbrough
Shipton
1150998
1190942
River Nidd
Wood Gutter
1190840
Redhouse Wood
Overton Wood
XC 275kV Overhead Line
XCP 275kV Overhead Line
Overton
The Foss
River Ouse
1293607
1149145
1315980
Skelton
Pennells Drain
Hurns Gutter
White Sike Drain
Burtree Drain
Burtree Dam
Hall Moor
Wigginton Moor
Skelton Moor
North Field

0 0.5 1 1.5 2 km

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

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Scheme: YORKSHIRE GREEN PROJECT

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FIGURE 4.6
LOCATION OF OPTION B.YN3A

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Table 4.6: Option B.YN3a Appraisal Summary

Technical Discipline	Summary of Option B.YN3a
Biodiversity	The Siting Areas avoid ecologically designated sites. There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing. Careful routeing and the absence of unavoidable constraints should preclude the need for significant mitigation measures. There is potential for wintering birds to be using arable fields adjacent to the River Ouse, commuting along the Ouse and risk of birds colliding with new overhead line. Further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. YN3a would be preferred, compared to B.YN2a and B.YN2b as it requires a much shorter connection and avoids crossing the River Ouse.
Physical Environment	This option is relatively constrained with flood zones to the west, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. This option has some potential to impact on the landscape character of the River Ouse corridor to the south including County level LCT 24, where landscape sensitivity is higher. There may be adverse effects due to the introduction of a nearby new substation and several additional overhead lines in this landscape, which may result in an increased 'wirescape'. Views from residential and recreational receptors may be adversely affected, including Overton Grange Farm, the small hamlet of Overton and views from a limited number of scattered residential receptors and other recreational receptors. Views from the settlement of Shipton by Beningbrough, located immediately to the west of Corridor B, may also be adversely affected due to the introduction of a new overhead line around the east and south of the village. Effects would be limited for the residents in the settlements of Skelton and Upper Poppleton and Nether Poppleton, located within 3km, due to distance and intervening vegetation which may help to filter some views. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The route of this option would need to cross NCN Route 65 (Way of the Roses) once, and possibly the Yorkshire Ouse Walk long distance path once; as such there would inevitably be some adverse visual effects on users of these routes. There is potential that the visual amenity of people travelling on London to Edinburgh Mainline Railway would be affected in the vicinity of the 'Edinburgh 200 miles' railway distance sign, and also the potential for impacts on visual amenity of tourists and visitors to the Sidings Hotel, Restaurant and Bar from which views over the railway to the west are promoted. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity (utilising existing screening such as Overton Wood), it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is moderately constrained, with a number of opportunities to avoid constraints and for mitigation through more detailed assessment, siting, routeing and construction which would prevent and/or reduce potential for significant landscape and visual effects, but a number of significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. Key issues will be the possible impacts on the setting of designated assets, especially Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds), and the listed buildings and Conservation Area of Skelton – all of which will be largely linked to the overhead line. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts, although the shorter route used in this option might reduce potential impacts, and. Setting impacts from the substation would appear to be limited as a result of the lack of designated assets in the area surrounding YN3a, and the relatively tall hedgerows around/near YN3a. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare in this option. There are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from residential properties which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses, the access land, and the golf course should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. A section of Corridor B and the whole of Siting Area YN3a are in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise.
Traffic and Access	Access to YN3a is constrained (no access) from the southern extent of Overton Road due to the 10' 6" height restriction on the bridge beneath the railway at Stripe Lane. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. Overton Road would likely require widening to allow two-way HGV movements or larger HGVs/AILs. Furthermore, it is noted that Overton Road is located within a flood risk area and is prone to flooding. The Corridor has good access north of the River Ouse.
Engineering	<u>CSEC</u> Sufficient room to accommodate works, however there are ponds 60m west of pylon YR039 and small area of woodland and trees to the south of pylon YR038 <u>Overhead Lines</u> Length 400kV overhead line = 3.0km (double circuit) Length 275kV overhead line = 3.0km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1

Technical Discipline	Summary of Option B.YN3a
	Length of 275kV Reconductoring = 34.5km Major Crossings for 400kV overhead line = 3 Major Crossings for 275kV = 0 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1 within Flood Zones 2 & 3, proximity to ECML YN3a - room to accommodate proposed configuration & straightforward line entries Approx. 10% of 400kV in Flood Zones 2 & 3 Approx. 90% of 400kV in Flood Zones 2 & 3 Shorter accesses for 400kV & 275kV overhead lines due to presence of nearby roads Opportunity to parallel 275kV overhead lines and 400kV Opportunity to parallel ECML with 275kV overhead lines <u>Substation</u> Sufficient space to accommodate different layouts Adjacent the A19 so minimal new/upgraded access works required, however bridge over ECML may not be suitable for HGVs/AILs and may require further survey (see Traffic and Access above)
Cost	Estimated total (capital and lifetime) cost of this option is £248.08m

Overview of Option B.YN3b

4.7.19 The components of Option B.YN3b are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWB, Corridor B and substation Siting Area YN3b.

4.7.20 The description presented above in Option A.YN3a for the CSEC Siting Area and Corridor B are also valid for Option B.YN3b.

4.7.21 Siting Area YN3b is located to the east of the ECML and is bound to the east by the A19 road. The Way of the Roses NCN crosses the north-western corner of the Siting Area. Siting Area YN3b principally falls within one large arable field but also includes part of a small-scale arable field to the north west. The fields are bounded by intensively managed hedgerows with some hedgerow trees; field trees are also present. The Hurns Gutter watercourse runs approximately 120m to the east of the Siting Area.

4.7.22 **Figure 4.7** shows the location of the Corridor and Siting Areas associated with Option B.YN3b and **Table 4.7** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information

N

2TW 400kV Overhead Line

YR 400kV Overhead Line

Blackrein Beck

Shipton by Beningbrough

Shipton

Hall Moor

Wigginton Moor (Old Enclosures)

Wigginton

Wigginton Moor (New Enclosures)

1150998

1190942

River Nidd

Wood Gutter

1190840

Redhouse Wood

Overton Wood

North Field

Skelton Moor

Pennells Drain

1149145

1315980

Skelton

Hurns Gutter

White Sike Drain

XC 275kV Overhead Line

XCP 275kV Overhead Line

Overton

Burtree Drain

Burtree Dam

River Ouse

1293607

The Foss

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor B
- 2TW CSEC Siting Area B
- York North Substation - Siting Area YN3b
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

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FIGURE 4.7
LOCATION OF OPTION B.YN3B

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Table 4.7: Option B.YN3b Appraisal Summary

Technical Discipline	Summary of Option B.YN3b
Biodiversity	The Siting Areas avoid ecologically designated sites. Hurns Gutter and Overton Borrowpit (a designated SINC) are unavoidable in the Corridor; construction methods to minimise impacts should be implemented. There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing; there are also three ponds in YN3b which should be avoided, where possible, and further surveys should be undertaken to determine the presence/absence of GCN. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures. There is potential for wintering birds using arable fields adjacent to the River Ouse, and risk of birds colliding with new overhead line. Further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. Mitigation for GCN (including provision of terrestrial habitat to replace that lost) will be required if they are present within the ponds, and an EPS licence is likely to be required. If a licence is required then as part of the licence there will be a need to explain the need for the project, that there isn't a satisfactory alternative and that GCN will not be harmed.. YN3b would be preferred, compared to B.YN2a, B.YN2b as it requires a much shorter connection and avoids crossing the River Ouse.
Physical Environment	This option is relatively constrained with flood zones located to the south however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA. There are some small isolated areas of surface water flooding/ponding identified in Defra's Risk of Flooding from Surface Water within Siting Area YN3b, although it is not considered a significant constraint. Within the 2TWB Siting Area there are also potential risks of surface water flooding and ponding and should be taken into consideration when siting the CSEC.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. This option has some potential to impact on the landscape character of the River Ouse corridor to the south including County level LCT 24, where landscape sensitivity is higher. There may be adverse effects due to the introduction of additional new overhead lines in this landscape, which may result in an increased 'wirescape'. Views from residential and recreational receptors may be adversely affected including views from a limited number of scattered residential receptors. Views from the settlement of Shipton by Beningbrough, located immediately to the west of Corridor B, may also be adversely affected due to the introduction of a new overhead line to the east and a new substation and overhead line to the south of the village. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation, including Overton Wood which provides existing screening to the west. The route of this option would need to cross NCN Route 65 (Way of the Roses) once and possibly the Yorkshire Ouse Walk long distance path once; as such there would inevitably be some adverse visual effects. There is potential that the visual amenity of people travelling on London to Edinburgh Mainline Railway would be affected in the vicinity of the 'Edinburgh 200 miles' railway distance sign. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity (i.e. utilising existing screening such as Overton Wood), it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is moderately constrained, with a number of opportunities to avoid constraints and for mitigation through more detailed assessment, siting, routeing and construction which would prevent and/or reduce potential for significant landscape and visual effects, but a number of significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. Key issues will be the possible impacts on the setting of designated assets, especially Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds), and the listed buildings and Conservation Area of Skelton – all of which will be largely linked to the overhead line. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts, although the shorter route used in this option should reduce potential impacts. Setting impacts from the substation would appear to be limited as a result of the lack of designated assets in the area surrounding YN3b, and the relatively tall hedgerows around/near YN3b. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare in this option. There are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from residential properties which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability or functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses, the access land, and the golf course should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. A section of Corridor B and Siting Area YN3b are in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise.
Traffic and Access	Direct access to YN3b is available from the A19 or potentially via junction with Overton Road and new access from Overton Road north of the Railway Bridge. Some widening of the A19 may be required to form the new junction. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. The Corridor has good access north of the River Ouse.
Engineering	CSEC Sufficient room to accommodate works, however there are ponds 60m west of pylon YR039 and small area of woodland and trees to the south of pylon YR038 Overhead Lines Length 400kV overhead line = 2.5km (double circuit) Length 275kV overhead line = 2.7km (double circuit) Length 275kV Dismantling = 0.1km (double circuit)

Technical Discipline	Summary of Option B.YN3b
	Number of 275kV Dismantling Towers = 1 Length of 275kV Reconductoring = 34km Major Crossings for 400kV overhead line = 2 Major Crossings for 275kV = 2 (1 per overhead line) 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1 (avoids Flood Zones 2 & 2) YN3a - room to accommodate proposed configuration & straightforward line entries Approx. 20% of 400kV in Flood Zones 2 & 3 Approx. 50% of 400kV in Flood Zones 2 & 3 Shorter accesses for 400kV & 275kV overhead lines due to presence of nearby roads Opportunity to parallel 275kV overhead lines and 400kV Substation Adjacent the A19 so minimal new/upgraded access works required
Cost	Estimated total (capital and lifetime) cost of this option is £244.66m

Overview of Option B.YN4a

4.7.23 The components of Option B.YN4a are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWB, Corridor B and substation Siting Area YN4a.

4.7.24 The descriptions presented above in Option B.YN3a for the CSEC Siting Area and Corridor B are also valid for Option B.YN4a. A description of Siting Area YN4a is provided within the description provided for Option A.YN4a above.

4.7.25 **Figure 4.8** shows the location of the Corridor and Siting Areas associated with Option B.YN4a and **Table 4.8** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

2TW 400kV Overhead Line

YR 400kV Overhead Line

Blackrein Beck

Shipton by Beningbrough

Shipton

Hall Moor

Wigginton Moor (Old Enclosures)

Wigginton

Wigginton Moor (New Enclosures)

1150998

1190942

River Nidd

Wood Gutter

Redhouse Wood

1190840

Overton Wood

Pennells Drain

Skelton Moor

North Field

1149145

1315980

Skelton

Hurns Gutter

White Sike Drain

XC 275kV Overhead Line

XCP 275kV Overhead Line

Overton

Burtree Drain

Burtree Dam

River Ouse

1293607

The Foss

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor B
- 2TW CSEC Siting Area B
- York North Substation - Siting Area YN4a
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
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Document Title:

FIGURE 4.8
LOCATION OF OPTION B.YN4A

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EB	06/01/2021	AB	06/01/2021	AW	06/01/2021

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Table 4.8: Option B.YN4a Appraisal Summary

Technical Discipline	Summary of Option B.YN4a
Biodiversity	The Siting Areas avoid ecologically designated sites. There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures. There is potential for wintering birds to be using arable fields adjacent to the River Ouse, commuting along the Ouse and risk of birds colliding with new overhead line. Further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. YN4a would be preferred, compared to B.YN2a, B.YN2b as it requires a much shorter connection and avoids crossing the River Ouse.
Physical Environment	This option is relatively constrained with flood zones to the south and north-east, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. This option has potential to impact on the landscape character of the River Ouse corridor to the south including County level LCT 24, where landscape sensitivity is higher. There may be adverse effects due to the introduction of a new substation and several additional overhead lines in this landscape, which may result in an increased 'wirescape'. Views from residential and recreational receptors may be adversely affected, including Overton Grange Farm to the immediate north and the small hamlet of Overton directly the south east of Siting Area YN4a and views from scattered residential receptors and other recreational receptors. Views from the settlement of Shipton by Beningbrough may also be adversely affected due to the introduction of a new overhead line around the east and south of the village. Effects would be limited for the residents in the settlements of Nun Monkton, Moor Monkton, Moor Monkton Moor, Skelton and Upper Poppleton and Nether Poppleton, located within 3km, due to distance and intervening vegetation which may help to filter some views. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The proximity of Siting Area YN4a has the potential to impact The Yorkshire Ouse Walk routed along the River Ouse banks and the landscape character of the River Ouse corridor. The route of this option would need to cross NCN Route 65 (Way of the Roses) once and a new substation would potentially lie in close proximity to this cycle route. The route of the option may also need to cross the Yorkshire Ouse Walk long distance path once. As such there would inevitably be some adverse visual effects on people using these cycle and walking routes. There is potential that the visual amenity of people travelling on London to Edinburgh Mainline Railway would be affected in the vicinity of the 'Edinburgh 200 miles' railway distance sign. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity (i.e. utilising existing screening such as Overton Wood), it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is relatively highly constrained, particularly to the south, however, some opportunities exist for mitigation through more detailed assessment, siting, routeing and construction or installation which would reduce the potential for some significant landscape and visual effects.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. Key issues will be the possible impacts on the setting of designated assets, especially Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds), and the listed buildings and Conservation Area of Skelton – all of which will be largely linked to the overhead line. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Setting impacts from the substation would appear to be limited to the listed buildings in Overton, and the relatively tall hedgerows around/near YN4a. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare in this option. There are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from residential properties which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability or functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses, the access land, and the golf course should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. A section of Corridor B and the whole of Siting Area YN4a are in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise.
Traffic and Access	Access to YN4a is constrained (no access) from the southern extent of Overton Road due to the 10' 6" height restriction on the bridge beneath the railway at Stripe Lane. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. Overton Road would likely require widening to allow two-way HGV movements or larger HGVs/AILs. Furthermore, it is noted that Overton Road is located within a flood risk area and is prone to flooding. The Corridor has good access north of the River Ouse.
Engineering	<u>CSEC</u> Sufficient room to accommodate works, however there are ponds 60m west of pylon YR039 and small area of woodland and trees to the south of pylon YR038 <u>Overhead Lines</u> Length 400kV overhead line = 4.0km (double circuit) Length 275kV overhead line = 0.6km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1

Technical Discipline	Summary of Option B.YN4a
	Length of 275kV Reconductoring = 33.5km Major Crossings for 400kV overhead line = 3 Major Crossings for 275kV overhead line = 0 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1, within Flood Zones 2 & 3, crossing of River Ouse, proximity of farm YN4a - room to accommodate proposed configuration & straightforward line entries Approx. 10% of 400kV in Flood Zones 2 & 3 Approx. 10% of 275kV in Flood Zones 2 & 3 Pinch point north of River Ouse for 400kV between Ancient Woodland & farm complex Shorter accesses in majority for 400kV & 275kV overhead lines, longer towards River Ouse Opportunity to parallel 275kV overhead lines and 400kV <u>Substation</u> Sufficient space to accommodate different layouts New access and road improvements required including further survey for bridge over the ECML to ascertain HGV/AIL suitability (see Traffic and Access above)
Cost	Estimated total (capital and lifetime) cost of this option is £243.06m

Overview of Option B.YN5a

4.7.26 The components of Option B.YN5a are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWB, Corridor B and substation Siting Area YN5a.

4.7.27 The descriptions presented above in Option B.YN3a for the CSEC Siting Area and Corridor B are also valid for Option B.YN5a.

4.7.28 Siting Area YN5a is located to the south west of the A19 road and is bound on the east by Stripe Lane, which includes a several residential properties and a small caravan and camping ground. It spans several small to medium-scale flat arable fields, which are bound by a mix of intensively managed hedgerows with few hedgerow trees and overgrown hedgerows with frequent hedgerow trees. The fields extend to the south west and north west, outside the Siting Area, to Hurns Gutter.

4.7.29 **Figure 4.9** shows the location of the Corridor and Siting Areas associated with Option B.YN5a and **Table 4.9** provides a summary of the relevant environmental and social disciplines along with supporting engineering technical information.

N

Shipton by Beningbrough

Shipton

Overton

Skelton

1150998

1190942

1190840

1149145

1315980

1293607

Redhouse Wood

Overton Wood

2TW 400kV Overhead Line

YR 400kV Overhead Line

XC 275kV Overhead Line

XCP 275kV Overhead Line

Blackrein Beck

River Nidd

Wood Gutter

Hurns Gutter

Pennells Drain

White Sike Drain

Burtree Drain

Burtree Dam

River Ouse

The Foss

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor B
- 2TW CSEC Siting Area B
- York North Substation - Siting Area YN5a
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

nationalgrid

Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 4.9
LOCATION OF OPTION B.YN5A

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	06/01/2021	AB	06/01/2021	AW	06/01/2021

Document Number:	Scale:	Format:	Sheets:	Rev:
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Table 4.9: Option B.YN5a Appraisal Summary

Technical Discipline	Summary of Option B.YN5a
Biodiversity	The Siting Areas avoid ecologically designated sites. Hurns Gutter and Overton Borrowpit (a designated SINC) are unavoidable in the Corridor; construction methods to minimise impacts should be implemented. There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures. There is potential for wintering birds to be using arable fields adjacent to the River Ouse, commuting along the Ouse and risk of birds colliding with new overhead line. Further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. YN5a would be preferred, compared to B.YN2a, B.YN2b as it requires a much shorter connection and avoids crossing the River Ouse.
Physical Environment	This option is relatively constrained with flood zones located to the west and north, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. There is also potential that the additional overhead line would result in a localised 'wirescape'. Views from residential and recreational receptors may be adversely affected including views from a limited number of scattered residential receptors. Views from the settlement of Shipton by Beningbrough, located immediately to the west, may also be adversely affected due to the introduction of a new overhead line around the east south of the village. Adverse effects are also anticipated to New Farm, which is enclosed on three sides by Siting Area YN5a and residential properties located on Stripe Lane to the east. Effects would be possible for residents in Overton (located approximately 1km south west of Siting Area YN5a) and a relatively small proportion of residents in the settlements of Skelton, located on the opposite side of the A19, but most would be limited due to intervening vegetation along the A19 and built form in the settlement which would block and filter some views. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. This option may be visible from NCN Route 65 (Way of the Roses); as such there may be some adverse visual effects. There is potential that the visual amenity of people travelling on London to Edinburgh Mainline Railway would be affected in the vicinity of the 'Edinburgh 200 miles' railway distance sign. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity, it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is low to moderately constrained (with more constraints in the south). There are a number of opportunities to avoid constraints and for mitigation through more detailed assessment, siting, routeing and construction which would prevent and/or reduce potential for significant landscape and visual effects, but some significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. Key issues will be the possible impacts on the setting of designated assets, especially Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds) resulting from the overhead line and impacts on the listed buildings and Conservation Area of Skelton resulting from the substation. Careful positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare. Combined indirect impacts may be experienced by adjacent residential properties due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN4b. Every effort should be made both to avoid being close to residential properties when siting within YN4b and to mitigate noise, visual or air quality as far as is possible where impacts arise which together will minimise likelihood of combined indirect impacts on residential properties.
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Combined indirect impacts may be experienced by an adjacent accommodation facility (caravan park) due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN5a. Every effort should be made both to avoid being close to the accommodation facility when siting within YN5a and to mitigate noise, visual or air quality as far as is possible where impacts arise. Whilst together this will reduce likelihood of combined indirect impacts on this receptor, it is likely that the facility would be adversely affected by the scheme if sited here due to proximity to it.
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses, the access land, and the golf course should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. A section of Corridor B in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. To the east of Corridor B in proximity to Skelton is a reserved matters application for 77 new homes (18/01558/REMM) and an application for seven homes (20/00543/FUL).
Traffic and Access	Direct access to YN5a is available from the A19; some widening of the A19 may be required to form the new junction. Alternatively, access could be gained via the existing New Farm access from the A19. The Corridor has good access north of the River Ouse.
Engineering	CSEC Sufficient room to accommodate works, however there are ponds 60m west of pylon YR039 and small area of woodland and trees to the south of pylon YR038 Overhead Lines Length 400kV overhead line = 3.5km (double circuit) Length 275kV overhead line = 0.6km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1 Length of 275kV Reconductoring = 35km

Technical Discipline	Summary of Option B.YN5a
	Major Crossings for 400kV overhead line = 2 Major Crossings for 275kV overhead line = 0 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1, within Flood Zones 2 & 3, crossing of ECML YN5a - limited space to accommodate proposed configuration, line entries may require more angles Approx. 20% of 400kV in Flood Zones 2 & 3 Approx. 80% of 275kV in Flood Zones 2 & 3 Longer accesses between Corban Lane & A19 Pinch point near Skelton, across the A19. Opportunity to parallel 275kV overhead lines <u>Substation</u> Space may not be sufficient to position and orientate the substation in the most optimal way; this would require sub-optimal connection for either the 275kV overhead line or the 400kV overhead line Adjacent the A19 so minimal new/upgraded access works required
Cost	Estimated total (capital and lifetime) cost of this option is £243.35m

Overview of Option B.YN5b

4.7.30 The components of Option B.YN5b are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWB, Corridor B and substation Siting Area YN5b.

4.7.31 The descriptions presented above in Option B.YN3a for the CSEC Siting Area and Corridor B are also valid for Option B.YN5b.

4.7.32 Siting Area YN5b is located to the east of the A19 road with its southern boundary defined by the settlement of Skelton. It spans several medium to large scale flat arable fields, which are typically bounded by overgrown hedgerows with frequent hedgerow trees. The fields extend to the north and east, outside the Siting Area, to a network of woodland blocks and tree belts.

4.7.33 **Figure 4.10** shows the location of the Corridor and Siting Areas associated with Option B.YN5b and **Table 4.10** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

2TW 400kV Overhead Line

YR 400kV Overhead Line

Blackrein Beck

Shipton by Beningbrough

Shipton

Hall Moor

Wigginton Moor

Wigginton

1150998

1190942

River Nidd

Wood Gutter

1190840

Redhouse Wood

Overton Wood

Pennells Drain

1149145

1315980

Skelton

Hurns Gutter

XC 275kV Overhead Line

XCP 275kV Overhead Line

Overton

White Sike Drain

Burtree Drain

Burtree Dam

River Ouse

1293607

The Foss

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor B
- 2TW CSEC Siting Area B
- York North Substation - Siting Area YN5b
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

nationalgrid

Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 4.10
LOCATION OF OPTION B.YN5B

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Table 4.10: Option B.YN5b Appraisal Summary

Technical Discipline	Summary of Option B.YN5b
Biodiversity	The Siting Areas avoid ecologically designated sites. Hurns Gutter and Overton Borrowpit (a designated SINC) are unavoidable in the Corridor; construction methods to minimise impacts should be implemented. There are several scattered woodlands in the Corridor which can be easily avoided with careful routeing. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures. There is potential for wintering birds to be using arable fields adjacent to the River Ouse, commuting along the Ouse and risk of birds colliding with new overhead line. Further survey and consultation with Natural England will be required to understand potential impacts to bird populations (e.g. collision, flight path disruption, injury, mortality) and assess appropriate mitigation measures accordingly. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. YN5b would be preferred, compared to B.YN2a, B.YN2b as it requires a much shorter connection and avoids crossing the River Ouse.
Physical Environment	This option is relatively constrained with flood zones located to the north, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. There is also potential that the additional overhead line would result in a localised 'wirescape'. Siting Area YN5b is typically bounded by a strong network of overgrown hedgerows with frequent hedgerow and field trees providing a sense of visual enclosure. Views from residential and recreational receptors may be adversely affected including views from a limited number of scattered residential receptors. Views from the settlement of Shipton by Beningbrough, located immediately to the west, may also be adversely affected due to the introduction of a new overhead line around the east south of the village. Effects would be possible for residents in Overton, located approximately 1.4km south west of Siting Area YN5b, and a relatively small proportion of residents in the settlements of Skelton along the northern edge, which lie in close proximity to the Siting Area YN5b; albeit intervening vegetation and built form would restrict the majority of views from this large settlement. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. This option may be visible from NCN Route 65 (Way of the Roses); as such there may be some adverse visual effects. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity, it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is low to moderately constrained (with more constraints in the south). There are a number of opportunities to avoid constraints and for mitigation through more detailed assessment, siting, routeing and construction which would prevent and/or reduce potential for significant landscape and visual effects, but some significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Park and Garden. Key issues include the possible impacts on the setting of designated assets, especially Beningbrough Hall Park and Garden (and the listed buildings forming part of the grounds) resulting from the overhead line and impacts on the listed buildings and Conservation Area of Skelton resulting from the substation. Careful positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare. Combined indirect impacts may be experienced by adjacent residential properties due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN5b. Every effort should be made both to avoid being close to residential properties when siting within YN5b and to mitigate noise, visual or air quality as far as is possible where impacts arise which together will minimise likelihood of combined indirect impacts on residential properties.
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. Direct effects on the former landfill site (at Parsons Lane at the southern extent of the Corridor) can be avoided through careful routeing. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses, the access land, and the golf course should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). Operation effects are unlikely to be significant.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. A section of Corridor B in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise.
Traffic and Access	Direct access to YN5b is available from the A19 which could be accessed via a new access or upgrade of the existing layby adjacent to the Siting Area YN5b; some widening of the A19 may be required to form the new junction. The Corridor has good access north of the River Ouse.
Engineering	CSEC Sufficient room to accommodate works, however there are ponds 60m west of pylon YR039 and small area of woodland and trees to the south of pylon YR038 Overhead Lines Length 400kV overhead line = 2.5km (double circuit) Length 275kV overhead line = 3.2km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1 Length of 275kV Reconductoring = 34.5km Major Crossings for 400kV overhead line = 1

Technical Discipline	Summary of Option B.YN5b
	Major Crossings for 275kV overhead line = 2 400kV Temp Diversions = 1 (up to) 275kV Temp Diversions = 1, partially within Flood Zones 2 & 3, proximity to ECML & Overton Road YN5b - should be enough room to accommodate proposed configuration, with line entries being relatively straightforward Approx. 20% of 400kV in Flood Zones 2 & 3 Approx. 50% of 275kV in Flood Zones 2 & 3 Longer accesses beyond Corban Lane for 400kV overhead line, shorter for 275kV overhead lines Opportunity to parallel 275kV overhead lines Substation Space may not be sufficient to position and orientate the substation in the most optimal way; this would require sub-optimal connection for either the 275kV overhead line or the 400kV overhead line Adjacent the A19 so minimal new/upgraded access works required
Cost	Estimated total (capital and lifetime) cost of this option is £246.87m

Overview of Option C.YN4b

4.7.34 The components of Option C.YN4b are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWC, Corridor C and substation Siting Area YN4b.

4.7.35 The CSEC Siting Area (2TWC) comprises arable fields which are bound by a mix of field drains and managed and overgrown hedgerows with frequent hedgerow trees. There are a number of agricultural buildings in the north east corner.

4.7.36 Corridor C mainly comprises agricultural land and the Forest of Galtres Golf Course. It crosses both the A19 road and the ECML. There are no settlements within Corridor C, with Beningbrough and Shipton by Beningbrough being located approximately 3km to the west and immediately to the east is Skelton. Immediately to the south west lies the small hamlet of Overton.

4.7.37 Siting Area YN4 is located north of the River Ouse, spans several small to medium-scale arable fields, which are generally flat but become more sloping to the south where levels fall gradually to the River Ouse. The fields are bounded by a mix of managed, fragmented and overgrown hedgerows with hedgerow trees. To the north west is Overton Road. The small hamlet of Overton is located to the south west of the Siting Area.

4.7.38 **Figure 4.11** shows the location of the Corridor and Siting Areas associated with Option C.YN4b and **Table 4.11** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

2TW 400kV Overhead Line

Blackrein Beck

YR 400kV Overhead Line

Shipton by Beningbrough

Shipton

Hall Moor

Wigginton

Wood Gutter

1190840

Redhouse Wood

Overton Wood

1149145

1315980

Pemnells Drain

Skelton

Hurns Gutter

XCP 275kV Overhead Line

Overton

White Sike Drain

Burtree Drain

Burtree Dam

River Ouse

1293607

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor C
- 2TW CSEC Siting Area C
- York North Substation - Siting Area YN4b
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

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Scheme: YORKSHIRE GREEN PROJECT

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FIGURE 4.11
LOCATION OF OPTION C.YN4B

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Table 4.11: Option C.YN4b Appraisal Summary

Technical Discipline	Summary of Option C.YN4b
Ecology	The Siting Areas avoid ecologically designated sites. Hurns Gutter is unavoidable in the Corridor; construction methods to minimise impacts should be implemented. A network of ditches (White Sike Drain) and affiliated woodland occupies a central stretch of the Corridor; routeing should seek to avoid the wooded areas. There are also scattered woodlands further south in the Corridor (flanking railway), as well as a Overton Borrowpit SINC. All could be avoided with careful routeing. Arable fields within YN4b in vicinity of the River Ouse could be used by wintering birds, further surveys would be required to determine the level of use. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. New overhead lines could have negative impacts on bird populations (e.g. collision, flight path disruption, injury, mortality); further survey and consultation with Natural England would assess degree of risk new connections would pose. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures.
Physical Environment	This option is relatively constrained, particularly as the south and east of YN4b is adjacent to flood zones, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. This option has potential to impact on the landscape character of the River Ouse corridor to the south including County level LCT 24, where landscape sensitivity is higher. There may be adverse effects due to the introduction of a new substation and several additional overhead lines in the vicinity of this landscape, which may result in an increased 'wirescape'. Corridor C covers the Forest of Galtres Golf Club, which is consider a recreational receptor of high sensitivity. Views from residential and recreational receptors may be adversely affected, most notably the small hamlet of Overton to the south of Siting Area YN4b and Upper Poppleton and Nether Poppleton, located within 3km directly south, and views from scattered residential receptors and other recreational receptors. A relatively small proportion of residents along the northern edge of Skelton may also be adversely affected as they lie in close proximity to Corridor C; albeit intervening vegetation and built form would restrict the majority of views from this large settlement. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The southern end of this option is in close proximity to NCN Route 65 (Way of the Roses). This option would also be close to the Yorkshire Ouse Walk long distance path. As such there would inevitably be some adverse visual effects on people using these cycle and walking routes. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity, it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is relatively highly constrained, particularly to the south, however, some opportunities exist for mitigation through more detailed assessment, siting, routeing and construction or installation which would reduce the potential for some significant landscape and visual effects but a number of significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. The scheme could result in impacts to the listed buildings and the Conservation Area of Skelton – all of which will be largely linked to the overhead line. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Setting impacts from the substation would appear to be limited to the listed buildings in Overton, and Upper Poppleton on the southern side of the River Ouse. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare. Combined indirect impacts may be experienced by adjacent residential properties in Overton to the south of Siting Area YN4b due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN4b. Every effort should be made both to avoid being close to residential properties when siting within YN4b and to mitigate noise, visual or air quality as far as is possible where impacts arise which together will minimise likelihood of combined indirect impacts on residential properties.
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). There is likely to be an operational effect on the golf course as the overhead line route will oversail it unless it is possible to use the 'gap' at the far western extent of the Corridor. The significance of the effect will depend on the route taken and the extent to which it would affect the operation and functionality of the golf club. Operational effects are unlikely to be significant with appropriate mitigation.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. A section of Siting Area YN4b in the area designated as the Green Infrastructure Corridor as identified in the draft Hambleton Local Plan. There is an area of existing open space just to the south of the 2TWC Siting Area (Moorlands Nature Reserve) identified in the draft York Local Plan (Policy GI5). To the west of Corridor C in proximity to Skelton is a reserved matters application for 77 new homes (18/01558/REMM) and an application for seven homes (20/00543/FUL).
Traffic and Access	Access to YN4b is constrained (no access) from the southern extent of Overton Road due to the 10' 6" height restriction on the bridge beneath the railway at Stripe Lane. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. Overton Road would likely require widening to allow two-way HGV movements or larger HGVs/AILs. Furthermore, it is noted that Overton Road is located within a flood risk area and is prone to flooding.
Engineering	CSEC Sufficient room is generally available to accommodate works, however there are restrictions north of pylon YR037 due to farm buildings and horse manège, plus vegetation to the south Overhead Lines Length 400kV overhead line = 4.5km (double circuit) Length 275kV overhead line = 0.8km (double circuit) Length 275kV Dismantling = 0.2km (double circuit) Number of 275kV Dismantling Towers = 1

Technical Discipline	Summary of Option C.YN4b
	Length of 275kV Reconductoring = 34.5km Major Crossings for 400kV overhead line = 3 Major Crossings for 275kV overhead line = 0 400kV Temp Diversions = 1, proximity of farm to the north of YR037 275kV Temp Diversions = 1, within Flood Zones 2 & 3 and crossing of ECML YN4b - limited space to accommodate proposed configuration, line entries may require more angles Approx. 60% of 400kV in Flood Zones 2 & 3 Approx. 20% of 275kV in Flood Zones 2 & 3 Longer accesses between Corban Lane & A19, shorter beyond A19 No opportunity to reuse existing 2TW/YR assets - replacement tower & temporary diversion needed Potential for substation & 3x overhead lines in proximity to Overton Potential oversail of golf course Temporary diversion over the ECML & within Flood Zones Opportunity to parallel 275kV overhead lines and 400kV (subject to substation orientation & design) <u>Substation</u> Some limitations on available space may constrain the substation design/layout New access and road improvements required including further survey for bridge over the ECML to ascertain HGV/AIL suitability (see Traffic and Access above)
Cost	Estimated total (capital and lifetime) cost of this option is £246.92m

Overview of Option C.YN5a

4.7.39 The components of Option C.YN5a are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWC, Corridor C and substation Siting Area YN5a.

4.7.40 The descriptions presented above in Option C.YN4b for the CSEC Siting Area and Corridor C are also valid for Option C.YN5a. The description of Siting Area YN5a presented in **Section 4.13** of this report is also valid for this option.

4.7.41 **Figure 4.12** shows the location of the Corridor and Siting Areas associated with Option C.YN5a and **Table 4.12** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

2TW 400kV Overhead Line

YR 400kV Overhead Line

Blackrein Beck

Shipton by Beningbrough

Shipton

Hall Moor

Wigginton

Wood Gutter

1190840

Redhouse Wood

Overton Wood

1149145

1315980

Pemnells Drain

Skelton

Humns Gutter

XCP 275kV Overhead Line

White Sike Drain

Overton

Burtree Drain

Burtree Dam

River Ouse

1293607

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor C
- 2TW CSEC Siting Area C
- York North Substation - Siting Area YN5a
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
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Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 4.12
LOCATION OF OPTION C.YN5A

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	06/01/2021	AB	06/01/2021	AW	06/01/2021

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Table 4.12: Option C.YN5a Appraisal Summary

Technical Discipline	Summary of Option C.YN5a
Biodiversity	The Siting Areas avoid ecologically designated sites. Hurns Gutter is unavoidable in the Corridor; construction methods to minimise impacts should be implemented. A network of ditches (White Sike Drain) and affiliated woodland occupies a central stretch of the Corridor; routeing should seek to avoid the wooded areas. There are also scattered woodlands further south in the Corridor (flanking railway), including a Overton Borrowpit SINC. All could be avoided with careful routeing. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. New overhead lines could have negative impacts on bird populations (e.g. collision, flight path disruption, injury, mortality); further survey and consultation with Natural England would assess degree of risk new connections would pose. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures.
Physical Environment	This option is relatively constrained with flood zones located to the west and north, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. There is also potential that the additional overhead line would result in a localised 'wirescape'. Adverse effects are anticipated to New Farm, which is enclosed on three sides by Siting Area YN5a and residential properties located on Stripe Lane to the east. Effects would be possible for residents in Overton (located approximately 1km south west of Siting Area YN5a) and a relatively small proportion of residents in the settlements of Skelton, located on the opposite side of the A19, but most would be limited due to intervening vegetation along the A19 and built form in the settlement which would block and filter some views. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. Views from recreational receptors may be adversely affected, most notably views from the Forest of Galtres Golf Club. The southern end of this option is in close proximity to NCN Route 65 (Way of the Roses), as such there would inevitably be some adverse visual effects on people using this cycle route. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity, it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is moderately constrained, with a number of opportunities to avoid constraints and for mitigation through more detailed assessment, siting, routeing and construction which would prevent and/or reduce potential for significant landscape and visual effects, but a number of significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Park and Garden. Itis expected that impacts to Nether and Upper Poppleton will be limited due to the distance from the Siting Area and Corridor, however this should be confirmed by a more detailed assessment. The scheme could result in impacts to the listed buildings and the Conservation Area of Skelton, although the A19 and the hedgerows running between the village and the substation site should reduce the potential for impacts. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare. Combined indirect impacts may be experienced by adjacent residential properties due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN5a. Every effort should be made both to avoid being close to residential properties when siting within YN5a and to mitigate noise, visual or air quality as far as is possible where impacts arise which together will minimise likelihood of combined indirect impacts on residential properties.
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Combined indirect impacts may be experienced by an adjacent accommodation facility (a caravan park) due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN5a. Every effort should be made both to avoid being close to the accommodation facility when siting within YN5a and to mitigate noise, visual or air quality as far as is possible where impacts arise. Whilst together this will reduce likelihood of combined indirect impacts on this receptor, it is likely that the facility would be adversely affected by the scheme if sited here due to proximity to it.
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). There is likely to be an operational effect on the golf course as the overhead line route will oversail it, unless it is possible to use the 'gap' at the far western extent of the Corridor. The significance of the effect will depend on the route taken and the extent to which it would affect the operation and functionality of the golf club. Operational effects are unlikely to be significant with appropriate mitigation.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. There is an area of existing open space just to the south of the 2TWC Siting Area (Moorlands Nature Reserve) identified in the draft York Local Plan (Policy GI5). To the west of Corridor C in proximity to Skelton is a reserved matters application for 77 new homes (18/01558/REMM) and an application for seven homes (20/00543/FUL).
Traffic and Access	Direct access to YN5a is available from the A19; some widening of the A19 may be required to form the new junction. Alternatively, access could be gained via the existing New Farm access from the A19. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. The Corridor has good access north of the River Ouse.
Engineering	CSEC Sufficient room is generally available to accommodate works, however there are restrictions north of pylon YR037 due to farm buildings and horse manège, plus vegetation to the south Overhead Lines Length 400kV overhead line = 3.5km (double circuit) Length 275kV overhead line = 0.6km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1 Length of 275kV Reconductoring = 35km Major Crossings for 400kV overhead line = 2

Technical Discipline	Summary of Option C.YN5a
	Major Crossings for 275kV overhead line = 0 400kV Temp Diversions = 1, proximity of farm to the north of YR037 275kV Temp Diversions = 1, within Flood Zones 2 & 3 and crossing of ECML YN5a - limited space to accommodate proposed configuration, line entries may require more angles Approx. 20% of 400kV in Flood Zones 2 & 3 Approx. 80% of 275kV in Flood Zones 2 & 3 Pinch point near A19 between Skelton & residential property More angles needed to avoid local constraints & oblique major crossings Longer accesses between Corban Lane & A19, shorter nearer to A19 No opportunity to reuse existing 2TW/YR assets - replacement tower & temporary diversion needed Potential oversail of golf course Opportunity to parallel 275kV overhead lines and 400kV (subject to substation orientation & design) <u>Substation</u> Space may not be sufficient to position and orientate the substation in the most optimal way; this would require sub-optimal connection for either the 275kV overhead line or the 400kV overhead line Adjacent the A19 so minimal new/upgraded access works required
Cost	Estimated total (capital and lifetime) cost of this option is £243.35m

Overview of Option C.YN5b

4.7.42 The components of Option C.YN5b are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWC, Corridor C and substation Siting Area YN5b.

4.7.43 The descriptions presented in **Section 4.15** of this report for the CSEC Siting Area and Corridor C are also valid for Option C.YN5b. The description of Siting Area YN5b presented in Option B.YN5b is also valid for this option.

4.7.44 **Figure 4.13** shows the location of the Corridor and Siting Areas associated with Option C.YN5b and **Table 4.13** provides a description of the relevant environmental and social disciplines along with supporting engineering technical information.

N

2TW 400kV Overhead Line

YR 400kV Overhead Line

Blackrein Beck

Shipton by Beningbrough

Shipton

Hall Moor

Wigginton

Wood Gutter

1190840

Redhouse Wood

Overton Wood

1149145

1315980

Pemnells Drain

Skelton

Humns Gutter

XCP 275kV Overhead Line

White Sike Drain

Overton

Burtree Drain

Burtree Dam

River Ouse

1293607

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor C
- 2TW CSEC Siting Area C
- York North Substation - Siting Area YN5b
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- A59
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

nationalgrid

Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 4.13
LOCATION OF OPTION C.YN5B

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Table 4.13: Option C.YN5b Appraisal Summary

Technical Discipline	Summary of Option C.YN5b
Biodiversity	The Siting Areas avoid ecologically designated sites. Hurns Gutter is unavoidable in the Corridor; construction methods to minimise impacts should be implemented. A network of ditches (White Sike Drain) and affiliated woodland occupies a central stretch of the Corridor. While not part of any designated site, these woodlands' location (in largely developed/agricultural landscape) may make them valuable refuge habitat for wildlife in the area. Impacts to them should be avoided if possible, by routeing around or by crossing at a narrow point. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. New overhead lines could have negative impacts on bird populations (e.g. collision, flight path disruption, injury, mortality); further survey and consultation with Natural England would assess degree of risk new connections would pose. Careful routeing and the absence of unavoidable constraints should preclude the need for significant ecological mitigation measures.
Physical Environment	This option is relatively constrained with flood zones located to the north, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. There is also potential that the additional overhead line would result in a localised 'wirescape'. Siting Area YN5b is typically bounded by a strong network of overgrown hedgerows with frequent hedgerow and field trees providing a sense of visual enclosure. Views from residential and recreational receptors may be adversely affected, most notably views from scattered residential receptors in the north and other recreational receptors including the Forest of Galtres Golf Club. Effects would be possible for residents in Overton, located approximately 1.4km south west of Siting Area YN5b, and a relatively small proportion of residents in the settlements of Skelton along the northern edge, which lie in close proximity to the Siting Area YN5b; albeit intervening vegetation and built form would restrict the majority of views from this large settlement. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The southern end of this option is in close proximity to NCN Route 65 (Way of the Roses), as such there would inevitably be some adverse visual effects on people using this cycle route. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity, it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is moderately constrained, with a number of opportunities to avoid constraints and for mitigation through more detailed assessment, siting, routeing and construction which would prevent and/or reduce potential for significant landscape and visual effects, but a number of significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Park and Garden. The scheme could result in impacts on the setting and character of the listed buildings and Conservation Area of Skelton. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare in this option. There are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from residential properties which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Other than the potential closure of the NCN, there are no combined direct impacts (either adverse or beneficial). Providing that construction activities and operational scheme infrastructure is located away from accommodation facilities which are adjacent to the Corridor and Siting Areas, there are no combined indirect impacts (either adverse or beneficial).
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the Northern Section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). There is likely to be an operational effect on the golf course as the overhead line route will oversail it, unless it is possible to use the 'gap' at the far western extent of the Corridor. The significance of the effect will depend on the route taken and the extent to which it would affect the operation and functionality of the golf club. Operational effects are unlikely to be significant with appropriate mitigation.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. There is an area of existing open space just to the south of the 2TWC Siting Area (Moorlands Nature Reserve) identified in the draft York Local Plan (Policy GI5). To the west of Corridor C in proximity to Skelton is a reserved matters application for 77 new homes (18/01558/REMM) and an application for seven homes (20/00543/FUL).
Traffic and Access	Direct access to YN5b is available from the A19 which could be accessed via a new access or upgrade of the existing layby adjacent to the Siting Area YN5b; some widening of the A19 may be required to form the new junction. The Overton Road bridge over the railway further north may require mitigation to accommodate larger HGV/AIL access due to the risk of grounding. The Corridor has good access north of the River Ouse.
Engineering	<u>CSEC</u> Sufficient room is generally available to accommodate works, however there are restrictions north of pylon YR037 due to farm buildings and horse manège, plus vegetation to the south <u>Overhead Lines</u> Length 400kV overhead line = 2.5km (double circuit) Length 275kV overhead line = 3.2km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1 Length of 275kV Reconductoring = 34km Major Crossings for 400kV overhead line = 1 Major Crossings for 275kV overhead line = 4 400kV Temp Diversions = 1, proximity of farm to the north of YR037

Technical Discipline	Summary of Option C.YN5b
	275kV Temp Diversions = 1, partially within Flood Zones 2 & 3, proximity to ECML & Overton Road YN5b - should be enough room to accommodate proposed configuration, with line entries being relatively straightforward Approx. 20% of 400kV in Flood Zones 2 & 3 Approx. 60% of 275kV in Flood Zones 2 & 3 More angles needed for 400kV overhead line to avoid local constraints Longer accesses between Corban Lane & A19, shorter nearer to A19 No opportunity to reuse existing 2TW/YR assets - replacement tower & temporary diversion needed Potential oversail of golf course Opportunity to parallel 275kV overhead lines <u>Substation</u> Space may not be sufficient to position and orientate the substation in the most optimal way; this would require sub-optimal connection for either the 275kV overhead line or the 400kV overhead line Adjacent the A19 so minimal new/upgraded access works required
Cost	Estimated total (capital and lifetime) cost of this option is £245.56m

Overview of Option D.YN6

4.7.45 The components of Option D.YN6 are summarised in **Table 4.1** and comprise the CSEC Siting Area 2TWD, Corridor D and substation Siting Area YN6.

4.7.46 The CSEC Siting Area (2TWD) comprises arable fields which are bound by a mix of field drains and managed and overgrown hedgerows with frequent hedgerow trees. There are number of properties located within its boundary (but clipped out of the Siting Area).

4.7.47 Corridor D largely comprises arable fields with a number of residential properties located within its boundary (but clipped out of the Corridor). Shipton by Beningbrough and Overton lie within approximately 3km to the west, Skelton lies immediately to the south west. Corridor D crosses the A19 road and its south western boundary is defined by the ECML. There are a number of watercourses (tributaries to the River Ouse) which cross Corridor D including Burtree Drain and White Sike Drain.

4.7.48 Siting Area YN6 is located to the south and south east of Skelton and to the east of the A19. It spans several medium to large scale flat arable fields. The fields are typically bounded by managed hedgerows with hedgerow trees.

4.7.49 **Figure 4.14** shows the location of the Corridor and Siting Areas associated with Option D.YN6 and **Table 4.14** provides a description of the relevant environmental and social disciplines along with supporting technical information.

N

2TW 400kV Overhead Line

Blackrein Beck

YR 400kV Overhead Line

Goland Dike

Shipton by Beningbrough

Shipton

Hall Moor

Overton Wood

1149145

1315980

Skelton

Pennells Drain

The Foss

Hurns Gutter

XCP 275kV Overhead Line

Overton

White Sike Drain

Burtree Drain

Burtree Dam

River Ouse

1293607

1315972

River Foss

0 0.5 1 1.5 2 km

LEGEND

- Study Area
- Overhead Line Corridor D
- 2TW CSEC Siting Area D
- York North Substation - Siting Area YN6
- 400 kV Overhead Line
- 275 kV Overhead Line

Constraints

- A19
- Railway Track
- National Cycle Network
- River
- Flood Zone 2
- Flood Zone 3
- Grade I Listed Building
- Grade II* Listed Building
- Ancient Woodland

Rev	Date	Description	GIS	Chk	App
0	06/01/2021	CPR & SS REPORT	EB	AB	AW

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Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 4.14
LOCATION OF OPTION D.YN6

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EB	06/01/2021	AB	06/01/2021	AW	06/01/2021

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Table 4.14: Option D.YN6 Appraisal Summary

Technical Discipline	Summary of Option D.YN6
Biodiversity	The Siting Areas avoid ecologically designated sites. The key ecological constraints across all Siting Areas include being within the Impact Risk Zone for the SSSI, crossing the River Ouse, a nature reserve, Moorlands Woodland, in the northwest of the Corridor. Burtree Dam running through YN6, and ponds with documented GCN populations east of the Corridor and inside northeast of the 400kV 2TWD overhead line. Impacts to all of these receptors can be minimised by routeing around them and ensuring protective buffer zones are maintained (e.g. 250m from ponds) and use of construction measures to minimise impacts to cross the River Ouse. Hedgerow and tree planting would be required to compensate for the loss and severance of hedgerows/woodland. New overhead lines could have negative impacts on bird populations (e.g. collision, flight path disruption, injury, mortality); further survey and consultation with Natural England would assess degree of risk new connections would pose. Mitigation for GCN (including provision of terrestrial habitat to replace that lost) will be required if they are present within the ponds, and an EPS licence is likely to be required. If a licence is required then as part of the licence there will be a need to explain the need for the project, that there isn't a satisfactory alternative and that GCN will not be harmed.
Physical Environment	This option is relatively constrained with flood zones located to the south and the Burtree Dam river running through YN6, however, some opportunities exist for mitigation through more detailed assessment, such as the completion of a FRA.
Landscape and Visual	This option has the potential to impact upon County level LCT 28 and local level LCA 26 due to the introduction of a new substation, CSEC and overhead line. The character of the landscape is generally of medium sensitivity with areas of lower sensitivity in relation to the presence of existing infrastructure closer to the urban fringe of York. There may be adverse effects from the introduction of additional large structures in the landscape, extending development into the rural farmland. There is also potential that the additional overhead line would result in a localised 'wirescape'. Views from residential and recreational receptors may be adversely affected, most notably views from largely open southern and eastern boundaries of Skelton (located directly east). In addition, views from Nether Poppleton (to the south west), and scattered residential receptors and other recreational receptors including the Forest of Galtres Golf Club may also be affected. Although residential areas on the outskirts of York (inside the A1237 outer ring road), including Rawcliffe are within relatively close proximity to the option it is anticipated that vegetation either side of the ring road would screen views of the option from these communities. Views from other settlements would be more limited due to a combination of distance and intervening landform and vegetation. The route of this option would also need to cross NCN Route 65 (Way of the Roses) once and the Yorkshire Ouse Walk long distance path once; as such there would inevitably be some adverse visual effects on users of these routes. Whilst it should be possible with this option to avoid a good proportion of potential adverse effects on the landscape and visual amenity, it is considered unlikely that all of the impacts could easily be mitigated, and significant residual effects are therefore possible. This option is moderately constrained, with a number of opportunities to avoid constraints and for mitigation through more detailed assessment, siting, routeing and construction which would prevent and/or reduce potential for significant landscape and visual effects, but a number of significant adverse effects may remain.
Heritage	It is likely that there will be no physical impacts to scheduled monuments, listed buildings, or the Registered Parks and Gardens. The scheme could result in impacts on the setting and character of the listed buildings and Conservation Area of Skelton, as well as Nether Poppleton, at the southern end of the Corridor. Positioning of the substation and the pylons associated with the new overhead line will be key to limiting setting impacts. Although impacts on non-designated assets have not been assessed as part of this study, significant impacts could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Settlement and Population	There are no relevant resources (primary schools, secondary schools, medical facilities, emergency services), no urban settlements are crossed or overlapped and population density is in the lowest band at 0-20 persons per hectare. Combined indirect impacts may be experienced by adjacent residential properties in Skelton due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN6. Every effort should be made both to avoid being close to residential properties when siting within YN6 and to mitigate noise, visual or air quality as far as is possible where impacts arise which together will minimise likelihood of combined indirect impacts on residential properties.
Tourism and Recreation	There are no relevant tourism and recreation resources other than the NCN which is crossed in several places. Temporary closure of the NCN is likely to be unavoidable in at least one location where the route crosses it and would necessitate diversions which could result in adverse direct impacts. Minimising the length of diversions and duration of closure would mitigate these direct impacts. Combined indirect impacts may be experienced by an adjacent accommodation facility (a hotel) due to the likelihood that construction activities and operational scheme infrastructure are located near to the perimeter of YN6. Every effort should be made both to avoid being close to the accommodation facility when siting within YN6 and to mitigate noise, visual or air quality as far as is possible where impacts arise. Whilst together this will reduce likelihood of combined indirect impacts on this receptor, it is likely that the facility would be adversely affected by the scheme if sited here due to proximity to it.
Land Use	Temporary construction works (including access) are unlikely to significantly affect land use or the long-term viability of functionality of any affected operations. During operation, the majority of agricultural operations and rural land uses would be able to continue below overhead lines. Direct operational effects on the businesses should be able to be avoided through careful routeing and siting. Agricultural land use operations above the cables connecting the CSECs would be able to continue. During operation, the substation and CSECs would result in the permanent loss of Grade 3 Agricultural Land. However, the majority of the northern section of the Study Area is Grade 3, the land take as a percentage is small, and its loss from an agricultural productivity perspective would be appropriately compensated where applicable; the substation and CSECs should be sited on Grade 3b (moderate quality) wherever practicable instead of Grade 3a (good quality). An operational effect on the golf course can be avoided if the eastern extent of the Corridor is used. Operational effects are unlikely to be significant with appropriate mitigation.
Planning	This option is wholly located within the Green Belt and within an area identified in the draft York Local Plan as an area of search for minerals and minerals safeguarding. There is an area of existing open space just to the south of the 2TWD Siting Area (Moorlands Nature Reserve) identified in the draft York Local Plan (Policy GI5). No significant planning (local plan land use allocations and relevant planning applications) impacts are likely to arise. Routeing adjustments will be required to avoid the strategic housing allocation at the south eastern extent of the Corridor (east of Skelton).
Traffic and Access	Direct access to YN6 is available from the A19 via new or via an existing farm access road located at north western site boundary; some widening of the A19 may be required to form the new junction. There is limited access between the River Ouse and the railway line; this may necessitate the use of a temporary bailey bridge and access track to enable a connection to be made between the substation and the existing 275kV overhead line.
Engineering	CSEC Sufficient room is generally available to accommodate works, however there are restrictions north of pylons YR036 and YR037 due to farm buildings and horse manège, plus vegetation to the south and there is a pond and a farm south of pylon YR035 Overhead Lines Length 400kV overhead line = 4.0km (double circuit) Length 275kV overhead line = 2.0km (double circuit) Length 275kV Dismantling = 0.1km (double circuit) Number of 275kV Dismantling Towers = 1

Technical Discipline	Summary of Option D.YN6
	Length of 275kV Reconductoring = 36.5km Major Crossings for 400kV overhead line = 1 Major Crossings for 275kV overhead line = 4 400kV Temp Diversions = 1, proximity of farms to the north, depending on chosen tower 275kV Temp Diversions = 1, within Flood Zones 2 & 3, crossing of River Ouse, restricted to west due to ECML YN6 - room to accommodate proposed configuration & straightforward line entries Approx. 0% of 400kV in Flood Zones 2 & 3 Approx. 75% of 275kV in Flood Zones 2 & 3 No opportunity to reuse existing 2TW/YR assets - replacement tower & temporary diversion needed Pinch point near A19 between hotel & restaurant for 275kV overhead lines - tree clearance required Longer accesses beyond Corban Lane, shorter nearer to A19 Temporary diversion for 275kV overhead lines close to ECML - restricted to the west Access required to 'island' between River Ouse & ECML for new 275kV overhead lines - crossing of railway Currently unrestricted views from Skelton properties to open fields where YN6 is proposed Opportunity to parallel 275kV overhead lines <u>Substation</u> Sufficient space to accommodate different layouts Adjacent the A19 so minimal new/upgraded access works required
Cost	Estimated total (capital and lifetime) cost of this option is £250.92m

4.8 The Holford Rules and Horlock Rules

4.8.1 The following paragraphs provide commentary of the extent to which the appraised options accord with the Holford Rules and Horlock Rules.

4.8.2 It is acknowledged that all of the appraised corridors accord with Holford Rule 1 - they avoid major areas of highest amenity value. With regard to Holford Rule 2, it is assumed a route could be identified within each corridor to avoid smaller areas of high amenity value. Corridor A is the longest of the options and is likely to involve a notable change in direction, it is reasonable to assume that a route within Corridor A would likely have more changes in direction however, sharp changes in direction cannot be discounted in any of the corridors as this is dependent on any localised constraints to routeing of the final design. Corridor B is the shortest and most direct of the options therefore is considered most closely to accord with Holford Rule 3. With regard to Rule 4, the northern part of Corridor A is larger in landscape scale and more open and therefore more pylons may be visible against a sky background. The skyline of this landscape is however not particularly distinctive or prominent and is already influenced by vertical infrastructure. Due to the flat landscape context, Holford Rule 6 would not differentiate between the options. Holford Rule 7 isn't considered to be applicable to this study.

4.8.3 With regard to the Horlock Rules, none of the CSEC or substation Siting Areas appraised would impact on any nationally valued landscapes. Within each of these Siting Areas it is considered possible for infrastructure to be sited to avoid areas of local amenity value. The greatest opportunity to take advantage of existing screening provided by vegetation is provided by Siting Area YN5b and to a lesser extent YN5a, however neither of these sites are considered to align closely with the supplementary note of the Holford Rules to "*avoid routeing close to residential areas as far as possible on grounds of general amenity*" as they would require large terminal structures near to residential areas. The Siting Areas which have least number of opportunities to take advantage of existing screening are YN4a and YN4b - these lie close to the River Ouse Corridor and are slightly elevated in relation to the river, with little intervening vegetation cover. While the other Siting Areas, including Siting Area YN3b, have fewer opportunities to take advantage of existing screening additional mitigation in the form of earth mounding/ planting could be implemented to help mitigate impacts. For example, for Siting Area YN3b there is an opportunity to supplement existing vegetation to screen the substation and sufficient space to site the substation to limit potential significant visual impacts.

4.8.4 Guidelines 7, 8 and 9 of the Horlock Rules (relating to design) should be considered in the siting and design of a new CSEC and substation. It is important to ensure that additional mitigation planting is designed to respect the character and fabric of the landscape.

4.9 York North Preferred Option

4.9.1 As outlined in **Section 2.2** of this report, a Preferred Option Workshop was held to consider the potential effect of the Project on the receptors within each option. Representatives from all technical disciplines attended to ensure the discussions were balanced and considered all constraints.

4.9.2 The workshop concluded Option B.YN3b as the preferred option for York North, while acknowledging that there are a number of constraints that will be subject to further

analysis and potential mitigation to reduce and limit impacts. The conclusion was based on a comparison of the different options and on balance, Option B.YN3b is the option with the fewest constraints or those that were considered could be feasibly managed through the implementation of mitigation. While there are no significant planning policy considerations to differentiate between the options (i.e. Green Belt, mineral safeguarding or Aerodrome Safeguarding Area), it is acknowledged that engagement will be required with the local planning authority, MPA and RAF Linton-on-Ouse to discuss existing designations and seek agreement that the relevant policy requirements can be met.

4.9.3 Option B.YN5b was also considered favourable when compared to the other options, but there were constraints associated with this option that were not present for Option B.YN3b. These included the proximity of Siting Area YN5b to the settlement of Skelton, approximately 100m to the south, which includes the Conservation Area of Skelton, although it was acknowledged that the existing setting provides a reasonable level of screening from the wider area. The Forest of Galtres Golf Club is located directly to the north of Siting Area YN5b and while the intention was to avoid crossing the Golf Club with any overhead lines, there was the potential for impacts on the Golf Club. From an ecological perspective, Siting Area YN5b was also considered less favourable than Siting Area YN3b due to the presence of Pennell's Drain within its boundary; depending on the siting and layout of the substation there was potential for impacts on this watercourse. In addition, the overhead line into Siting Area YN5b had the potential to impact several woodland areas to the north.

4.9.4 From an engineering perspective, Siting Area YN3b provides sufficient space to accommodate the substation. The total overhead line (400kV and 275kV) required would be approximately 6km in length; a direct route largely clear of constraints exists between the 400kV 2TW/YR overhead line and Siting Area YN3b.

4.9.5 Option B.YN3b provides direct access from the A19 to Siting Area YN3b, with limited disruption to the local network. The access roads are out of the flood plain and it is considered that the potential effects on the NCN can be managed (or enhanced as part of proposals). The Siting Area is located away from any residential properties, with the closest being Overton Grange Farm approximately 800m to the south of the site.

4.9.6 Biodiversity constraints of Siting Area YN3b includes three ponds and while the presence of GCN has not been confirmed at this stage, there remains the potential and further survey work should be undertaken to confirm. Mitigation for GCN (including provision of terrestrial habitat to replace that lost) will be required if they are present within the ponds, and an EPS licence is likely to be required. If a licence is required then as part of the licence there will be a need to explain the need for the project, that there isn't a satisfactory alternative and that GCN will not be harmed. To the north, east and south of Siting Area YN3b, Corridor B includes Hurns Gutter, over which crossing of the 400kV overhead line should be limited, where possible, through more detailed routeing and siting.

4.9.7 Siting Area YN3b is situated in open arable fields containing only approximately six mature isolated trees hence few valued landscape elements would need to be removed. While Siting Area YN3b is not considered to best align with the aims of the Horlock Rules when compared with the alternative Siting Areas (see **Section 4.8**), the overall combination of Siting Area YN3b and Corridor B provide the preferred option with respect to the Horlock and Holford Rules combined and technical

feasibility. Planting will be required to mitigate the potential visual impact of the York North substation, however, there is the opportunity to supplement the vegetation along Hurns Gutter, along the ECML railway and the road corridor. The Siting Area also lies furthest away from away from the River Ouse and the Ouse Valley LCT which has high landscape sensitivity.

4.9.8 Overall, given that Option B.YN3b offers the potential for one of the shortest and most direct routes from the 2TW 400kV overhead line (with Corridor B considered to best align with the Holford Rules (see **Section 4.8**)); benefits from being sited away from settlements and individual residential properties; presents an opportunity to mitigate potential landscape and visual impacts through planting and careful siting, it was considered, on balance, to be the preferred option for York North. Careful mitigation should be integrated into the design of the Project as it is developed to limit visual impact.

4.9.9 Following the selection of the preferred Corridor, two graduated swathes were developed, based on a preliminary route for the proposed 400kV overhead line to Siting Area YN3b, and two routeing options developed for the two 275kV overhead lines connecting to the existing XCP 275kV overhead line. Two options are provided at this stage as further investigation and analysis of the potential ecological impacts of the crossing of the River Ouse is required. This will be determined through further data collection and consultation with Natural England. A summary of the options is presented below.

Option 1

4.9.10 This option comprises a new 275kV overhead line from Siting Area YN3b, crossing perpendicular to the ECM railway line, routeing broadly towards the eastern extent of Overton Wood and to the north-west of Overton Grange Farm, before turning in a south-westerly direction towards the River Ouse, crossing perpendicular to it, and connecting into the existing 275kV XCP overhead line. The second new 275kV overhead line would extend from Siting Area YN3b, routeing in a southerly direction, parallel with the ECM railway line, connecting into the existing 275kV XCP overhead line at the point at which it turns from an east/west to a southerly direction towards Poppleton. As part of this option, up to 2.5km of the existing XCP 275kV overhead line would be permanently dismantled.

4.9.11 The benefits of this option are largely associated with landscape and visual impacts from the dismantling work. It is expected that the viewscape from Overton, Nether Poppleton/Upper Poppleton and the community to the south and north of the River Ouse would be improved due to the removal of up to 2.5km of the existing XCP 275kV overhead line. Also, the removal of the XCP 275kV overhead line would reduce the risk of localised wirescape.

4.9.12 While there are benefits associated with this option, there is also the potential for ecological impacts on the River Ouse, Hurns Gutter, the Overton Borrowpit SINC and small areas of woodland. A potential adverse impact is associated with the new 275kV overhead line crossing the River Ouse, which would result in some loss of habitat and could increase collision risk with birds. However, the existing XCP 275kV overhead line, which crosses the River Ouse, would be removed which would help mitigate against environmental impacts.

Option 2

4.9.13 This option comprises a new 275kV overhead line from Siting Area 3b, crossing perpendicular to the ECM railway line, then turning sharply in a southerly direction,

parallel with the ECM railway line, before connecting into the existing XCP 275kV overhead line. The second new 275kV overhead line from Siting Area 3b would follow the same route as proposed for Option 1 routeing in a southerly direction, parallel with the ECM railway line. As part of this option, up to 700m of the existing XCP 275kV overhead line would be permanently dismantled.

4.9.14 The viewscape would be improved from Overton, Nether Poppleton/Upper Poppleton due to the dismantling work, however it would be to a lesser extent than for Option 1. In addition, and similar to Option 1, the risk of wirescape would be reduced, but again to a lesser extent. Option 2 is situated further from the River Ouse, which is of greater benefit from an ecological perspective as the potential risk to wintering birds is expected to be reduced. As the second new 275kV overhead line for this option follows the same route as Option 1, the same potential ecological impacts are also applicable.

4.9.15 The preferred Siting Areas for the CSECs and substation have been developed as graduated preliminary locations. The graduated swathes (Option 1 and Option 2) and graduated preliminary locations are combined and are presented in **Figure 4.15** and **Figure 4.16**. The darker area indicates the preferred location of the infrastructure with the final locations to be determined following potential modifications based on public and stakeholder feedback.

Figure 4.15: Option 1 - Graduated Preliminary Route Swathe and Graduated Preliminary Locations of CSEC and Substation at York North

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Yorkshire GREEN Works

North west of York graduated swathe - option 1

Key	
	Potential alignment of new 400kV overhead line
	Potential alignment of the two new 275kV overhead lines
	Preliminary location of infrastructure, including the substation and cable sealing end compounds
	Existing properties
	Existing 400kV overhead line
	Existing 275kV overhead line
	Partial removal of the existing 275kV Poppleton to Monk Fryston overhead line
	District boundary
	North west of York corridor boundary

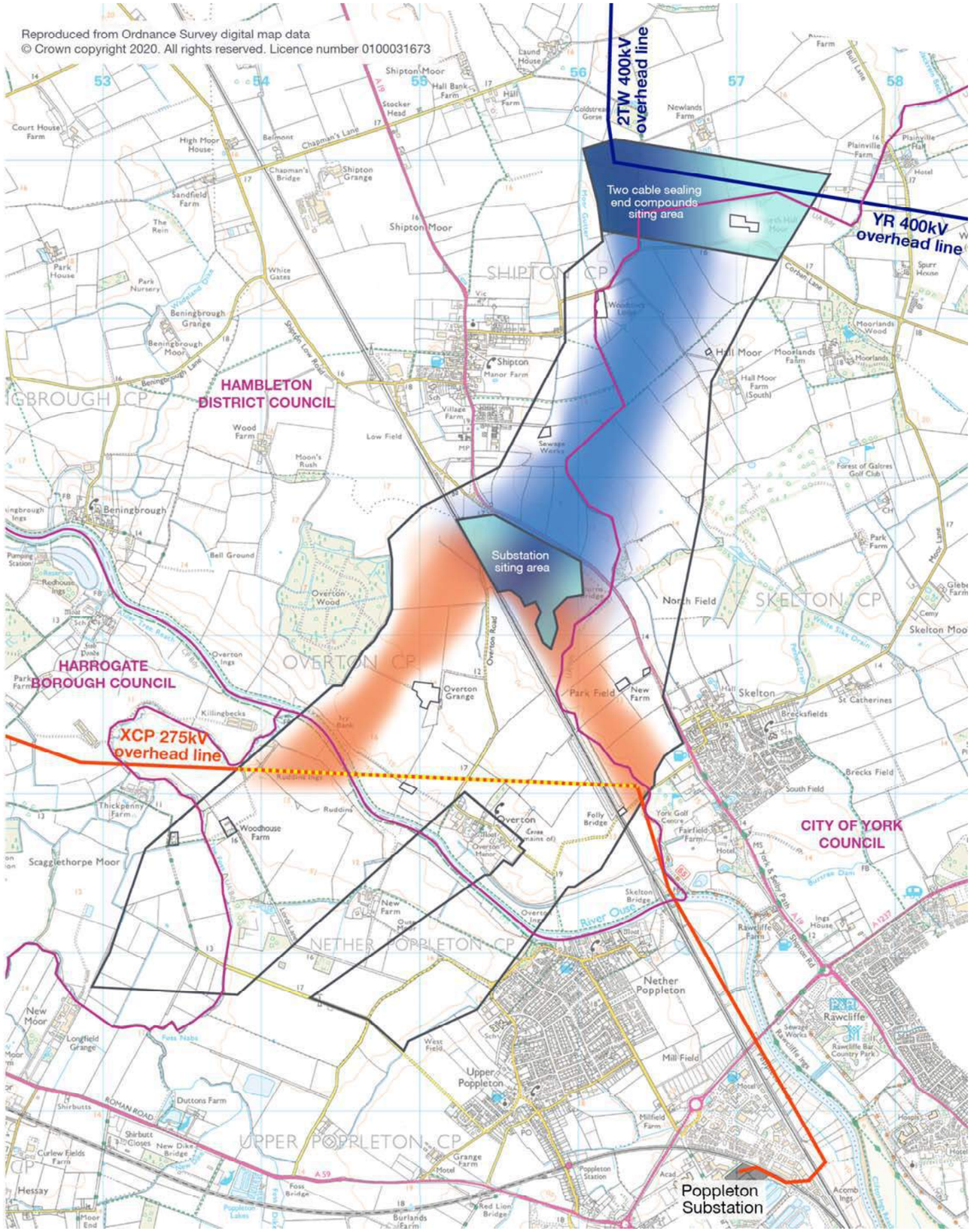


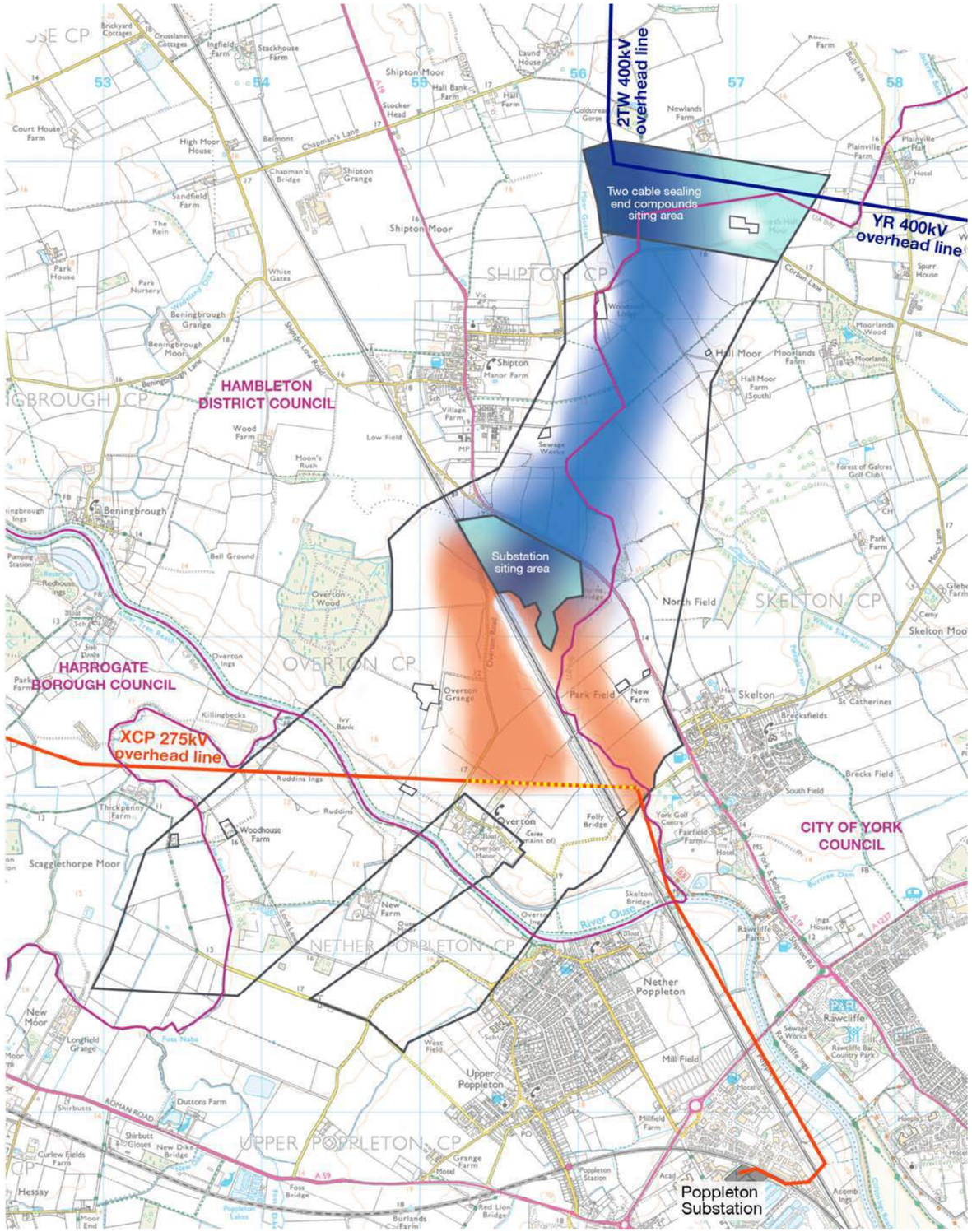
Figure 4.16: Option 2 - Graduated Preliminary Route Swathe and Graduated Preliminary Locations of CSEC and Substation at York North

nationalgrid

Yorkshire GREEN Works

North west of York graduated swathe - option 2

Key	
	Potential alignment of new 400kV overhead line
	Potential alignment of the two new 275kV overhead lines
	Preliminary location of infrastructure, including the substation and cable sealing end compounds
	Existing properties
	Existing 400kV overhead line
	Existing 275kV overhead line
	Partial removal of the existing 275kV Poppleton to Monk Fryston overhead line
	District boundary
	North west of York corridor boundary



5. TADCASTER OPTIONS APPRAISAL

5.1 Approach to Appraisal

5.1.1 The Tadcaster options appraisal refers to the appraisal of the CSEC Siting Areas identified on the XC and XD overhead lines near Tadcaster.

5.1.2 The overall objective of this stage of the options appraisal process was to identify potential sites to locate the two CSECs (one on the XD overhead line and one on the XC overhead line) which best balances the effects on the environment and local community, whilst having regard to technical and engineering feasibility. In addition, an underground cable is also required to connect the two CSECs. This component was not considered in detail as part of the options appraisal process given that it is feasible to route the cable sensitively between the preferred Siting Areas within the Underground Cable Siting Areas (i.e. via existing roads and tracks) (refer to **Figure 5.1**). The preference from both a technical and environmental perspective is for a shorter length of underground cable, resulting in less impact on the environment while also ensuring cost efficiency. The overall approach taken is summarised in **Chapter 2** of this report.

5.2 CSEC Siting Area Identification

5.2.1 The following factors were considered when identifying potential Siting Areas for the CSECs:

- Proximity to existing infrastructure: As set out in **Section 2.3** of this report a key driver for identifying the location of Siting Areas for the CSECs substation was proximity to the existing XC and XD overhead lines and pylons associated with those overhead lines.
- Land take: The CSEC Siting Area requires sufficient space to accommodate the CSEC footprint (approximately 50m x 40m).
- Existing environment: The Siting Area locations sought to avoid known environmental and socio-economic constraints, where possible.
- Guidelines, adopted by National Grid, on the Siting and Design of Substations (the Horlock Rules).

5.2.2 **Figure 5.1** shows the ten Siting Areas identified as potential locations for the two CSECs of which three are located on the XC overhead line and seven on the XD overhead line with **Appendix 5A** showing the wider context of the area. All Siting Areas have been subject to an options appraisal, which enabled the identification of two preferred Siting Areas. The options appraisal involved the detailed analysis of the Siting Areas for the technical disciplines outlined in **Chapter 2** of this report.

5.2.3 **Sections 5.3 to 5.12** of this report summarise the appraisal for each of the Siting Areas and presents the analysis of the following environmental disciplines:

- biodiversity;
- landscape and visual;
- heritage;
- settlement and population; and

- traffic and access.

5.2.4 Whilst detailed analysis was conducted for the other disciplines (physical environment, settlement and population, tourism and recreation, land use, planning and engineering) they did not identify any significant features or constraints which would differentiate between the Siting Areas. A summary of the review of these disciplines is provided in the following paragraphs along with a summary of the engineering analysis of each Siting Area.

5.2.5 Across all Siting Areas there are no relevant tourism and recreation resources. While there are several residential properties located both between Siting Area XD1 and Siting Area XC1 as well as within the wider area, there are no clusters of five or more residential properties, which is the focus of the settlement and population appraisal. The only difference between the Siting Areas from a settlement and population perspective is the potential use of the field within which Siting Area XD4 and Siting Area XD5 are located, which is used for educational purposes by the University of Leeds. From a planning perspective, all Siting Areas are located in land designated as Green Belt and within a Mineral Safeguarding Area as defined in the draft Minerals and Waste Joint Plan[10].

5.2.6 None of the Siting Areas are located within proximity to any watercourses or situated in areas of flood zone. Except for Siting Area XC2 all the Siting Areas are located within a Source Protection Zone III area, although the percentage of land covered varies from 100% to 46%. Bedrock geology across the Siting Areas largely comprises the Zechstein Group. No aquifers were identified across the area. For Siting Area XC1 a small section is located within the Defra Risk of Flooding from Surface Water, but it is not considered to be significant.

5.2.7 From an engineering perspective, all XC and XD Siting Areas provide sufficient space to accommodate the CSEC, with the key differentiator being the length of underground cabling required to connect the two CSECs. Siting Area XC1 also has the advantage over the other XC Siting Areas as the existing pylon can be reused limiting the required construction and cost. The shortest underground cabling section was identified for Siting Area XC1 to connect with Siting Area XD1 with a total approximate length of 0.5km. The longest underground cabling section would be to connect Siting Area XC3 with Siting Area XD7, which would require an approximate length of 2.5km.

5.2.8 Costs are not provided for each Siting Area; instead the cost associated with the works at Tadcaster have been captured in overall costs calculated for each of the combined options at York North.

[10] https://maps.northyorks.gov.uk/connect/analyst/mobile/#/main?mapcfg=mwjp. Accessed 25th February 2021

N

Toulston Wood

Tadcaster Grammar School

Toulson Ground

Lordswood Cricket School

Highmoor Farm

Wise Warren

XD 275kV Overhead Line

Braham Substation

Headley Cottages

Headley Hall

Brick House Farm

XC 275kV Overhead Line

0 0.2 0.4 0.6 0.8 1 km

LEGEND

- Study Area
- Substation
- 275 kV Overhead Line

Siting Area for underground cabling

- XC
- XD

Siting Area for XC CSEC

- XC Siting Zone 1
- XC Siting Zone 2
- XC Siting Zone 3

Siting Area for XD CSEC

- XD Siting Zone 1
- XD Siting Zone 2
- XD Siting Zone 3
- XD Siting Zone 4
- XD Siting Zone 5
- XD Siting Zone 6
- XD Siting Zone 7

Constraints

- Garnet Lane
- Warren Lane
- A64
- A659
- Ancient Woodland

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FIGURE 5.1
LOCATION OF SITING AREAS FOR CSEC
ON THE XD AND XC OVERHEAD LINE

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Overview of Siting Area XC1

5.2.9 Siting Area XC1 is located directly north of the A64 and spans across the south eastern corner of an arable field and a recently planted area of woodland. Brick House Farm is located approximately 100m west of the Siting Area. An angle/ tension pylon sits in the northern section of the Siting Area.

5.2.10 **Figure 5.1** provides a description of Siting Area XC1 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.1: Siting Area XC1 Appraisal Summary

Technical Discipline	Summary of Siting Area XC1
Biodiversity	There are no significant ecological constraints (i.e. designated sites) in Siting Area XC1 and its proximity to existing infrastructure is considered beneficial i.e. avoiding disruption of less developed areas. There is a SINC on the opposite side of the A64, which means indirect impacts are not expected. Siting Area XC1 is currently in use as agricultural fields and as such is considered to be of limited value for wildlife. There remain some habitat features on the site that should be subject to thorough survey to ensure they do not harbour protected species (i.e. habitats in hedgerows, field margins), such as bats and badger and that the habitats are not of high ecological value (i.e. species rich hedgerow). If woodland habitat is to be lost as a result of the project, replacement planting would be required to ensure no net loss. Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitat such as hedgerows should preclude significant impacts to ecological receptors on / near the site.
Landscape and Visual	**Landscape Designations** There are no nationally designated landscapes within 5km of Siting Area XC1. Siting Area XC1 is located within the Selby Important Landscape Area. This landscape receptor is of regional/local value and typically of varying sensitivity to Siting Area XC1. Bramham Park, a Grade I Registered Park and Garden is located approximately 3.7km to the south west. This valued historic landscape is considered to be of high sensitivity to Siting Area XC1, however it is not expected that the construction of the CSEC on Siting Area XC1 will have a significant impact to these features. **Landscape Character** Siting Area XC1 falls within the Southern Magnesian Limestone NCA. Overall, this NCA is considered to be of regional value and is likely to vary in sensitivity with areas of lower sensitivity typically where infrastructure, large scale commercial development and urban land use influence tranquillity and character. At a county and local level Siting Area XC1 is located within North Yorkshire Landscape Characterisation LCT 6: Magnesium Limestone Ridge and Selby LCA 8 West Selby Limestone Ridge. The LCT and LCA are of regional/local value and of varying sensitivity to Siting Area XC1. Landscape sensitivity in the vicinity of the site is low as it is already affected by the A64, A659, a quarry and a number of overhead lines. **Visual Amenity** The following settlements lie within approximately 3km of the Siting Area XC1: Towton, Stutton and Tadcaster. In addition, there are scattered properties within 3km of the Siting Area XC1, including the following: • Brick House Farm and adjacent property which lie adjacent to the Siting Area to the east; and

Technical Discipline	Summary of Siting Area XC1
	• High Moor Farm approximately 500m to the north. Views from residential receptors in the area may be adversely affected, although a new CSEC would be seen in the context of existing overhead lines. There is potential for residents immediately adjacent to the site at Brick House Farm and the adjacent property to be adversely affected due to their proximity although intervening existing planting would provide some immediate screening and filtering of views. There is also the potential for views from High Moor Farm to the north; albeit existing tree cover would provide some filtering/ screening of lower parts of a CSEC. People travelling on the A64 would potentially have close up views of a new CSEC; however, these receptors are of lower sensitivity and a large angle/ tension pylon is already highly visible in views from a short section of the A64. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are within 1km of Siting Area XC1 to the north but are largely enclosed by belts and blocks of woodland which screen views of the site. There are no National Trails within 3km of Siting Area XC1. Ebor Way, a Regional Trail, broadly follows the course of the River Wharfe to the north, being approximately 2.5 km away to the north east at its closest point. Furthermore, there are no NCN routes or recreational areas or facilities within 3km of Siting Area XC1. Overall, Siting Area XC1 has few constraints with opportunities for mitigation through more detailed assessment, siting, design and construction which would prevent/ reduce the potential for significant landscape effects, but adverse effects may remain.
Heritage	There are no designated assets within the Siting Area XC1, with only a limited number of listed buildings in the wider area. The nearest asset is a Grade II listed milestone (1132446) located over 400m away to west. The remaining listed buildings are both located over 1km from the Siting Area and comprise a milestone 1.2km to the north-north east (1132445), and a windmill 1.2km to the north east (1296547). These are also all Grade II listed. There are no other designated assets within the surrounding area. The construction of the CSEC in Siting Area XC1 is not expected to impact the setting of any designated assets, but there is potential for unrecorded archaeology to exist in the area, which could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Traffic and Access	It is expected that Siting Area XC1 will be accessed from A659 and through existing Brick House Farm, where established access already exists for National Grid's use. Routing is unlikely along Garnet Lane to the north of the site due to the very narrow, weight restricted road. Good access is available to the west to the A659 and subsequently A64. Traffic and access is not considered to be a constraint to Siting Area XC1.

Overview of Siting Area XC2

5.2.11 Siting Area XC2, located to the north of the A64 and Garnet Lane, is wholly located within a medium-scale, arable field which sits at a slightly elevated level in relation to surrounding fields. The field is enclosed in part by fragmented hedgerow, with some hedgerow loss to the north east. The site is bounded to the south east and south west by Garnet Lane and roadside hedgerows. Tree cover nearby is within the grounds of Brick House Farm and the adjacent property which are located immediately to the south. The XC overhead line runs along the north western boundary of Siting Area XC2.

5.2.12 **Table 5.2** provides a description of Siting Area XC2 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.2: Siting Area XC2 Appraisal Summary

Technical Discipline	Summary of Siting Area XC2
Biodiversity	The summary presented for Siting Area XC1 is also valid for Siting Area XC2, with the exception of the location of the SINC, which is located approximately 250m south west of Siting Area XC2.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XC1 is also valid for Siting Area XC2, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 3.9km to the south west. **Landscape Character** The summary presented for Siting Area XC1 is also valid for Siting Area XC2. **Visual Amenity** The summary presented for Siting Area XC1 is also valid for Siting Area XC2, with the exception of the differences in relation to scattered properties within 3km of the Siting Area as follows: • Brick House Farm and adjacent property lie immediately to the south; • High Moor Farm is located approximately 300m to the north west; • An additional property lies approximately 50m to the south east; • Properties on Garnet Lane including properties on Garnet Terrace between 300m and 600m to the east; and • Views from Tadcaster approximately 1km to the north east. Views from residential receptors in the area may be adversely affected. Although a new CSEC would be seen in the context of existing overhead lines. There is potential for several residents along Garnet Lane, in close proximity to Siting Area XC2, to be adversely affected due to their proximity and limited intervening vegetation. Residential receptors at High Moor Farm to the north are also likely to be adversely affected as they would experience direct views with limited existing screening. Residential receptors to the north east and at Garnet Terrace may also be adversely affected. Views from the settlement of Tadcaster may be adversely affected although distance and intervening features may help to filter some views. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are within 1km of Siting Area XC2 to the north but are largely enclosed by belts and blocks of woodland which screen views of the site. There are no National Trails within 3km of Siting Area XC2. Ebor Way is located approximately 2.7 km away to the north east at its closest point. NCN Route 66 is located approximately 2.7 km to the south west at its closest point. There are no designated recreational areas or facilities within 3km of the site.

Technical Discipline	Summary of Siting Area XC2
	Overall, Siting Area XC2 is moderately constrained, mainly from a visual perspective with opportunities for landscape mitigation through more detailed assessment, siting, design and construction which would reduce potential for significant landscape effects, but adverse effects may remain.
Heritage	The summary presented for Siting Area XC1 is also valid for Siting Area XC2, with the exception of the distances to nearby assets as summarised below: • Grade II listed milestone (1132446) is located over 600m to the south west; • Grade II listed milestone (1132445) is located approximately 1km to the north east; and • Grade II listed windmill (1296547) is located approximately 1km to the north east.
Traffic and Access	While there is no current formal vehicular access point directly into Siting Area XC2, it is expected that access will be gained via existing field access linking the west to the A659 and subsequently A64. Traffic and access is not considered to be a constraint to Siting Area XC1.

Overview of Siting Area XC3

5.2.13 Siting Area XC3 is north of the A64 and straddles two medium-scale, arable fields with a field boundary formed by a drainage ditch and sits at a slightly elevated level in relation to surrounding fields. The north west boundary is formed by the A659. The pattern of arable fields extends out to nearby blocks and belts of trees. These partially enclose the landscape, which is more open to the north west. The XC overhead line runs along the north boundary of the site.

5.2.14 **Table 5.3** provides a description of Siting Area XC3 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.3: Siting Area XC3 Appraisal Summary

Technical Discipline	Summary of Siting Area XC3
Biodiversity	As with Siting Areas XC1 and XC3 there are no significant ecological constraints (i.e. designated sites) in Siting Area XC3, however the hedgerow that divides the two fields which Siting Area XC3 straddles connects with the SINC located approximately 90m south and could be used as a flight line by bats. Given the site's current apparent use as agricultural land, the site is of limited value for wildlife, with the exception of a commuting route for bats. There remain some habitat features on the site that should be subject to survey to ensure they do not harbour protected species (i.e., habitats in hedgerows, field margins), such as bats and badger and that the habitats are not of high ecological value,(i.e. species rich hedgerow). Furthermore, the proximity to existing infrastructure is beneficial (avoiding disruption of less developed areas). Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitat such as hedgerows should preclude significant impacts to ecological receptors on / near the site.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XC1 is also valid for Siting Area XC3, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 3.2km to the south west. **Landscape Character** The summary presented for Siting Area XC1 is also valid for Siting Area XC3.

Technical Discipline	Summary of Siting Area XC3
	Visual Amenity The following settlements lie within approximately 3km of Siting Area XC3: Bramham, Clifford, Stutton and Tadcaster. There are scattered properties within 3km of the Siting Area, including the following: • Brick House Farm and adjacent property within 300m of the site to the south; • High Moor Farm located approximately 200m to the north west; • An additional property located approximately 200m away to the south east; • Views from Tadcaster approximately 700m to the north east; and • Properties on Garnet Lane including properties on Garnet Terrace located between 150m and 350m to the east. Views from residential receptors in the area may be adversely affected. Although a new CSEC would be seen in the context of existing overhead lines. There is potential for nearby residents at High Moor Farm and those along Garnet Lane (including Garnet Terrace, Brick House Farm and the adjacent property) to be adversely affected due to their proximity (between approximately 150 and 300m) to the Option and the lack of intervening vegetation. Views from the settlement of Tadcaster are also likely to be adversely affected. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are within 1km of Siting Area XC3 to the north but are largely enclosed by belts and blocks of woodland which screen views of the site. There are no National Trails within 3km of Siting Area XC3. Ebor Way is located approximately 2.7 km away to the north east at its closest point. NCN Route 66 is located approximately 2.7 km to the south west at its closest point. There are no designated recreational areas or facilities within 3km of the site. Overall, there is potential for adverse visual effects, but the CSEC could, over time, be screened by a combination of appropriate mounding/ false cuttings and/ or mitigation planting. The upper parts of the CSEC may continue to be visible from receptors in the surrounding local area; however, the existing overhead line is currently visible in these views. Some locally significant residual visual effects are possible.
Heritage	The summary presented for Siting Area XC1 is also valid for Siting Area XC2, with the exception of the distances to nearby assets as summarised below: • Grade II listed milestone (1132446) is located over 800m to the south west; • Grade II listed milestone (1132445) is located approximately 800m to the north east; and • Grade II listed windmill (1296547) is located approximately 1km to the north east.
Traffic and Access	The Siting Area is bounded by open fields with very limited potential for vehicular access north of the bend on Garnet Lane. Access unlikely to be given along Garnet Lane to east of the site due to narrow lane with weight restriction. The only other means of access via the same as Siting Area XC2 with additional length of haul road from the new access to the XC3 site. Overall, the Siting Area XC3 is considered to be more constrained than Siting Area XC1 and XC2.

Overview of Siting Area XD1

5.2.15 Siting Area XD1 is located north of the A64 within two medium-scale, arable fields and spans a field boundary formed by a drainage ditch. Landform slopes gently down to the south to the A64. The north west boundary is formed by the A659. The pattern of arable fields extends out to nearby blocks and belts of trees. These partially enclose the landscape, which is more open to the north west. The XD overhead line runs along the north boundary of the site.

5.2.16 **Table 5.4** provides a description of Siting Area XD1 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.4: Siting Area XD1 Appraisal Summary

Technical Discipline	Summary of Siting Area XD1
Biodiversity	There are no significant ecological constraints (i.e. designated sites which will be directly impacted) in Siting Area XD1. There is a SINC within 350m on the opposite side of the A64, however indirect impacts are not anticipated. There are no boundary features (hedgerows) in Siting Area XD1, although there are small woodlands 75m south of the site boundary, which may support protected species (e.g. badger, bats, birds). Given the site's current apparent use as agricultural land, the site is of limited value for wildlife. There remain some habitat features in the vicinity that should be subject to survey to ensure they do not harbour protected species (i.e., small woodland area), such as bats and badger and that the habitats are not of high ecological value, (i.e. species rich hedgerow). Furthermore, the proximity to existing infrastructure is beneficial (avoiding disruption of less developed areas). Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitat such as hedgerows should preclude significant impacts to ecological receptors on / near the site.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XC1 is also valid for Siting Area XD1, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 3.2km to the south west. **Landscape Character** The summary presented for Siting Area XC1 is also valid for Siting Area XD1. **Visual Amenity** The following settlements lie within approximately 3km of the Siting Area: Bramham, Clifford, Stutton and Tadcaster. There are scattered properties within 3km of the Siting Area, including the following: • Brick House Farm and adjacent property approximately 250m to the east although views are filtered by intervening blocks of trees; • High Moor Grange Farm approximately 580m to the north west; and • High Moor Farm approximately 580m to the north east. Views from residential receptors in the area may be adversely affected. Although a new CSEC would be seen in the context of existing overhead lines. There is potential for residents to the east of the site at Brick House Farm and the adjacent property to be adversely affected due to their proximity although existing woodland planting around the properties would provide some immediate screening and filtering of views. There is also the potential for views from High Moor Farm to the north east and High Moor Grange Farm to the north west. People travelling on the A659 would potentially have close up views of a new CSEC. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are located within 1km of the site to the north. There are no National Trails within 3km of the Siting Area. Ebor Way is located approximately 2.7 km away to the north east at its closest point. NCN Route 66 is located approximately 2.7 km to the south west at its closest point. There are no designated recreational areas or facilities within 3km of the site.

Technical Discipline	Summary of Siting Area XD1
	Overall, Siting Area XD1 is considered to have some constraints with opportunities for landscape mitigation through more detailed assessment, siting, design and construction which would reduce the potential significant landscape effects, but adverse effects may remain.
Heritage	The summary presented for Siting Area XC1 is also valid for Siting Area XD1, with the exception of the distances to nearby assets as summarised below: • Grade II listed milestone (1132446) is located immediately west; • Grade II listed milestone (1132445) is located approximately 1.3km to the north- north east; and • Grade II listed windmill (1296547) is located approximately 1.4 km to the north east.
Traffic and Access	Existing access used for agricultural purposes would need upgrading to facilitate access. The A659 is subject to national speed limit restrictions, but is relatively straight in horizontal alignment which facilitates visibility. Siting Area XD1 offers a good location for routing north along A659 itself or south towards A64. Overall, Siting Area XD1 is not considered to be constrained by traffic and access with a route available directly from the A659.

Overview of Siting Area XD2

5.2.17 Siting Area XD2 is located to the east of the A659 and spans two, small to medium-scale arable fields enclosed and separated by well-maintained hedgerows with few boundary trees. Landform slopes gently down to the west. The XD overhead line runs along the north boundary of Siting Area XD2.

5.2.18 **Table 5.5** provides a description of Siting Area XD2 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.5: Siting Area XD2 Appraisal Summary

Technical Discipline	Summary of Siting Area XD2
Biodiversity	There are no significant ecological constraints (i.e. designated sites which will be directly impacted) in Siting Area XD2. There is a hedgerow within Siting Area XD2, which may support protected species (e.g. badger, bats, birds). Given the site's current apparent use as agricultural land, the site is of limited value for wildlife. There remain some habitat features in Siting Area XD2 that should be subject to survey to ensure they do not harbour protected species (i.e. hedgerow), such as bats and badger and that the habitats are not of high ecological value (i.e. species rich hedgerow). Furthermore, the proximity to existing infrastructure is beneficial (avoiding disruption of less developed areas). Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitat such as hedgerows should preclude significant impacts to ecological receptors on / near the site.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XC1 is also valid for Siting Area XD2, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 3km to the south west and Parlington Estate, a Grade II Registered Park and Garden is located approximately 5km to the south west. **Landscape Character** The summary presented for Siting Area XC1 is also valid for Siting Area XD2. **Visual Amenity**

Technical Discipline	Summary of Siting Area XD2
	The following settlements lie within approximately 3km of the Siting Area: Bramham, Clifford, Stutton and Tadcaster. There are scattered properties within 3km of the Siting Area, including the following: • Brick House Farm and adjacent property approximately 590m to the east although views are filtered by intervening blocks of trees; • High Moor Grange Farm approximately 300m to the north west; and • High Moor Farm approximately 700m to the north east. Views from residential receptors in the area may be adversely affected. Although a new CSEC would be seen in the context of existing overhead lines, there is potential for residents within the vicinity of the site at High Moor Grange Farm and High Moor Farm to be adversely affected due to their proximity and the lack of intervening vegetation. Residential receptors at Brick House Farm may also be adversely affected although intervening woodland planting would bring some immediate mitigation. People travelling on the A659 would potentially have close up views of a new CSEC. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are located within 1km of the site to the north. There are no National Trails within 3km of the Siting Area. Ebor Way is located approximately 2.9 km away to the north east at its closest point. NCN Route 66 is located approximately 2.5 km to the south west at its closest point. There are no designated recreational areas or facilities within 3km of the site. Overall, Siting Area XD2 is considered to have some constraints with opportunities for landscape mitigation through more detailed assessment, siting, design and construction which would reduce the potential significant landscape effects, but adverse effects may remain.
Heritage	There are no designated assets within Siting Area XD2, with only a limited number of listed buildings in the wider area. The nearest asset is a Grade II listed milestone (1132446) located immediately to east. The remaining listed buildings are both located over 1km from the Siting Area and consist of a former aircraft hangar recorded just under 1km to the south west (1313197), and a barn approximately 1km to the west-southwest (1200561). These are also all Grade II listed. There are no other designated assets within the surrounding area. There is potential for unrecorded archaeology to exist in the area.
Traffic and Access	Access to Siting Area XD2 does not seem to be as well-established and would likely require upgrading the existing road network and potentially crossing an existing footpath adjacent to carriageway.

Overview of Siting Area XD3

5.2.20 The site spans over two medium-scale, flat, arable fields which are separated by a hedgerow. Landform slopes gently down to the north east. The XC overhead line runs along the north western boundary of the site. With the exception of the XC overhead line there are no tangible features which define the site.

5.2.21 **Table 5.6** provides a description of Siting Area XD3 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.6: Siting Area XD3 Appraisal Summary

Technical Discipline	Summary of Siting Area XD3
Biodiversity	There are no significant ecological constraints (i.e. no known designated sites) in this Siting Area. The site is west of the A659 and is currently in use as agricultural fields. This site would impact numerous hedgerows (up to five), which may support protected species (e.g. badger). Given the site's current apparent use as agricultural land, the site is of limited value for wildlife. There remain some habitat features in Siting Area XD3 that should be subject to survey to ensure they do not harbour protected species (i.e. hedgerow), such as bats and badger and that the habitats are not of high ecological value (i.e. species rich hedgerow). Furthermore, the proximity to existing infrastructure is beneficial (avoiding disruption of less developed areas). Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitat such as hedgerows should preclude significant impacts to ecological receptors on / near the site.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XC1 is also valid for Siting Area XD3, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 2.5km to the south west and Parlington Estate, a Grade II Registered Park and Garden is located approximately 4.7km to the south west. **Landscape Character** The summary presented for Siting Area XC1 is also valid for Siting Area XD3. **Visual Amenity** The following settlements lie within approximately 3km of the Siting Area: Bramham, Clifford, Stutton and Tadcaster. There are scattered properties within 3km of the Siting Area, including the following: • High Moor Grange Farm located approximately 200m away to the north; • Wise Warren located approximately 440m to the north west; and • Headley Hall and Headley Cottages located approximately 450m away to the south west. Residential receptors are considered to be of medium to high sensitivity to a new substation. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are located within 1km of the site to the north. There are no National Trails within 3km of the Siting Area. Ebor Way is located approximately 1.9km away to the north east at its closest point. NCN Route 66 is located approximately 2.7km to the south west at its closest point. There only designated recreational areas or facilities within 3km of the site is an area of allotments located approximately 275m to the north east.
Heritage	There are no designated assets within the Siting Area XD3, with only a limited number of listed buildings in the wider area. The nearest asset is a Grade II listed milestone (1132446) located

Technical Discipline	Summary of Siting Area XD3
	400m to the east. The remaining listed buildings are both located approximately 500m from Siting Area XD3 and consist of a former aircraft hangar recorded to the south west (1313197), and a barn to the west-southwest (1200561). These are also all Grade II listed. There are no other designated assets within the surrounding area. The construction of the CSEC in Siting Area XD3 is not expected to impact the setting of any designated assets, but there is potential for unrecorded archaeology to exist in the area, which could be avoided or reduced through careful siting of the infrastructure as well as mitigation such as excavation/recording.
Traffic and Access	Siting Area XD3 is considered to have very poor access and it is expected that a new road will need to be contracted to link the site with the A659. The new road would likely be across an existing field and approximately 360m in length. Overall, Siting Area XD3 is considered to be significantly constrained from a traffic and access perspective, especially when compared with Siting Areas XD1 and XD2.

Overview of Siting Area XD4

5.2.22 Siting Area XD4 is set within an area of regular, small to medium-scale arable fields enclosed by well-maintained hedgerows with few boundary trees. Landform is generally flat. The site is located primarily within one medium-scale field but also includes a small area of the field adjacent to the north. Two overhead lines cross the site. Warren Lane forms the western boundary.

Table 5.7 provides a description of Siting Area XD4 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.7: Siting Area XD4 Appraisal Summary

Technical Discipline	Summary of Siting Area XD4
Biodiversity	There are no significant ecological constraints (i.e. designated sites which will be directly impacted) in Siting Area XD4. There are three hedgerows within Siting Area XD4, which may support protected species (e.g. badger, bats, birds). Given the site's current apparent use as agricultural land, the site is of limited value for wildlife. There remain some habitat features in Siting Area XD4 that should be subject to survey to ensure they do not harbour protected species (i.e. hedgerows), such as bats and badger and that the habitats are not of high ecological value (i.e. species rich hedgerow). Furthermore, the proximity to existing infrastructure is beneficial (avoiding disruption of less developed areas). Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitat such as hedgerows should preclude significant impacts to ecological receptors on / near the site.
Landscape and Visual	**Landscape Designations** There are no nationally designated landscapes within 5km of the Siting Area and the site is located approximately 250m to the west of the Selby Important Landscape Area. Bramham Park, Grade I Registered Park and Garden is located approximately 2.2km to the south west and Parlington Estate, Grade II Registered Park and Garden is located approximately 4.6km to the south west. This valued historic landscape is considered to be of high sensitivity to this Siting Area. **Landscape Character**

Technical Discipline	Summary of Siting Area XD4
	The site falls within the Southern Magnesium Limestone NCA. At a county and local level, the site is within North Yorkshire Landscape Characterisation LCT 6: Magnesium Limestone Ridge and Leeds Landscape Assessment ELB2: East Bramham. The LCT and LCA are of regional/local value and of varying sensitivity to the Option. The sensitivity of the landscape of LCT6 and ELB2 in the vicinity of the site is low as it is already affected by the A64 and A1(M), a quarry, an existing substation and a number of overhead lines. **Visual Amenity** The following settlements lie within approximately 3km of the Siting Area: Bramham, Clifford, Stutton and Tadcaster. There are scattered properties within 3km of the Siting Area, including the following: • High Moor Grange Farm located approximately 500m away to the north east; • Wise Warren located approximately 200m away to the north west; • Headley Hall approximately 300m away to the south; and • Headley Cottages are located approximately 200m to the south. Views from residential receptors in the area may be adversely affected. A new CSEC would be seen in the context of existing overhead lines. However, there is potential for residents within the vicinity of the site to be adversely affected due to their proximity, particularly at Wise Warren but also at High Moor Grange Farm, Headley Hall and Headley Cottages, and the lack of intervening vegetation. People travelling on Warren Lane would potentially have close up views of a new CSEC. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are located within 1km of the site to the north. There are no National Trails within 3km of the Siting Area. Ebor Way is located approximately 2.9km away to the north east at its closest point. NCN Route 66 is approximately 1.6km to the west at its closest point. It is additionally noted that NCN Route 67 is approximately 2.1km to the north west at its closest point. There are no designated recreational areas or facilities within 3km of the site. Overall, Siting Area XD4 is considered moderately constrained. Some opportunities exist for mitigation through more detailed assessment, siting, design and construction which would reduce the potential for some landscape and visual effects, but adverse effects may remain.
Heritage	The summary presented for Siting Area XD3 is also valid for Siting Area XD4 with the exception of the distances to nearby assets as summarised below: • Grade II listed barn (1200561) is located approximately 350m to the south; and • Grade II former aircraft hangar (1313197) is located approximately 500m to the south.
Traffic and Access	Available access to Siting Area XD4 is via Warren Lane, which is narrow, but currently serves Bramham substation. As such, it is assumed Warren Lane will to be able to accommodate some level of HGV traffic, but with potentially some mitigation.

Overview of Siting Area XD5

5.2.23 Siting Area XD5 is set within a small-scale pastoral field located to the north east of an existing substation. The field is enclosed by a mix of hedgerow and belts of woodland adjacent to the substation. The eastern boundary is form by Warren Lane. Landform is generally flat. The XD overhead line is located to the northern boundary.

5.2.24 **Table 5.8** provides a description of Siting Area XD5 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.8: Siting Area XD5 Appraisal Summary

Technical Discipline	Summary of Siting Area XD5
Biodiversity	There are no significant ecological constraints (i.e. no known designated sites) in Siting Area XD5, however it includes a line of large trees on the southern boundary, and is immediately adjacent to a small copse to the west as well as a larger woodland southwest (approximately 65m), all of which could support protected species (e.g. badger, bats) Given the site's current apparent use as agricultural land, the site is of limited value for wildlife. There remain some habitat features on the site that should be subject to survey to ensure they do not harbour protected species (i.e., habitats in hedgerows, field margins), such as bats and badger and that the habitats are not of high ecological value,(i.e. species rich hedgerow). Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitat such as hedgerows should preclude significant impacts to ecological receptors on / near the site.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XD4 is also valid for Siting Area XD5, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 2.1km to the south west and Parlington Estate, a Grade II Registered Park and Garden is located approximately 4.7km to the south west. In addition, the Siting Area is located approximately 500m to the west of Selby Important Landscape Area. **Landscape Character** The summary presented for Siting Area XD4 is also valid for Siting Area XD5. **Visual Amenity** • The following settlements lie within approximately 3km of the Siting Area: Bramham, Clifford, Stutton and Tadcaster. There are scattered properties within 3km of the Siting Area, including the following: Wise Warren located approximately 200m away to the north; • Headley Hall approximately 350m away to the south; and • Headley Cottages are located approximately 250m to the south. Views from residential receptors in the area may be adversely affected. A new CSEC would be seen in the context of existing overhead lines. However, there is potential for residents within the vicinity of the site to be adversely affected due to their proximity to the Option, particularly at Wise Warren but also Headley Cottages and Headley Hall; although existing tree cover would provide some immediate screening for the latter. People travelling on Warren Lane would potentially have close up views of a new CSEC. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are located within 1km of the site to the north. There are no National Trails within 3km of the Siting Area. Ebor Way is located approximately 2.9 km away to the north east at its closest point. NCN Route 66 is approximately 1.4km to the west at its closest point. It is additionally noted that NCN Route 67 is approximately 1.9km to

Technical Discipline	Summary of Siting Area XD5
	the north west at its closest point. There are no designated recreational areas or facilities within 3km of the site. Overall, Siting Area XD4 is considered moderately constrained. Some opportunities exist for mitigation through more detailed assessment, siting, design and construction which would reduce the potential for some landscape and visual effects, but adverse effects may remain.
Heritage	The summary presented for Siting Area XD3 is also valid for Siting Area XD5 with the exception of the distances to nearby assets as summarised below: • Grade II listed barn (1200561) is located approximately 400m to the south; and • Grade II former aircraft hangar (1313197) is located approximately 650m to the south east. In addition, the base of a Grade II listed cross has also been recorded 650m to the north west (1135647).
Traffic and Access	The summary presented for Siting Area XD4 is also valid for Siting Area XD5.

Overview of Siting Area XD6

Siting Area XD6 located within a narrow, small scale pastoral field located directly to the north of the existing Braham substation. The field is enclosed by a mix of hedgerow and trees and includes scattered trees and a small block of woodland. Siting Area XC6 also includes the north west part of the woodland located around Braham substation. The XD overhead line is located to the northern boundary.

5.2.25 **Table 5.9** provides a description of Siting Area XD6 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.9: Siting Area XD6 Appraisal Summary

Technical Discipline	Summary of Siting Area XD6
Biodiversity	There are no significant ecological constraints (i.e. designated sites) in Siting Area XD6, however, it does include parts of several woodlands. While not part of any designated site, these woodlands are a national priority habitat (deciduous woodland), and their location (in largely developed/agricultural landscape) may make them valuable refuge habitat for wildlife in the area. These areas may support protected species (e.g. badger, bats). Much of the rest of the site includes grassy lawns and small wooded copses / tree lines. As Siting Area XD6 includes priority habitats and features which may support protected species, these habitats should be subject to an ecological survey to ensure they do not harbour protected species such as bats and badger, and that the habitats are not of high ecological value,(i.e. species rich hedgerow, priority habitat woodland). If woodland habitat is to be lost as a result of the Project, replacement planting would be required to ensure no net loss of a priority habitat (deciduous woodland) and to achieve a 10% net gain in accordance with National Grid's targets. Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) and provision of compensation habitats such as hedgerows should preclude significant impacts to ecological receptors on / near the site.

Technical Discipline	Summary of Siting Area XD6
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XD4 is also valid for Siting Area XD6, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 1.8km to the south west and Parlington Estate, a Grade II Registered Park and Garden is located approximately 4.6km to the south west. In addition, the Siting Area is located approximately 700m to the west of the Selby Important Landscape Area. **Landscape Character** The summary presented for Siting Area XD4 is also valid for Siting Area XD6. **Visual Amenity** The following settlements lie within approximately 3km of the Siting Area: Bramham, Clifford and Tadcaster. There are scattered properties within 3km of the Siting Area, including the following: • Wise Warren located approximately 250m away to the north; • Headley Hall approximately 380m away to the south east; and • Headley Cottages are located approximately 250m to the south. Views from a limited number of residential receptors in the area may be adversely affected, although a new CSEC would be seen in the context of existing overhead lines and the Braham substation. There is potential for residents within the vicinity of the site at Wise Warren to be adversely affected due to their proximity although existing tree cover would provide some immediate filtering of views. Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are located within 1km of the site to the north. There are no National Trails within 3km of the Siting Area. Ebor Way, a regional Trail, broadly follows the course of the River Wharfe to the north, being approximately 3km away to the north east at its closest point. NCN Route 66 is approximately 1.1km to the west at its closest point. It is additionally noted that NCN Route 67 is approximately 1.6km to the north west at its closest point. There are no designated recreational areas or facilities within 3km of the site. Overall, Siting Area XD6 is considered to have few constraints. There are opportunities for mitigation through more detailed assessment, siting, design and construction which would prevent/ reduce the potential for significant landscape effects, but adverse effects may remain.
Heritage	The summary presented for Siting Area XD3 is also valid for Siting Area XD6 with the exception of the distances to nearby assets as summarised below: • Grade II listed barn (1200561) is located approximately 430m to the south east; and • Grade II former aircraft hangar (1313197) is located approximately 700m to the south east. In addition, the base of a Grade II listed cross has also been recorded 620m to the north (1135647).
Traffic and Access	The summary presented for Siting Area XD4 is also valid for Siting Area XD6.

Overview of Siting Area XD7

5.2.26 Siting Area XD7 is located within the eastern corner of a largely flat, medium-scale arable field which also contains a rectangular area of trees planted in a grid. The field lies to the west of the substation and is enclosed by fragmented hedgerow. The XD overhead line is located to the northern boundary.

5.2.27 **Table 5.10** provides a description of Siting Area XD7 for the relevant environmental and social disciplines; an overview of the engineering appraisal is presented in **Section 5.2** of this report.

Table 5.10: Siting Area XD7 Appraisal Summary

Technical Discipline	Summary of Siting Area XD7
Biodiversity	There are no significant ecological constraints (i.e. no known designated sites) in Siting Area XD7. There is a small stand of trees on the eastern boundary of the site, which may support protected species (e.g. badgers, bats). Much of the site is currently in use as agricultural fields. Given that Siting Area XD7 is currently used as agricultural land, it is of limited value for wildlife. There remain some habitat features on the site that should be subject to survey to ensure they do not harbour protected species (i.e., woodland / copse, tree lines, habitats in hedgerows, field margins), such as bats and badger and that the habitats are not of high ecological value,(i.e. species rich hedgerow). Siting Area XD7's proximity to existing infrastructure is beneficial (avoiding disruption of less developed areas). Protective measures before and during site construction (e.g. seasonality of construction works, barriers/fencing, ecological supervision) should preclude significant impacts to ecological receptors on / near the site. Hedgerow planting would be required to compensate for loss and severance of existing hedges.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area XD4 is also valid for Siting Area XD7, with the exception of the distance to Bramham Park, a Grade I Registered Park and Garden which is approximately 1.8km to the south west and Parlington Estate, a Grade II Registered Park and Garden is located approximately 4.6km to the south west. In addition, the Siting Area is located approximately 850m to the west of Selby Important Landscape Area. **Landscape Character** The summary presented for Siting Area XD4 is also valid for Siting Area XD7. **Visual Amenity** The following settlements lie within approximately 3km of the Siting Area: Bramham and Clifford. There are scattered properties within 3km of the Siting Area, including the following: • Wise Warren located approximately 450m away to the north; • Headley Cottages located approximately 380m away to the south east (views from Headley Hall screened by Headley Cottages). Views from a limited number of residential receptors in the area may be adversely affected, although a new CSEC would be seen in the context of existing overhead lines and Braham substation. There is potential for residents within the vicinity of the site at Wise Warren and Headley Cottages to be adversely affected due to their proximity although existing tree cover would provide some immediate filtering of views from properties to the south east (Headley Cottages). Tadcaster Grammar school, Toulson Polo Ground and Lordswood Cricket School are located within 1km of the site to the north. There are no National Trails within 3km of the Siting Area. Ebor Way, a regional Trail, broadly follows the course of the River Wharfe to the north, being approximately 3km away to the north east at its closest point. NCN Route 66 is approximately 1km to the west at its closest point. It is additionally noted that NCN Route 67 is approximately 1.5km to the north west at its closest point. There are no designated recreational areas or facilities within 3km of the site. Overall, Siting Area XD7 is considered to have few constraints. There are opportunities for mitigation through more detailed assessment, siting, design and construction which would prevent/ reduce the potential for significant landscape effects, but adverse effects may remain.

Technical Discipline	Summary of Siting Area XD7
Heritage	The summary presented for Siting Area XD3 is also valid for Siting Area XD7 with the exception of the distances to nearby assets as summarised below: • Grade II listed barn (1200561) is located approximately 650m to the south east; and • Grade II former aircraft hangar (1313197) is located approximately 900m to the south east. In addition, the base of a Grade II listed cross has also been recorded 620m to the north (1135647).
Traffic and Access	Available access to Siting Area XD7 is via Warren Lane, which is narrow, but currently serves Bramham substation. As such, it is assumed Warren Lane will to be able to accommodate some level of HGV traffic, however the overall distance from Warren Lane means that a new road would need to be constructed. Siting Area XD7 is considered to be significantly constrained from a traffic and access perspective when compared to the other XD Siting Areas.

5.3 Tadcaster Preferred Option

5.3.1 All Siting Area avoid "*altogether internationally and nationally designated areas of the highest amenity*…" and are considered to comply with Rule 2 of the Horlock Rules. Siting Areas XD4, XD6 and XD7 were considered least preferable on the XD overhead line from a biodiversity perspective due to the presence of existing woodland that would be subject to either potential removal or impact. The Siting Areas on the XC overhead line were broadly considered as equal, however, an option that required the shortest underground cabling section would be considered most preferred to limit the loss of existing vegetation and potential impact to unrecorded archaeology.

5.3.2 All Siting Areas are considered to broadly comply to Rule 3 of the Horlock Rules to protect areas of local amenity value. Siting Areas XC2 and XC3 were least preferred from a landscape and visual perspective on the XC overhead line due to open views from Tadcaster and slightly elevated level in relation to surrounding landscape. As such, Siting Areas XC2 and XC3 are not considered to fully meet the objective of Rule 4 of the Horlock Rules, which requires the siting area to take advantage of the screening provided by the landform and to limit intrusion into the surrounding area. Siting Area XC1 considered the most preferred option in Tadcaster and is considered to align most closely with the Horlock Rules. On the XD overhead line Siting Area XD1 was most preferred from a landscape and visual perspective due to the proximity to the A64, however all XD Siting Area were considered acceptable under landscape and visual criteria relating to the Horlock Rules.

5.3.3 Access to the Siting Areas varied, with Siting Area XC3 considered the least preferred on the XC overhead line due to limited access and the likely requirement of a new road. For Siting Area XC1 and Siting Area XC2 access is possible via existing tracks, although some unavoidable upgrade work may be required. On the XD overhead line, Siting Area XD7 and Siting Area XD3 were considered least preferred with access limitation also noted for Siting Area XD4, Siting Area XD5 and Siting Area XD6.

5.3.4 For all other technical disciplines there was no key preference of the location, but it was acknowledged, similar to biodiversity, that limiting the length of underground cabling would reduce the potential disturbance to unrecorded archaeology.

5.3.5 From an engineering perspective Siting Area XC1 is preferred as the existing pylon can be reused and there will be no need for a replacement. Additionally, the connection with the XD1 Siting Area ensures that this option has the shortest underground cabling section.

5.3.6 Based on the above, Siting Areas XC1 and XD1 have been selected as the preferred option for the CSECs. The close proximity of the Siting Areas to each other, limited environmental and socio-economic constraints and good access means the potential impacts to the environment and local community are limited, where possible. In addition, from a technical perspective the underground cabling is expected to be limited to approximately 0.5km, which in turn has favourable cost implications.

5.3.7 Following the selection of the preferred CSEC Siting Areas graduated preliminary locations have been developed, as presented in **Figure 5.2,** to indicate the preferred locations of the CSEC and the underground cabling. The darker area indicates the preferred location of the infrastructure with the final location to be determined following potential modifications based on public and stakeholder feedback.

Figure 5.2: Graduated Preliminary Locations of the CSECs and Underground Cabling at Tadcaster

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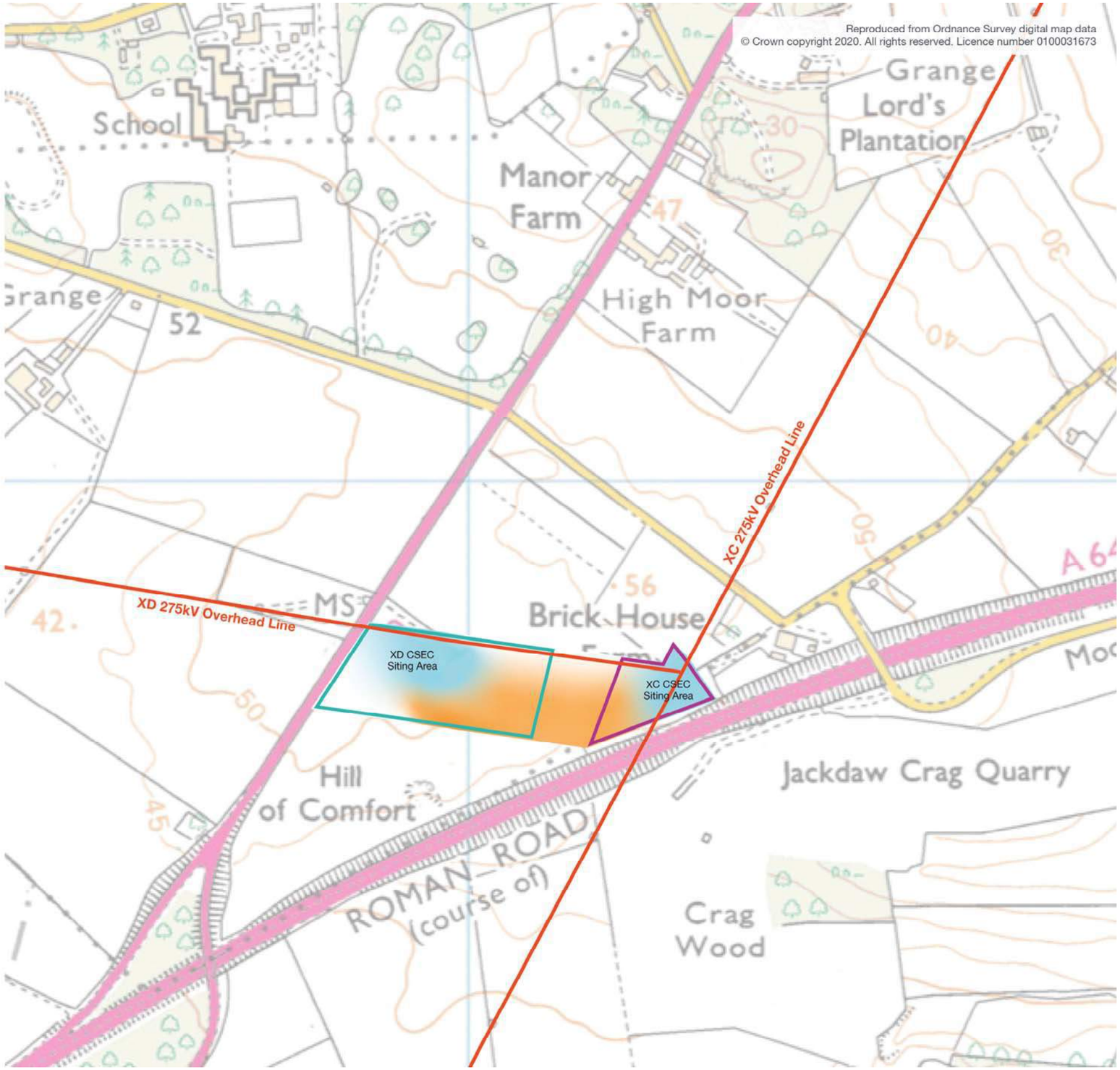
Key	
	Location of proposed new cable sealing end compound
	Location of proposed underground cabling
	Existing 275kV overhead line
	Proposed XD cable sealing end compound location
	Proposed XC cable sealing end compound location



6. MONK FRYSTON OPTIONS APPRAISAL

6.1 Approach to Appraisal

6.1.1 The Monk Fryston options appraisal refers to the appraisal of:

- Three Substation Siting Areas (denoted as MF1, MF2 and MF3) identified to locate a substation in proximity of the existing Monk Fryston substation.
- Associated infrastructure related with each of the Substation Siting Areas, which will be situated within the wider Associated Infrastructure Siting Area.

6.1.2 The location of each of the three Substation Siting Areas necessitates a different solution for the associated infrastructure, including location and type (i.e. realignment of existing infrastructure, new overhead line and/or underground cabling etc.). To facilitate a meaningful options appraisal the Project Team defined high level solutions for each Substation Siting Area. It is the combination of each Substation Siting Area (MF1, MF2 and MF3) and the bespoke associated infrastructure (located within the Associated Infrastructure Siting Area), which form the basis of the options appraisal summarised below.

6.1.3 The overall objective of this stage of the options appraisal process was to identify potential substation sites which best balance the effects on the environment and local community whilst having regard to technical and engineering feasibility. The approach taken is summarised in **Chapter 2** of this report.

6.2 Substation and Associated Infrastructure Siting Areas Identification

6.2.1 The following factors were considered when identifying potential substation sites:

- Proximity to existing infrastructure: As set out in **Section 2.3** of this report a key driver for identifying the location Siting Areas for the new substation was proximity to the existing Monk Fryston 257kV/400kV substation.
- Land take: The site needed to have sufficient space to accommodate the substation (approximately 350m x 210m).
- Existing Environment: The Substation and location of associated Infrastructure sought to avoid known environmental and socio-economic constraints, where possible.
- Guidelines, adopted by National Grid, for the Routeing of New High Voltage Overhead Transmission Lines (the Holford Rules).
- Guidelines, as adopted by National Grid, on the Siting and Design of Substations (the Horlock Rules).

6.2.2 **Figure 6.1** shows the location of the three Substation Siting Areas (denoted as MF1, MF2 and MF3) as identified as potential sites for the substation with **Appendix 6A** showing the wider context of the area. All Substation Siting Areas, taking into account the associated infrastructure, have been subject to an options appraisal to identify the preferred Substation Siting Area. The options appraisal involved the detailed analysis of the Substation Siting Areas and the associated infrastructure for the technical disciplines outlined in **Chapter 2** of this report.

6.2.3 **Sections 6.3 to 6.5** of this report summarises the appraisal for each of the Substation Siting Areas and associated infrastructure, and presents the analysis of the following technical disciplines:

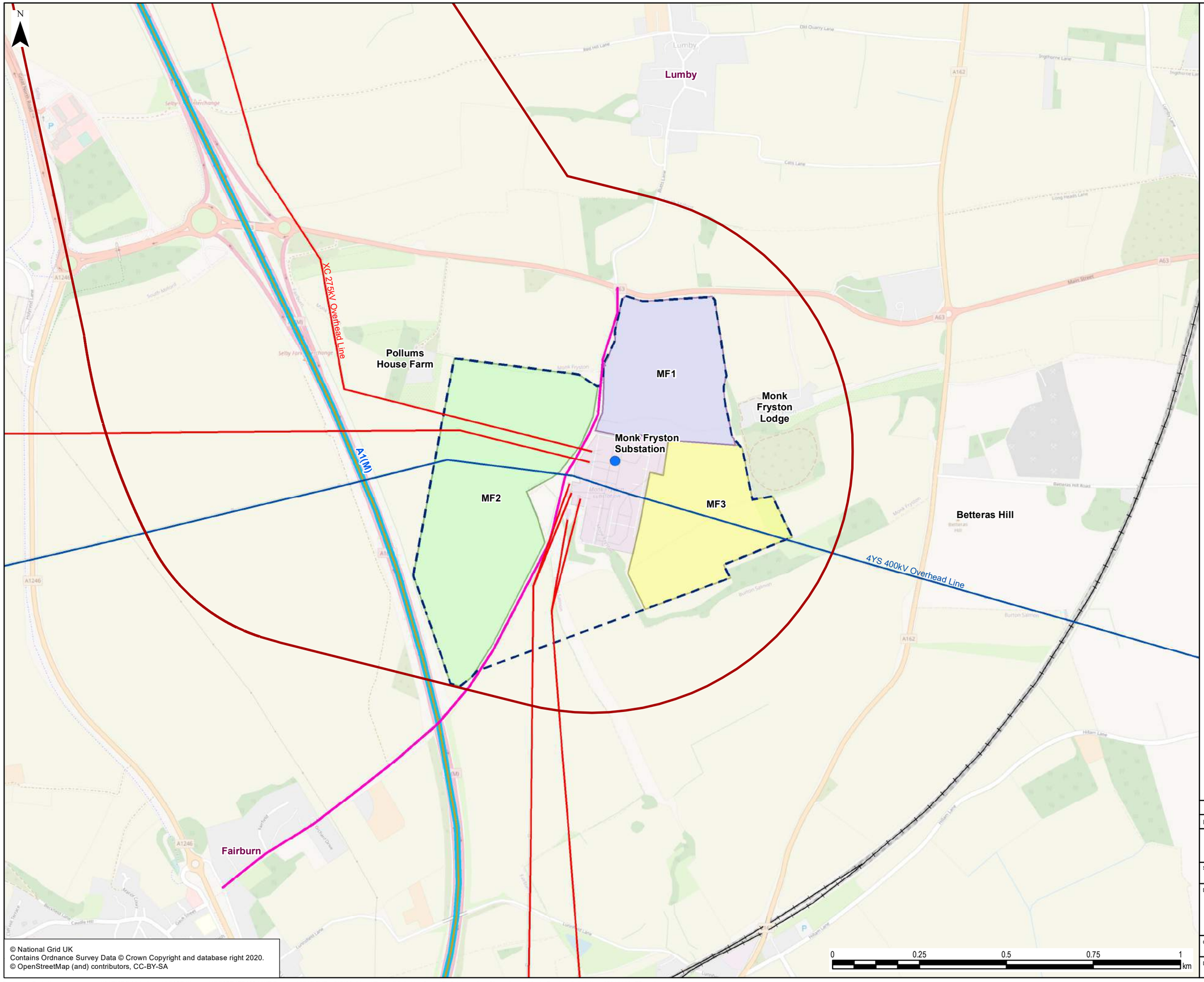
- biodiversity;
- landscape and visual;
- heritage;
- traffic and access;
- planning; and
- engineering.

6.2.4 It should be noted that while detailed analysis was conducted for the other technical disciplines (physical environment, settlement and population, tourism and recreation and land use) they did not identify any significant features or constraints which would differentiate between the Substation Siting Areas. A summary of the review of these disciplines is provided in the following paragraphs.

6.2.5 From a planning perspective, information about local planning applications is provided in **Table 6.1**, **Table 6.2** and **Table 6.3**, however at a national level it is recognised that all Siting Areas are located in land designated as Green Belt and within a Mineral Safeguarding Area as defined in the draft Minerals and Waste Joint Plan.

6.2.6 Across all Siting Areas (both substation and associated infrastructure) there are no relevant tourism and recreation resources. There are a number of residential properties located within the vicinity of the Substation Siting Areas, namely Monk Fryston Lodge located to the east of Substation Siting Areas MF1 and MF3 which is understood to include four residential properties within its grounds, and Pollums House Farm to the north west of Substation Siting Area MF2. As these properties do not represent a cluster of five or more residential properties they are not considered from a settlement and population perspective.

6.2.7 None of the Siting Areas (both substation and associated infrastructure) are located within proximity to any watercourses or within Source Protection Zones. All Siting Areas are located within a Flood Zone 1 area and there are small areas in Siting Areas MF1 and MF3 which are within the Defra Risk of Flooding from Surface Water, but they are not considered to be significant. Bedrock geology across the Siting Areas largely comprises Zechstein Group. No aquifers were identified across the Siting Areas. All Substation Siting Areas would result in the permanent loss of Grade 2 Agricultural Land, which covers the entire area of all Siting Areas.



LEGEND

- Study Area
- Substation
- 400 kV Overhead Line
- 275 kV Overhead Line

Monk Fryston Substation Extension Siting Zones

- MF1
- MF2
- MF3
- Associated Infrastructure Siting Area

Constraints

- Rawfield Lane
- Trunk Road
- Motorway
- Railway Track

Rev	Date	Description	GIS	Chk	App
0	08/01/2021	CPR & SS REPORT	EB	AB	AW

nationalgrid

Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 6.1
LOCATION OF SITING AREAS FOR THE NEW MONK FRYSTON SUBSTATION

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	08/01/2021	AB	08/01/2021	AW	08/01/2021

Document Number:	Scale:	Format:	Sheets:	Rev:
FIGURE	1:10,000	A3	1 of 1	0

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Overview of Substation Siting Area MF1 and Associated Infrastructure

6.2.8 Substation Siting Area MF1 is situated immediately north of the existing Monk Fryston 275kV/400kV substation. The A63 defines the northern boundary of the Substation Siting Area and Rawfield Lane defines the western boundary. The majority of the site is located within a medium-scale arable field but also contains a fragmented hedgerow and part of an adjacent arable field. To the east is Monk Fryston Lodge (a Grade II listed building) with associated buildings. Fields/ paddock to the south of the grounds extend into a pastoral field and is then partially bounded by the existing 275kV/400kV Monk Fryston substation.

6.2.9 The associated infrastructure for Substation Siting Area MF1 is likely to comprise:

- Proposed 275kV underground cable from the gantries within existing Monk Fryston 275kV/400kV substation to the proposed 400kV substation.
- Underground cabling to connect the SGT in the existing 275kV/400kV substation with the proposed 400kV substation.
- Realignment of the 4YS 400kV overhead line to Eggborough from the existing Monk Fryston 275kV/400kV substation to connect with the proposed 400kV substation. This will likely include the construction of a new section of 400kV overhead line to connect the proposed 400kV substation with the existing 4YS 400kV overhead line situated in Substation Siting Area MF3.
- Dismantling of a small section (less than 400m) of the 4YS 400kV overhead line, which currently connects into the existing Monk Fryston 275kV/400kV substation.

6.2.10 **Table 6.1** provides a description of Substation Siting Area MF1 and the location of proposed associated infrastructure outlining environmental and social disciplines along with supporting engineering technical information.

Table 6.1: Substation Siting Area MF1 and Associated Infrastructure Appraisal Summary

Technical Discipline	Summary of Substation Siting Area MF1 and Associated Infrastructure
Biodiversity	There are no significant ecological constraints such as designated sites that would be directly impacted by the Substation Siting Area MF1, although the site is located within Fairburn and Newton Ings SSSI Impact Risk Zone. Given the site's current apparent use as pasture/arable land, the site is of limited value for wildlife, however the site could be used by wintering birds such as whooper swan (*cygnus cygnus*). An area of broadleaved woodland is likely to be impacted during the realignment of the existing 4YS 400kV overhead line and there is the potential for direct/indirect impacts on the pond adjacent to the existing pylon at Betteras Hill during realignment works. It is unknown if the pond supports GCN and this should be determined through surveys. If GCN are present any works could impact aquatic and/or terrestrial habitat used by GCN. Mitigation for GCN (including provision of terrestrial habitat to replace that lost) will be required if they are present within either of the ponds, and an EPS licence is likely to be required. If a licence is required then as part of the licence there will be a need to explain the need for the project, that there isn't a satisfactory alternative and that GCN will not be harmed. There remain some habitat features on the site that should be subject to thorough survey to ensure they do not harbour protected species (i.e., habitats in hedgerows, field margins), such as badger and that the habitats are not of high ecological value (i.e. species rich hedgerow). The site's proximity to existing infrastructure is beneficial (avoiding disruption of less developed areas).

Technical Discipline	Summary of Substation Siting Area MF1 and Associated Infrastructure
	Hedgerow and woodland planting would be required to compensate for loss and severance of existing hedges/woodland and should aim to achieve a net gain of 10% in accordance with National Grid guidance.
Landscape and Visual	**Landscape Designations** There are no nationally designated landscapes within 5km of Substation Siting Area MF1. Selby Important Landscape Area lies in close proximity with part of its southern boundary broadly following the A63. Ledston Hall and Park, a Grade II* Registered Park and Garden is located approximately 2.9km to the north west. This valued historic landscape is considered to be of high sensitivity; however, it is not expected that the construction of the substation on Substation Siting Area MF1 will have a significant impact to these features. **Landscape Character** Substation Siting Area MF1 falls within the South Magnesium Limestone NCA. Overall, this NCA is considered to be of regional value and is likely to vary in sensitivity with areas of lower sensitivity typically where infrastructure, large scale commercial development and urban land use influence tranquillity and character. At a county and local level Siting Area MF1 is within North Yorkshire Landscape Characterisation LCT 6: Magnesium Limestone Ridge and Selby LCA 8 West Selby Limestone Ridge. The LCT and LCA are of regional/local value and of varying sensitivity to the option. The sensitivity of the landscape of LCT6 and LCA8 in the vicinity of the site is low as it is already affected by an existing substation, a number of overhead lines and nearby motorway junction. Substation Siting Area MF1 and associated infrastructure have potential to affect local landscape character. Although the character of the landscape in the vicinity of the site is generally less sensitive due to the presence of the existing 275kV/400kV substation, overhead lines and nearby A1(M), there may be adverse effects from the introduction of additional large structures in the landscape including a new substation and new pylons. This option would extend development into the rural farmland to the north and east. Furthermore, there would likely be a permanent loss of a fragmented hedgerow field boundary and removal of an area of bunding to the north of the existing substation. **Visual Amenity** The following settlements lie within approximately 3km of the Option: Ledsham, Fairburn, Lumby, South Milford, Sherburn in Elmet, Monk Fryston, Byram and Brotherton and Burton Salmon and Poole. There are few scattered properties within 3km of the option, although Monk Fryston Lodge is almost immediately to the east and Pollums House Farm is approximately 500m to the west. Residential receptors are considered to be of high sensitivity to the option taking into account the existing landscaping and screening present. There are no National Trails, Regional Trails, National Cycle Routes, Country Parks or Countryside and Rights of Way (CROW) access land within 3km of the site. There are no views from prominent landmarks or promoted views on OS maps within 3km of the site. Fairburn Ings Local Nature Reserve, RSPB site and recreational destination is located approximately 2.1km to the south west. People visiting Fairburn Ings are considered to be of medium sensitivity to the option; however, the majority of views towards the site are highly likely to be filtered/ restricted by intervening vegetation and landform. Views from residential receptors in the area may be adversely affected. Although the new substation and additional length of overhead line (including several new pylons) would be seen in the context of the existing substation and overhead lines, which form the backdrop to some existing views, there is potential for residents immediately adjacent to the site at Monk Fryston Lodge (and associated properties) and to the west of the site at Pollums House Farm to have views significantly affected. There is also the potential for impact to views from the surrounding settlements.

Technical Discipline	Summary of Substation Siting Area MF1 and Associated Infrastructure
	Substation Siting Area MF1 is considered to be low to moderately constrained in landscape and visual terms. There are opportunities for mitigation through more detailed assessment, siting and construction, which would reduce the potential for significant landscape effects. However, underground cables and overhead lines around the proposed 400kV substation may constrain what is possible in terms of mounding and planting for landscape mitigation and visual screening purposes. There is potential for adverse visual effects, but the lower parts of the substation could, over time, be screened by a combination of appropriate mounding/ false cuttings and mitigation planting. The upper parts of the substation would continue to be visible from properties and settlements in the surrounding local area; however, this would be, for most properties, in combination with the existing substation and as such these would appear as one, particularly in longer distance views. Some locally significant residual visual effects are therefore possible.
Heritage	There are no designated assets in Substation Siting Area MF1, with only a limited number of listed buildings in the wider area. All of these are located to the east, with the nearest site being the Grade II listed Monk Fryston Lodge (1167647) located approximately 120m to the east. The remaining listed buildings are all located on the A162 road, at least 750m to the east, and include two milestones (1167492 & 1167565) and gate piers linked to Monk Fryston Lodge (1316268). These are also all Grade II listed. There are no other designated assets within the surrounding area. Works within Substation Siting Area MF1 and the construction of a small section of 400kV overhead line and realignment of the existing 4YS 400kV overhead line have the potential to result in setting impacts, as well as physical impacts, on designated and non-designated assets although these could be limited/removed through careful siting of the infrastructure to avoid receptors. The most significant setting impact will potentially be on Monk Fryston Lodge. However, as the house is surrounded by relatively extensive mature woodland, as well as farm outbuildings, impacts on setting should be minimal. A full setting assessment will, however, be required to assess all impacts.
Traffic and Access	Substation Siting Area MF1 is located adjacent to the existing substation on the eastern side of Rawfield Lane. Traffic would adopt the same route as for the existing substation, most likely from A63 to the north. Any traffic routing from the south would require travelling through Fairburn village which should be avoided to minimise environmental impact on sensitive receptors. Given the proximity of the existing substation, Substation Siting Area MF1 is not considered to be a constraint.
Planning	There are no adopted or emerging Local Plan allocations or planning applications/permissions within Substation Siting Area MF1. Associated infrastructure will be located in Substation Siting Area MF3 within which there is an existing planning application, 2020/0594/FULM (validated 22/06/2020), for the installation and operation of 11no. 4.5MW gas engines. Both this planning application and the proposed infrastructure associated with the Project are on land owned by National Grid and this therefore offers National Grid a degree of control, not resulting in a significant impediment to the Project. Work will continue with the proponent of the application 2020/0594/FULM as the Project develops Taking this onboard, this planning application is not considered to be a key constraint, however It is recommended that the objections raised in relation to 2020/0594/FULM are reviewed and taken into consideration, where feasible.
Engineering	Substation Siting Area MF1 provides sufficient space to locate the substation north of the existing substation, however connection with the existing infrastructure is expected to be reasonably complex (particularly for the 275kV underground cables).
Cost	Siting Area MF1 and associated infrastructure has an overall estimated build cost of £110 million.

Overview of Siting Area MF2 and Associated Infrastructure

6.2.11 Substation Siting Area MF2 is bounded to the north by two smaller scale arable fields. To the west there is no defined boundary to the site; the field continues north west to Pollums House Farm and west to the A1(M) road corridor. To the east is Rawfield Lane and to the south the bridge over which Rawfield Lane passes over the A1(M). The existing Monk Fryston substation is located on the opposite side of Rawfield Lane to the east.

6.2.12 The associated infrastructure for Substation Siting Area MF2 is likely to comprise:

- Proposed 275kV underground cable from the gantries within existing Monk Fryston 275kV/400kV substation to the proposed 400kV substation. This will require crossing Rawfield Land and will likely require routeing to the western section of Siting Area MF2.
- Underground cabling to connect the SGT in the existing 275kV/400kV substation with the proposed 400kV substation.
- Proposed CSEC to the south of the existing 275kV/400kV substation.
- Realignment of the 4YS 400kV overhead line to connect to the proposed 400kV substation. This will likely require routeing the overhead line around the southern boundary of the existing 275kV/400kV substation (within the area denoted as Siting Area MF3).
- Dismantling of a small section (less than 400m) of the 4YS 400kV overhead line (within the area denoted as Siting Area MF3), which currently connects existing Monk Fryston 275kV/400kV substation.

6.2.13 **Table 6.2** provides a description of Substation Siting Area MF2 and the location of the proposed associated infrastructure outlining environmental and social disciplines along with supporting engineering technical information.

Table 6.2: Substation Siting Area MF2 and Associated Infrastructure Appraisal Summary

Technical Discipline	Summary of Substation Siting Area MF2 and Associated Infrastructure
Biodiversity	The summary presented for Substation Siting Area MF1 and associated infrastructure is also valid for Substation Siting Area MF2 and associated infrastructure. In addition, there is also the potential for severance and habitat loss of several hedgerows associated with the underground cabling connecting the exiting 275kV/400kV substation with the proposed 400kV substation and potential impact to a pond located to the south east of the existing substation within approximately 100m of the new overhead line. Mitigation presented in Table 6.1 is also applicable to Siting Area MF2.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area MF1 is also valid for Siting Area MF2 with the exception of the distance to Ledston Hall and Park, Grade II* Registered Park and Garden which is approximately 2.6km to the north west. **Landscape Character** The summary presented for Substation Siting Area MF1 is also valid for Substation Siting Area MF2. **Visual Amenity** The following settlements lie within approximately 3km of Substation Siting Area MF2: Ledsham, Fairburn, Lumby, South Milford, Sherburn in Elmet, Monk Fryston, Castleford,

Technical Discipline	Summary of Substation Siting Area MF2 and Associated Infrastructure
	Byram and Brotherton and Burton Salmon and Poole. There are few scattered properties within 3km of the option, although Pollums House Farm lies almost immediately north west, and Monk Fryston Lodge is approximately 500m to the east. Residential receptors are considered to be of high sensitivity. As stated for Substation Siting Area MF1, there are no National Trails, Regional Trails, National Cycle Routes, Country Parks or CROW access land within 3km of the site. There are no views from prominent landmarks or promoted views on OS maps within 3km of the site. Fairburn Ings Local Nature Reserve, RSPB site and recreational destination is located approximately 1.3km to the south west. Views from residential receptors in the area may be adversely affected. Although the new substation would be disconnected from the existing substation, from a distance it would be seen in the context of the existing substation and overhead lines, which form the backdrop to some existing views. There is potential for residents immediately adjacent to the site at Pollums House Farm to have views significantly affected. Views from Monk Fryston Lodge (and associated properties) to the east and the settlements of Fairburn to the south west and South Millford to the north may also be adversely affected. Substation Siting Area MF2 is considered low to moderately constrained in landscape and visual terms. There are opportunities for mitigation through more detailed assessment, siting and construction, which would reduce the potential for significant landscape effects. However, underground cables and overhead lines around the proposed 400kV substation may constrain what is possible in terms of mounding and planting for landscape mitigation and visual screening purposes. There is potential for adverse visual effects, but the lower parts of the substation could, over time, be screened by a combination of appropriate mounding/ false cuttings and mitigation planting (albeit mounding/ false cuttings may require comparable greater extent of earthworks due to the sloping nature of the field). The upper parts of the substation would continue to be visible from properties and settlements in the surrounding local area. In short distance views the substation may appear slightly disjointed from the existing substation however, in longer distance views the existing substation and new substation may appear as one. Some locally significant residual visual effects are possible.
Heritage	The summary presented for Substation Siting Area MF1 is also valid for Substation Siting Area MF2 with the exception of the distance to Monk Fryston Lodge, which is approximately 500m to the east, which will limit the potential setting impacts when compared to Substation Siting Area MF1 and MF2. The associated infrastructure for Substation Siting Area MF2 will be located further away from Monk Fryston Lodge than for Substation Siting Area MF1, however there is still the potential for setting impacts as detailed in **Table 6.1**.
Traffic and Access	The summary presented for Substation Siting Area MF1 is also valid for Substation Siting Area MF2, however site-specific access would need to be constructed into the Substation Siting Area from Rawfield Lane.
Planning	The summary presented for Substation Siting Area MF1 is also valid for Substation Siting Area MF2.
Engineering	While Siting Area MF2 provides sufficient space to locate the substation, the proximity and orientation of site would mean considerable and complex work would be required to the existing infrastructure. Connection (either overhead or underground cabling) would be needed across Rawfield Lane.
Cost	Siting Area MF2 and associated infrastructure has an overall estimated build cost of £147 million.

Overview of Substation Siting Area MF3 and Associated Infrastructure

6.2.14 Siting Area MF3 is located immediately east of the existing Monk Fryston substation and spans across a small to medium-scale pastoral and arable field and contains a young, fragmented hedgerow. The northern boundary of the site stops short of a hedgerow field boundary and arable field beyond. To the east is a small area of maturing woodland associated with Monk Fryston Lodge and a medium-scale arable field and to the south a mature belt of deciduous trees and understorey.

6.2.15 The associated infrastructure for Substation Siting Area MF3 is likely to comprise:

- Realignment of the XC 275kV overhead line to connect to a proposed CSEC adjacent to proposed 400kV substation. This will likely require routeing the XC 275kV overhead line directly north of the existing 275kV/400kV substation (within the area denoted as Siting Area MF1).
- Connect to the existing SGTs in the existing 275kV/400kV substation with the proposed 400kV substation via busbars.
- Dismantling of a small section (less than 400m) of the XC 275kV overhead line (within the area denoted as Siting Area MF2), which currently connects existing Monk Fryston 275kV/400kV substation.
- Proposed CSEC directly to the north of the proposed 400kV substation to connect one of the XC circuits into the proposed 400kV substation
- Dismantling of a small section (less than 400m) of the 4YS 400kV overhead line (within Siting Area MF3), which currently connects existing Monk Fryston 275kV/400kV substation and connect 4YS into proposed Monk Fryston 400kV substation.

6.2.16 **Table 6.3** provides a description of Substation Siting Area MF3 and the location of the proposed associated infrastructure outlining environmental and social disciplines along with supporting engineering technical information.

Table 6.3: Substation Siting Area MF3 and Associated Infrastructure Appraisal Summary

Technical Discipline	Summary of Substation Siting Area MF1 and Associated Infrastructure
Biodiversity	The summary presented for Substation Siting Area MF1 and associated infrastructure is also valid for Siting Area MF3 and associated infrastructure including the realignment of the existing 4YS 400kV overhead line and there is the potential for direct/indirect impacts on the pond adjacent to the existing pylon at Betteras Hill during realignment works. There is an additional pond located approximately 80m south of Siting Area MF3; the presence of GCN is unknown.
Landscape and Visual	**Landscape Designations** The summary presented for Siting Area MF1 is also valid for Substation Siting Area MF3 with the exception of the distance to Ledston Hall and Park, a Grade II* Registered Park and Garden which is approximately 3.3km north west. **Landscape Character** The summary presented for Siting Area MF1 is also valid for Siting Area MF3. **Visual Amenity** The following settlements lie within approximately 3km of the Option: Ledsham, Fairburn, Lumby, South Milford, Sherburn in Elmet, Monk Fryston, Castleford, Byram and Brotherton and Burton Salmon and Poole. There are few scattered properties within 3km of the option, although Monk Fryston Lodge is almost immediately to the north east and Pollums House Farm

Technical Discipline	Summary of Substation Siting Area MF1 and Associated Infrastructure
	is approximately 700m to the north west. Residential receptors are considered to be of high sensitivity. There are no National Trails, Regional Trails, National Cycle Routes, Country Parks or CROW access land within 3km of the site. There are no views from prominent landmarks or promoted views on OS maps within 3km of the site. Fairburn Ings Local Nature Reserve, RSPB site and recreational destination is located approximately 1.9km to the south west. Views from residential receptors in the area may be adversely affected. Although the new substation would be seen in the context of the existing substation and overhead lines, which form the backdrop to some existing views, there is potential for residents very near to the site at Monk Fryston Lodge (and associated properties) to have views significantly affected. Views from Pollums House Farm and the settlement of South Millford to the north may also be adversely affected Siting Area MF3 is considered low to moderately constrained in landscape and visual terms. There are opportunities for mitigation through more detailed assessment, siting and construction, which would reduce the potential for significant landscape effects. The proximity to Monk Fyston Lodge and underground cables around the substation would greatly constrain what is possible in terms of screen mounding and/ or planting to the north east of the new substation and sealing end compound. Substation Siting Area MF3 does however maximise the filtering/ screening benefit of existing vegetation to the south of the siting zone which would screen the lower parts of the development from some views. The upper parts of the substation would continue to be visible from other properties and settlements in the surrounding local area. This would however be in combination with the existing substation and as such these would appear as one, particularly in longer distance views.
Heritage	The summary presented for Siting Area MF1 is also valid for Siting Area MF3 with the exception of the distance to Monk Fryston Lodge, which is approximately 140m to the north east.
Traffic and Access	Substation Siting Area MF3 is located adjacent to existing substation on its eastern boundary. It is assumed there will be shared access with existing substation. Traffic would adopt the same route as for the existing substation, most likely from A63 to the north. Any traffic routing from the south would require travelling through Fairburn village which should be avoided to minimise environmental impact on sensitive receptors. Given the proximity of the existing substation, Substation Siting Area MF3 is not considered to be a constraint.
Planning	There are no adopted Local Plan or emerging Local Plan allocations located within Substation Siting Area MF3. As presented in **Table 6.1**, there is one planning application associated with the Substation Siting Area MF3. For the reasons outlined in **Table 6.1**, this is not considered to be a significant constraint.
Engineering	Substation Siting Area MF3 presents sufficient space to site the substation and its proximity and unlike Substation Siting Areas MF1 and MF2, its orientation to the existing substation enables an optimal solution to integration. Construction will require the removal of the existing mounds around the substation.
Cost	Siting Area MF3 and associated infrastructure has an overall estimated build cost of £98 million.

6.3 Monk Fryston Preferred Option

6.3.1 Following detailed discussions on all three potential Substation Siting Areas (and associated infrastructure) at Monk Fryston as part of the Preferred Option Workshop, Substation Siting Area MF3 was selected as the preferred option. Given the need to

site the new Monk Fryston 400kV substation adjacent to the existing substation, the siting decision was steered by the technical feasibility of the Project taking into account potential environmental and socio-economic impacts. With regard to the Horlock Rules, none of the Substation Siting Areas appraised would impact on any nationally valued landscapes. Within each of these Substation Siting Areas it is considered possible for infrastructure to be sited to avoid areas of local amenity value. All siting areas were considered to broadly align with the requirements of Rules 1 to 4 of the Horlock Rules.

6.3.2 Potential impacts associated with physical environment, tourism and recreation, settlement and population and land use were considered to be indiscernible across all three Siting Areas.

6.3.3 All three Siting Areas comprise largely pasture and arable land and are located within the Fairburn and Newton Ings SSSI Impact Risk Zone. There are two ponds in the area, one adjacent to the tower located at Beterras Hill which has the potential to be impacted by all options. An additional pond located to the south east of the existing substation may be indirectly impacted by Siting Areas MF2 and MF3. The presence of GCN in the ponds is unknown and should be established through surveys.

6.3.4 For traffic and access, while it was acknowledged that access arrangements would vary for each Substation Siting Area, all were considered feasible with access from Rawfield Lane. For Substation Siting Area MF3 access would be required adjacent or through the existing Monk Fryston 275kV/400kV substation, but given this area is owned by National Grid this was not perceived as an issue.

6.3.5 There is one planning application associated with Substation Siting Area MF3 (2020/0594/FULM), within which associated infrastructure for Substation Siting Areas MF1 and MF2 will be located. As both Projects will be located on land owned by National Grid necessary steps will be taken, where feasible, to identify a solution whereby both Projects can be accommodated through engagement with the proponent of the application 2020/0594/FULM. As such, planning it is not considered to be a constraint to all Substation Siting Areas.

6.3.6 With regards to heritage, Siting Area MF3 was not considered the preferred option given that Siting Area MF1 has less limiting impact to assets, due to distance from Monk Fryston Lodge. The key constraint for heritage is the Monk Fryston Lodge, a Grade II listed building and associated gate piers at the entrance to the property. The lodge is located on the eastern boundary of Siting Areas MF1 and MF3. While the installation of the substation and associated infrastructure is not expected to result in physical impacts to the lodge, the setting may be compromised. However, it is considered with appropriate planting and landscaping this could be mitigated to limit significant effects.

6.3.7 For landscape and visual all three Substation Siting Areas were considered broadly within the same degree of impact with the potential for locally significant visual effects. The proximity of the substation and associated infrastructure with respect to Monk Fryston Lodge was of concern as it may limit the ability to sufficiently screen and plant around the substation and associated infrastructure from a landscape and visual perspective with the necessary offset.

6.3.8 Substation Siting Area MF3 provides a location where a less complex and cost-effective solution to connect with existing infrastructure can be realised. This includes shorter and fewer cable routes as the proposed substation can be connected to the existing Monk Fryston 275kV/400kV substation via bushbars;

shorter lengths of new overhead line compared to the other Siting Areas and use of existing access roads. Furthermore, National Grid own the land within Siting Area MF3 removing any requirements to acquire new land. From an engineering perspective Substation Siting Area MF3 was strongly considered the preferred option.

6.3.9 Taking on board input from all the environmental, socio-economic and technical specialists and considering the potential impact and possible mitigation required it was considered, on balance, that Substation Siting Area MF3 provided the optimal location when compared against Substation Siting Areas MF1 and MF2. As stated above, the technical feasibility was considered to be a decisive aspect of the siting appraisal.

6.3.10 Following the selection of the preferred Substation Siting Area a graduated preliminary location has been developed, as presented in **Figure 6.2,** to indicate the preliminary location of the substation within Siting Area MF3 and the associated infrastructure within the Associated Infrastructure Siting Area. The darker area indicates the preferred location of the infrastructure with the final location to be determined following potential modifications based on public and stakeholder feedback.

Figure 6.2: Graduated Preliminary Locations for a Proposed Substation and Associated Infrastructure at Monk Fryston

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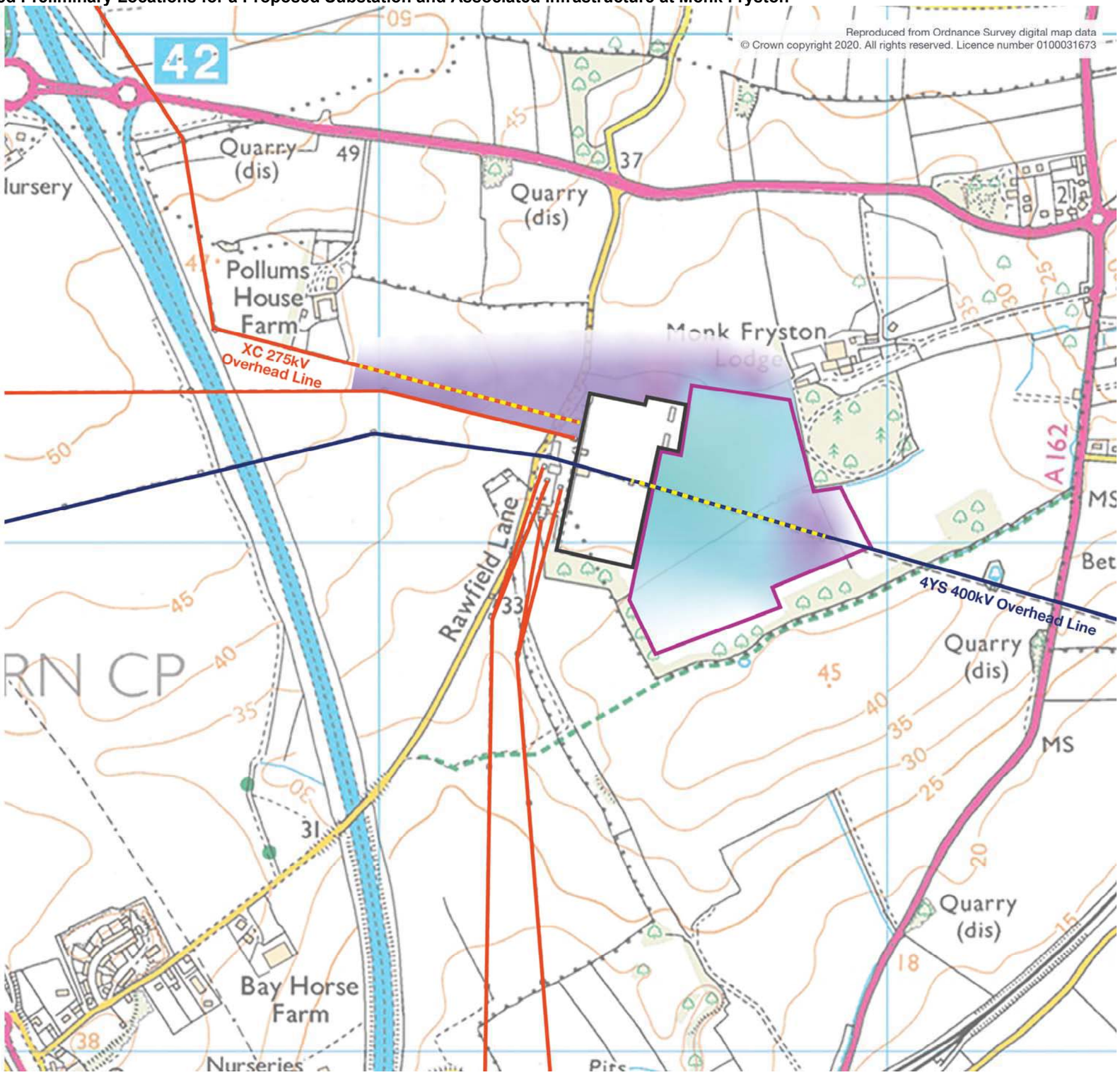
Key	
	Proposed location of associated infrastructure connecting to proposed, new MF3 substation
	Proposed location of new substation
	Existing 275kV overhead line
	Existing 400kV overhead line
	Partial removal of the existing 275kV XC/XCP overhead line (Poppleton to Monk Fryston)
	Partial removal of the existing 400kV 4YS overhead line (Monk Fryston to Eggborough)
	Proposed MF3 substation location
	Existing Monk Fryston substation



7. CONCLUSION AND NEXT STEPS

7.1 Conclusion

7.1.1 An options appraisal in accordance with National Grid's process has been conducted which has identified the preferred options for the proposed components summarised in **Section 1.3** of this report.

7.1.2 At York North, the options appraisal considered the combination of the following components: a CSEC Siting Area on the 400kV 2TW/YR overhead line; a Corridor to route the proposed 400kV and two 275kV overhead lines; and a substation Siting Area in proximity to the 275kV XCP overhead line. There were four Corridors (and one Corridor Section), four CESC Siting Areas and 12 substation Siting Areas identified, which equated to 21 feasible combination options.

7.1.3 It was concluded that Option B.YN3b was the preferred option providing a direct and short route for the overhead line from the 2TW/YR overhead line to substation Siting Area YN3b. While there are a number of constraints associated with the option (i.e. potential loss of ponds within Siting Area YN3b) it was considered, on balance and through collective discussion during the Preferred Option Workshop to present the most suitable solution. Two options have been proposed to connect the two new 275kV overhead lines from the substation (Siting Area YN3b) with the existing XCP 275kV overhead line. These options will be subject to further investigation and analysis.

7.1.4 At Tadcaster, ten Siting Areas were identified for two CSECs to be located on the existing XD and XC 275kV overhead lines. From an engineering perspective, with the exception of the length of underground cabling required between the two CSECs, there was little to differentiate between the Siting Areas. The decision was driven by traffic and access and potential landscape and visual impacts. It was concluded that Siting Area XC1 and Siting Area XD1 offered the optimal solution limiting the length of underground cabling required as far as possible, which in turn will limit the potential impacts to biodiversity through loss of vegetation.

7.1.5 Three Siting Areas were identified at Monk Fryston to locate a substation and a CSEC. Proximity and orientation to the existing substation was a key engineering driver for this option. It was concluded that Siting Area MF3 was the preferred Siting Area, but it was acknowledged that mitigation would be required to limit the impacts to Monk Fryston Lodge and the properties within its grounds.

7.2 Next Steps

7.2.1 The preferred Corridor and Siting Areas identified in this report, in conjunction with the other elements of the Options Identification and Selection process, will be kept under review throughout the development of the Project. Surveys will be undertaken to obtain baseline data, which will be used to inform the further development of the Project. Public consultation and engagement with key stakeholders, including landowners, will be undertaken and the feedback from consultation used to further inform the design.

APPENDIX 2A

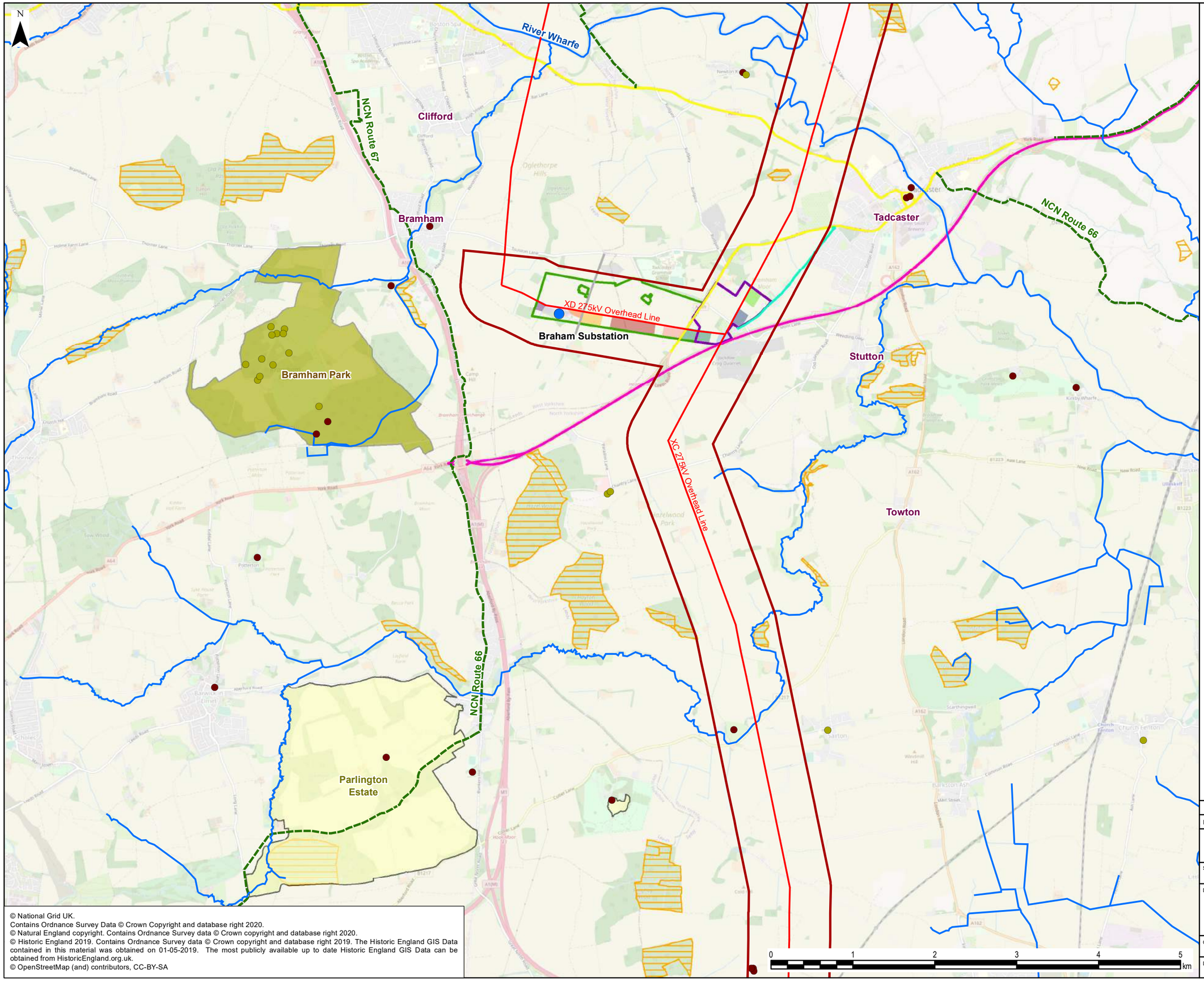
DATA CONSIDERED IN THE APPRAISAL

Data Gathering	
Landscape and Visual	
National Parks	Areas of Outstanding Natural Beauty
World Heritage Sites	Biosphere Reserves
Heritage Coasts	National trails
Regional/County landscape designations	Regional or local landscape character areas
Registered Parks and Gardens	Sustrans cycle routes
Residential receptors as represented by settlements	Designated recreational areas (e.g. country parks, CROW access land)
Outdoor recreational facilities (e.g. canals, caravan parks, mountain bike centres)	
Ecology	
European/Natura 2000 sites (i.e. SAC, SPA incl. candidate sites)	Ramsar sites
Sites of Special Scientific Interest	National Nature Reserves
Ancient Woodland	RSPB Important Bird Areas
Regional/County designations (CWS, SINC etc.)	Local Nature Reserves
Significant areas of UKBAP Priority Habitat	Significant populations of Protected Species
Historic Environment	
Scheduled Monuments	Grade I, Grade II* and Grade II Listed Buildings
Other historical structures, landscapes or assets of national and County importance	Registered Battlefields
Regionally or locally important archaeological sites	Conservation Areas
Historic townscape with important historic integrity	Archaeological sites recorded in the HER or the NMR
Heritage at Risk 2019	
Water	
National flood zones/areas benefiting from flood defences	Major aquifers

Data Gathering	
Significant salmonid/cyprinid fisheries	Regionally or locally important floodplain or defence
Source Protection Zones	
Socio-economics	
Major visitor attractions (e.g. in the Top 20 UK attractions)	Major settlements/urban areas
National Trust Inalienable land	Trans-European Networks (roads or national/European walking/cycling routes)
Military Airfields, Military Sites and Military Practice Areas	Passenger airports and ILS licensed aerodromes
Major utilities and other installations	Harbour areas and ports
Local businesses (business parks, industrial estates, retail/shopping centres etc.)	Aggregate and mineral resource areas
Woodland/forestry	Previously developed land of national, regional or local status
Traffic and Transport	
Local transport networks (incl. Public Rights of Way, local cycle routes, bus services etc.)	Rail lines and stations
Trunk Road Network, classified and unclassified roads	
Planning	
Local planning policy and allocations as required (including waste and minerals)	Significant planning applications/projects

APPENDIX 5A

CONTEXT OF THE TADCASTER AREA



LEGEND

- Study Area
- Substation
- 275 kV Overhead Line

Siting Area for underground cabling

- XC
- XD

Siting Area for XC

- XC Siting Zone 1
- XC Siting Zone 2
- XC Siting Zone 3

Siting Area for XD

- XD Siting Zone 1
- XD Siting Zone 2
- XD Siting Zone 3
- XD Siting Zone 4
- XD Siting Zone 5
- XD Siting Zone 6
- XD Siting Zone 7

Constraints

- Garnet Lane
- Warren Lane
- A64
- A659
- National Cycle Network
- River
- Grade I Listed Building
- Grade II* Listed Building
- Grade I Registered Parks and Gardens
- Grade II Registered Parks and Gardens
- Ancient Woodland

Rev	Date	Description			
0	17/12/2020	CPR & SS REPORT	EB	AB	AW

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Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 5A
APPENDIX - IN CONTEXT OF TADCASTER

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EB	17/12/2020	AB	17/12/2020	AW	17/12/2020

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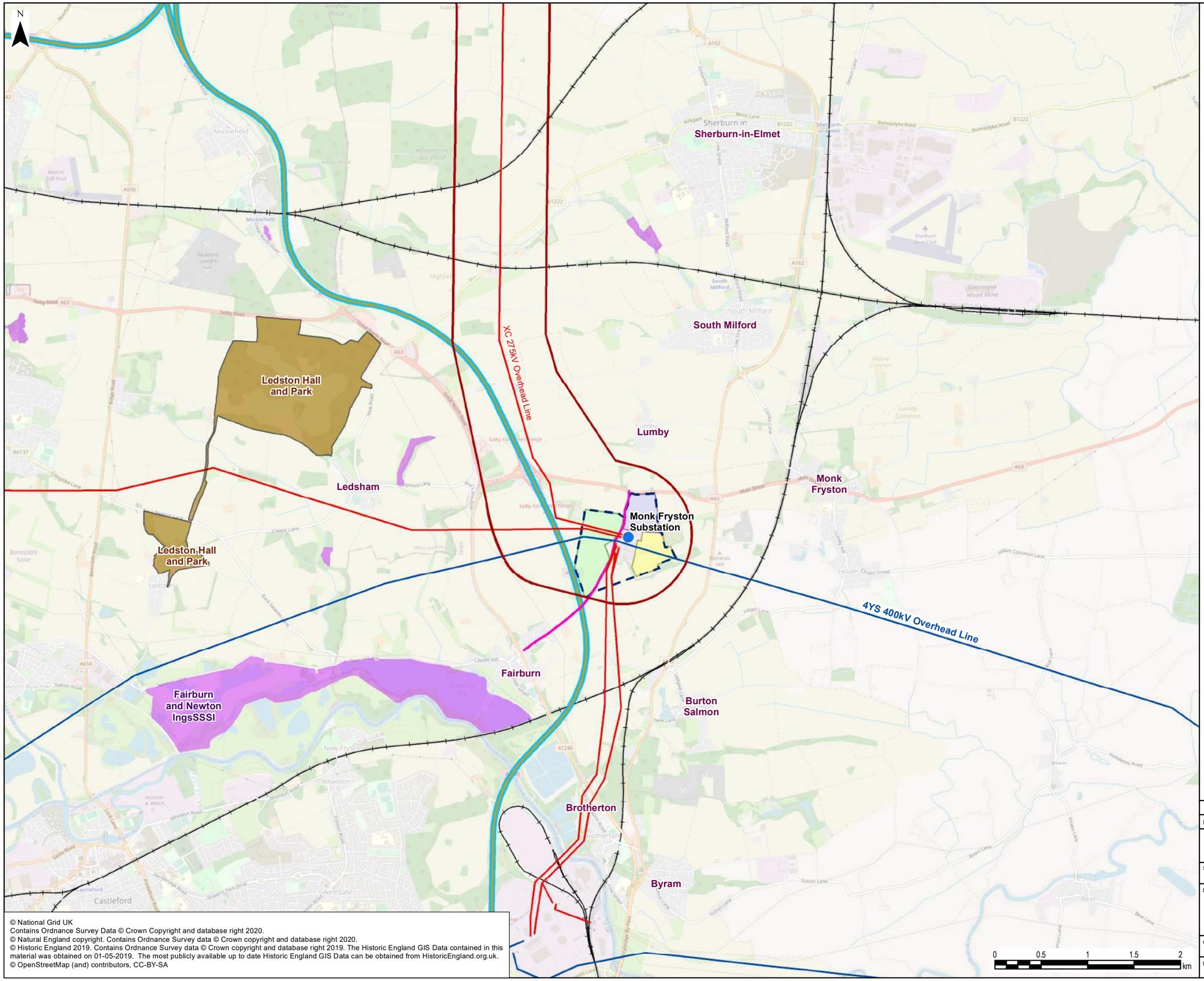
APPENDIX 6A

CONTEXT OF THE MONK FRYSTON AREA



LEGEND

- Study Area
- Substation
- 400 kV Overhead Line
- 275 kV Overhead Line

Monk Fryston Substation Extension Siting Zones

- MF1
- MF2
- MF3
- Associated Infrastructure Siting Area

Constraints

- Rawfield Lane
- Trunk Road
- Motorway
- Railway Track
- Grade II* Registered Parks and Gardens
- Site of Special Scientific Interest (SSSI)

Rev	Date	Description	GIS	Chk	App
0	08/01/2021	CPR & SS REPORT	EB	AB	AW

nationalgrid

Scheme: YORKSHIRE GREEN PROJECT

Document Title:

FIGURE 6A
APPENDIX - IN CONTEXT OF MONK FRYSTON

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EB	08/01/2021	AB	08/01/2021	AW	08/01/2021

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