

**The Great Grid Upgrade**

Norwich to Tilbury

# Preliminary Environmental Information Report

Non-Technical Summary

April 2024

**nationalgrid**

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# Contents

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<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.1	Overview	1
1.2	Purpose of this Non-Technical Summary	1
1.3	What is Norwich to Tilbury?	2
1.4	Who is National Grid?	2
1.5	Why is Norwich to Tilbury Needed?	2
1.6	The consenting process for Norwich to Tilbury	3
<b>2.</b>	<b>Main Alternatives Considered</b>	<b>5</b>
2.1	Introduction	5
2.2	Strategic Proposal	6
2.3	Options Identification and Selection	6
<b>3.</b>	<b>Project Description</b>	<b>11</b>
3.1	Key Components of Norwich to Tilbury	11
3.2	Construction Programme and Timings	13
<b>4.</b>	<b>Approach and Methodology</b>	<b>14</b>
4.1	What is the Preliminary Environmental Information Report and EIA?	14
4.2	Scoping, Consultation and Engagement	14
4.3	PEIR Approach and Methodology	15
4.4	PEIR Structure	16
<b>5.</b>	<b>Preliminary Environmental Assessment</b>	<b>17</b>
5.1	Introduction	17
5.2	Agriculture and Soils	17
5.3	Air Quality	19
5.4	Ecology and Biodiversity	21
5.5	Contaminated Land, Geology and Hydrogeology	24
5.6	Health and Wellbeing	28
5.7	Historic Environment	30
5.8	Hydrology and Land Drainage	32
5.9	Landscape and Visual	35
5.10	Noise and Vibration	38

5.11	Socio-economics, Recreation and Tourism	40
5.12	Traffic and Transport	42
5.13	Cumulative Effects	43
<b>6.</b>	<b>Looking Forward</b>	<b>45</b>
6.1	What Happens Next?	45
6.2	What if I would like further information?	45
6.3	How can I have my say?	46

Figure 1: Environmental Constraints Plan

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# 1. Introduction

## 1.1 Overview

- 1.1.1 Norwich to Tilbury (referred to as the Project) is a project proposed by National Grid Electricity Transmission plc (referred to as National Grid) to reinforce the high-voltage power network in East Anglia. It comprises approximately 184 km of new electricity infrastructure, comprising new overhead lines, a new 400 kV substation, works to three existing substations, underground cables and equipment to connect overhead lines to underground cables, known as Cable Sealing End (CSE) compounds.
- 1.1.2 This Non-Technical Summary (NTS) presents a summary of the information set out in the more detailed Preliminary Environmental Information Report (PEIR) for the Project.

## 1.2 Purpose of this Non-Technical Summary

- 1.2.1 The aim of this NTS is to enable the local communities and other stakeholders to understand the likely preliminary environmental effects arising from the Project, as reported in the PEIR, in a concise manner.
- 1.2.2 This NTS includes an outline of the main alternatives considered, description of the Project, the methodology and approach to the PEIR, the preliminary environmental assessment undertaken to date and next steps. Table 1.1 sets out further details of each of the sections of this NTS.

Table 1.1 – What’s included in this PEIR?

Section	What is it about?
1: Introduction	This section introduces National Grid, what the proposed Project is, where it is located and why it is needed.
2: Main Alternatives Considered	This section explains the main alternative designs considered to date and provides a summary of how the design has evolved and developed to date.
3: Project Description	This section explains how the Project would be built (should it be consented), what new electricity infrastructure would be implemented and how long construction would take.
4: Approach and Methodology	This section explains how the preliminary assessment has been undertaken and how it has been informed by consultation and stakeholder engagement to date.
5: Preliminary Environmental Assessment	This section provides a summary of the potential environmental effects arising from the Project which have been identified to date.

Section	What is it about?
6: Next Steps	This section explains what happens next in the Environmental Impact Assessment (EIA) process, and how you can have your say on the Project.

### 1.3 What is Norwich to Tilbury?

- 1.3.1 National Grid is working to build a cleaner, fairer, and more affordable energy system that serves everyone, powering the future of our homes, transport, and industry. The Project would support the UK’s net zero target through the connection in East Anglia of new low carbon energy generation, and by reinforcing the local transmission network.
- 1.3.2 National Grid is proposing to reinforce the high voltage power network in East Anglia. The reinforcement is needed because the existing transmission network, even with current upgrading, will not have sufficient capacity for the new renewable energy (a substantial proportion of which is generated by offshore wind) that is expected to connect to the network over the next ten years and beyond. Completion of the Project, together with other new reinforcements across the country will meet this future energy transmission demand both in East Anglia and across the UK.
- 1.3.3 The Project proposes to reinforce the transmission network between the existing substations at Norwich Main in Norfolk, Bramford in Suffolk, and Tilbury in Essex as well as connecting new offshore wind generation and an interconnector proposed to come ashore on, or in the vicinity of, the Tendring Peninsula via connection into a new 400 kV East Anglia Connection Node (EACN) Substation.

### 1.4 Who is National Grid?

- 1.4.1 National Grid owns, builds and maintains the electricity transmission network in England and Wales. Under the Electricity Act 1989, National Grid holds a transmission licence under which it is required to develop and maintain an efficient, coordinated, and economic electricity transmission system.

### 1.5 Why is Norwich to Tilbury Needed?

- 1.5.1 Great Britain already has 8.5 gigawatts (GW) of offshore wind energy in operation, and another 1.9 GW under construction. The Government’s Energy White Paper (December 2020) outlines a plan to increase energy from offshore wind to 40 GW by 2030 (with this Government target being increased in April 2022 to 50 GW) and this Project would support achieving that target.
- 1.5.2 New connections for new offshore wind and nuclear power generation projects and for interconnectors into East Anglia are expected to continue. These new connections are being constructed or are expected to connect into substations at Necton, Norwich Main, Bramford, Friston and Sizewell. Additionally, agreements are in place with two offshore wind farm projects and an interconnector based on their connections into a new EACN Substation. National Grid has a duty to facilitate new connections and maintain a safe National Electricity Transmission System (NETS) and has considered the capability of the existing network to support such connections.

- 1.5.3 East Anglia's 400 kV electricity transmission network was built in the 1960s. It was built to supply regional demand, centred around Norwich and Ipswich. With the growth in new energy generation from offshore wind, nuclear power and interconnection with other countries, there will be more electricity connected in East Anglia than the network can currently accommodate.
- 1.5.4 As a result, and to comply with its duties, National Grid needs to reinforce the electricity network to allow power to be imported to and exported from East Anglia. The reinforcement would provide additional capability to connect to areas of demand, allowing power flows across boundaries, and linking interconnectors to and from Europe.
- 1.5.5 The Project could also connect new offshore wind farms off the Essex coast and a European interconnector to the electricity transmission network. Two offshore wind farms, the North Falls Offshore Wind Farm and Five Estuaries Offshore Wind Farm, and the Tarchon Energy Interconnector (from Germany) are currently in development.

## 1.6 The consenting process for Norwich to Tilbury

- 1.6.1 If progressed with significant elements of overhead line, then the Project would be classified as a Nationally Significant Infrastructure Project (NSIP) and National Grid would need to obtain 'development consent' under statutory procedures set by Government. NSIPs are projects of certain types, over a certain size, which are considered by the Government to be of national importance, hence permission to build them needs to be given at a national level, by the relevant Secretary of State (in this case the Secretary of State for Energy Security and Net Zero). Instead of applying to the local authorities for planning permission, National Grid must apply to the Planning Inspectorate for a different permission called a Development Consent Order (DCO).
- 1.6.2 National Grid must submit an application for a DCO to the Planning Inspectorate, the government body responsible for operating the planning process for NSIPs, who will first decide whether to accept the application for Examination. If accepted for Examination, the Planning Inspectorate will appoint an independent Inspector or panel of Inspectors (known as the Examining Authority) to examine the application on behalf of the Secretary of State. The Examination is a public process in which interested parties are able to participate.
- 1.6.3 Following the examination, the Examination Authority will make a recommendation to the Secretary of State. The Secretary of State will decide whether development consent should be granted. The timescale between acceptance of the submission and a decision is approximately 18 months.
- 1.6.4 The DCO application for the Project is due to be submitted in Summer 2025 which will provide further details of the Project and will be accompanied by an Environmental Statement.

## Environmental Impact Assessment

- 1.6.5 The Project is classified as 'EIA development' under the Infrastructure Planning (EIA) Regulations 2017 (described in the rest of this document as 'the EIA Regulations 2017').
- 1.6.6 National Grid is required to undertake an EIA for the Project, which for an NSIP requires three documents to be prepared:
- EIA Scoping Report – prepared to define and agree the scope of the Environmental Statement with the Planning Inspectorate

- Preliminary Environmental Information Report – prepared to provide preliminary details of the environmental work and anticipated likely significant effects across a range of topics as result of the Project. The PEIR is published alongside statutory consultation
- Environmental Statement – prepared to outline the anticipated environmental effects across a range of topics the Project may have together with mitigation measures. The Environmental Statement is submitted with the DCO application

1.6.7 In November 2022 an EIA Scoping Report was issued to the Planning Inspectorate. Following this, in December 2022, the Planning Inspectorate provided National Grid with a formal opinion (a ‘Scoping Opinion’) on what should be included within the EIA. This Scoping Opinion was informed by comments from stakeholders.

1.6.8 A PEIR has been prepared as part of the pre-application consultation. As above, it sets out the preliminary environmental information and the preliminary findings of the EIA undertaken to date. The PEIR allows consultees to develop an informed view of the likely significant environmental effects of the Project and provide any comments on the preliminary findings during the 2024 statutory consultation process. This will enable National Grid to consider these comments when finalising the Project before an application is made to the Secretary of State.

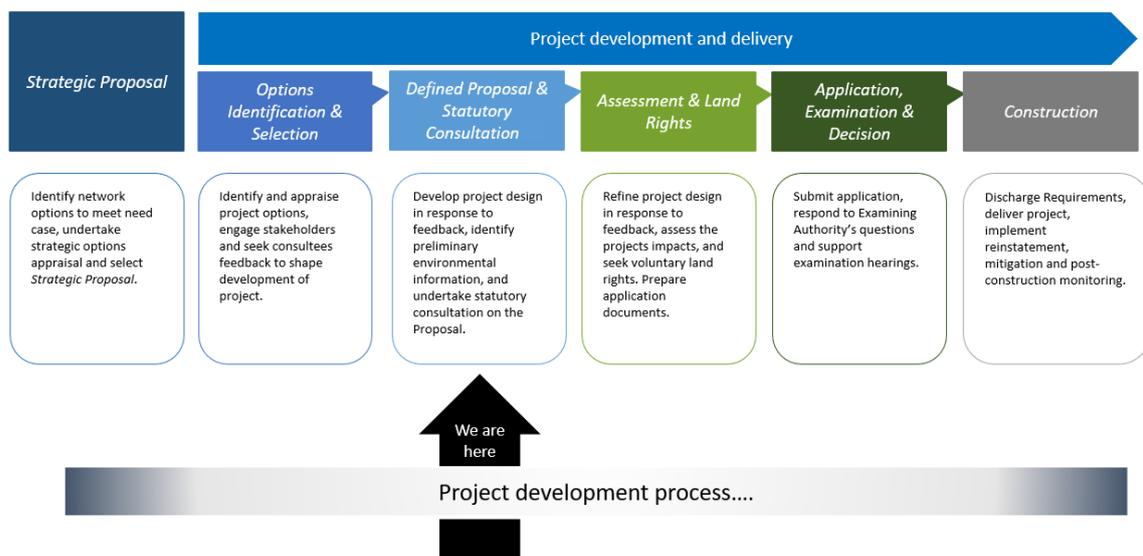
1.6.9 Following statutory consultation, the Environmental Statement will be prepared which will be submitted with the application for a DCO (expected submission Summer 2025).

# 2. Main Alternatives Considered

## 2.1 Introduction

- 2.1.1 National Grid undertakes options appraisals during the first stage of project development for all its new projects. These often identify a number of different approaches the project could take to achieve its stated purpose, also known as its ‘Needs Case’, and may include different locations, technologies or designs.
- 2.1.2 Options appraisal is a robust and transparent process that is used to compare options and to assess the positive and negative effects. Options are appraised across a wide range of criteria including environmental, socio-economics, technical and cost factors, as set out in National Grid’s Our Approach to Options Appraisal (National Grid, 2012). The aim is to find a balanced outcome, bearing in mind the range of National Grid’s statutory duties. The appraisal process is documented to provide, in a transparent manner, information upon which decisions are based.
- 2.1.3 Image 2.1 shows where the options appraisal sits within National Grid’s approach to project development and delivery, as set out in the National Grid’s publication ‘Our Approach to Consenting’ (National Grid, 2022).
- 2.1.4 The current design of the Project (presented at the 2024 statutory consultation) is the result of an iterative process that commenced at project inception, when the initial need to reinforce the network in East Anglia was identified in both the 2021 and 2022 editions of National Grid’s Network Options Assessment (NOA) reports. Environmental, engineering and economic considerations have influenced the optioneering<sup>1</sup> and design evolution process. There have also been extensive discussions with relevant stakeholders during the development of the Project including two rounds of non-statutory consultation.

Image 2.1 - National Grid’s Consenting Process



<sup>1</sup> The process where options are identified and discounted.

## 2.2 Strategic Proposal

- 2.2.1 Following the need for the reinforcement being identified, National Grid commenced their optioneering process to determine how best to achieve reinforcements. The objective of the first stage in the options appraisal process is to determine a preferred strategic option or Strategic Proposal.
- 2.2.2 There were numerous strategic options identified including a range of different technologies and multiple connection points including offshore and onshore connections.
- 2.2.3 The strategic options that might address network needs were appraised at a strategic level and considered the likely environmental and socio-economics effects, technical issues, and costs associated with each strategic option. A total of 23 strategic options were identified and appraised. Options were discounted owing to a number of factors including poor performing cost benefit analysis, the presence of complex Special Protection Area (SPA) / Special Area of Conservation (SAC) / Sites of Special Scientific Interest (SSSIs) and options having higher capital costs for limited benefit and the presence of the Suffolk Coast and Heaths National Landscape (an Area of Outstanding Natural Beauty (AONB)).
- 2.2.4 Following the appraisal process the preferred Strategic Proposal comprised:
- An offshore reinforcement between the south coast and East Anglia (whilst subject to separate study this is initially identified as between Sizewell and Richborough and referred to as the Sea Link project)
  - An onshore reinforcement between Tilbury and Grain
  - An onshore reinforcement between Norwich and Tilbury
- 2.2.5 The Project covers the onshore reinforcement between Norwich and Tilbury only and this element of the preferred Strategic Proposal comprised *'A new 400 kV double-circuit of ~60 km between Norwich Main and Bramford Substations and a new 400 kV double circuit of ~120 km between Bramford and Tilbury Substations via a new EACN Substation to be located in Tendring District'* (Corridor and Preliminary Routeing and Siting Study, National Grid, 2022).
- 2.2.6 The preferred Strategic Proposal (covering the onshore reinforcement between Norwich and Tilbury) was initially identified as comprising steel lattice pylons supporting overhead lines, with the use of appropriate mitigation including undergrounding in certain locations such as through the Dedham Vale National Landscape (an AONB). Further detail regarding how the Strategic Proposal was selected is outlined in previous reports – including the Corridor and Preliminary Routing and Siting Study (National Grid, 2022) and updated in the Strategic Options Back Check and Review (National Grid, 2023).

## 2.3 Options Identification and Selection

### Routeing and Siting and 2022 Non-Statutory Consultation

- 2.3.1 Routeing and siting work commenced following strategic proposal selection in the following four areas:
- Norwich Main Substation to Bramford Substation
  - Bramford Substation to the EACN Substation

- EACN Substation
- EACN Substation to Tilbury Substation

2.3.2 At this stage approximately 31 route corridors and siting options<sup>2</sup> were identified and appraised considering the likely environmental and socio-economics effects, technical issues, and costs associated with each option. Options were discounted owing to poor performing cost benefit analysis, the presence of complex environmental constraints and options having higher capital costs for limited benefit.

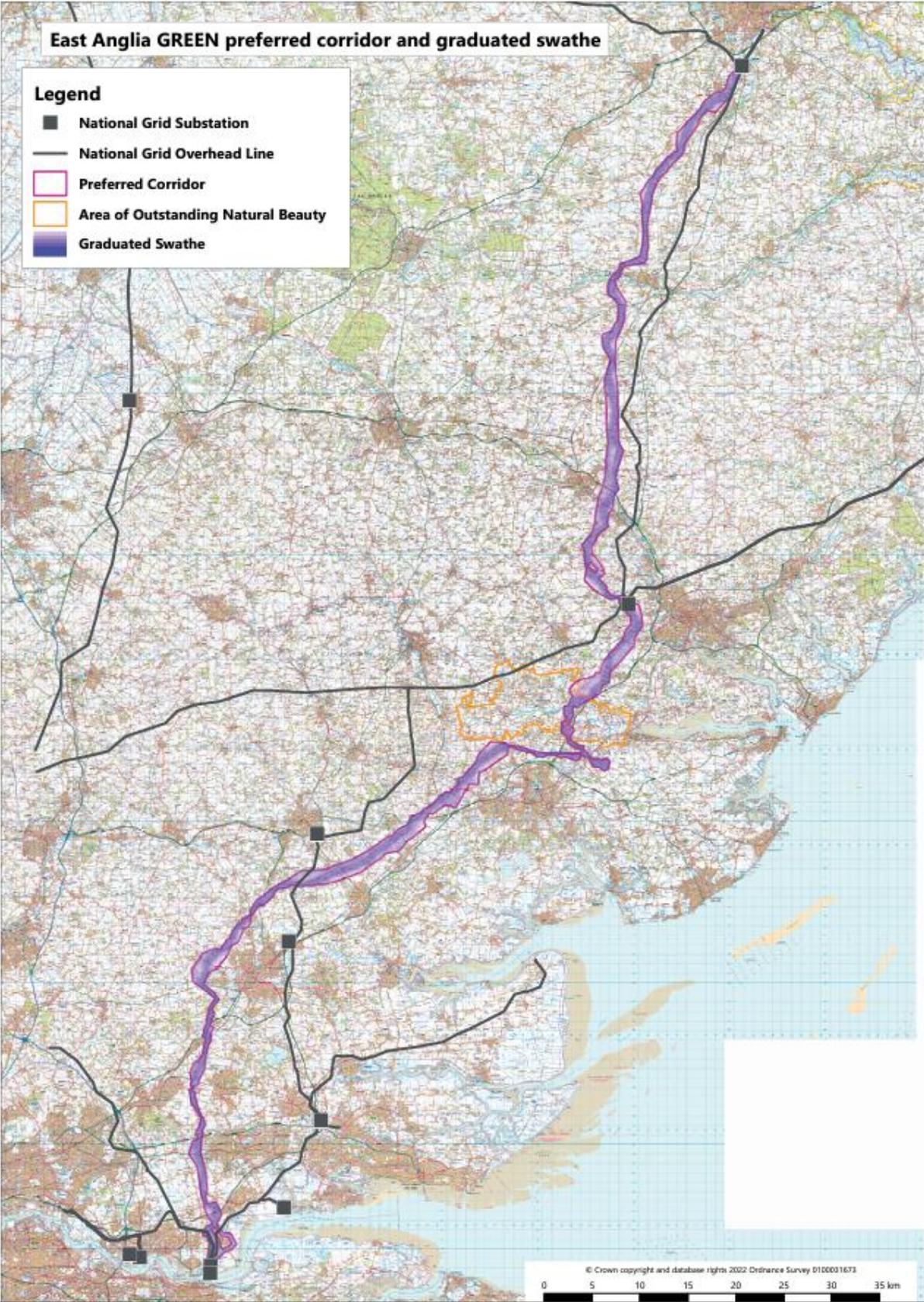
2.3.3 The routeing and siting stage resulted in an emerging preferred option – a preferred corridor and graduated swathe<sup>3</sup> and a zone for a new substation at Tendring being identified between the existing Norwich Main Substation and Tilbury Substation. The Corridor and Preliminary Routing and Siting Study (National Grid, 2022) presents further details of the routeing and siting stage. The preferred option is presented on Image 2.2 and was consulted on at the 2022 non-statutory consultation (which ran from 21 April 2022 until 16 June 2022).

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<sup>2</sup> The principles of which are outlined in the Corridor and Preliminary Routing and Siting Study (National Grid, 2022)

<sup>3</sup> The area the Project was most likely to be located based on the information available at that time. The darker colour indicated most likely and the lighter colour indicated less likely. The swathe is used at non-statutory consultation to help gather feedback.

Image 2.2 - Preferred Corridor and Graduated Swathe Presented at the 2022 Non-Statutory Consultation – as taken from the Corridor and Preliminary Routing and Siting Study (National Grid, 2022)



2.3.4 Feedback from stakeholders (including the local community) received from the 2022 non-statutory consultation was considered and taken into account to help shape and guide the development of the Project. Following the 2022 non-statutory consultation, the 2023 preferred draft alignment was developed.

## 2023 Non-Statutory Consultation

2.3.5 The 2023 preferred draft alignment (including pylon locations, areas of underground cable, CSE compounds and the area the EACN Substation may be located within) was subject to non-statutory consultation – the 2023 non-statutory consultation. The 2023 non-statutory consultation ran from 27 June 2023 until 21 August 2023.

2.3.6 Prior to the 2023 non-statutory consultation, a backcheck and review of the preferred option identified within the Corridor and Preliminary Routeing and Siting Study (National Grid, 2022) was conducted, and reported within the 2023 Design Development Report (National Grid, 2023). The 2023 Strategic Options Backcheck and Review (National Grid, 2023) concluded that the preferred Strategic Proposal, as presented in the 2023 non-statutory consultation remained valid and an appropriate basis on which to take the Project forward.

2.3.7 Feedback from stakeholders (including the local community) received from the 2023 non-statutory consultation has helped to shape and guide the development of the Project into the 2024 preferred draft alignment together with the draft Order Limits<sup>4</sup> and all associated temporary works presented within this PEIR. Feedback provided was considered and taken into account in the context of environmental and socio-economics constraints and opportunities, engineering feasibility and cost, and planning policy considerations.

2.3.8 Areas where the most extensive changes to the 2023 preferred draft alignment have been made (or have been considered) include:

- South of Norwich Main Substation
- Around 2 km in the Waveney Valley (potential for the use of underground cable)
- East of Wortham near Brook Farm Airstrip
- North and west of Mellis
- South of Offton
- North of Raydon Airstrip
- Moving the western CSE compound at Fairstead to the east
- Adoption of the existing gas pipeline corridor at Dunton Hills for the overhead line alignment

2.3.9 National Grid has prepared a Strategic Options Back Check and Review (SOBR) in accordance with National Grid's document 'Our Approach to Consenting' (National Grid, 2022). The 2024 SOBR appraises the ability of onshore and offshore options to meet the

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<sup>4</sup>The maximum extent of land within which the Project can be carried out. The draft Order Limits include both the permanent and temporary land required to build and operate the Project.

system need while balancing cost, technical performance, and environmental and socio-economics effects.

## 2024 Statutory Consultation

- 2.3.10 Following the 2023 non-statutory consultation feedback, the Project has been developed to form the 2024 preferred draft alignment (presented at the 2024 statutory consultation). The alignment includes an overhead line alignment (with pylon locations), sections of underground cable, locations of CSE compounds, the location of the EACN Substation, third party utilities diversion works, permanent access roads (where necessary), permanent drainage, environmental mitigation ('Environmental Areas'), areas identified for onsite Biodiversity Net Gain (BNG) (included within the 'Environmental Areas') and all associated temporary works associated with the construction and operation (and maintenance) of the Project.

# 3. Project Description

## 3.1 Key Components of Norwich to Tilbury

3.1.1 Current draft proposals for the Project, referred to as the 2024 preferred draft alignment, which are the subject of the 2024 statutory consultation, comprise:

- A new 400 kV electricity transmission connection of approximately 184 km overall length from Norwich Main Substation to Tilbury Substation via Bramford Substation comprising:
  - Approximately 159 km of new overhead line supported on approximately 510 steel lattice pylons (approximately 50 m in height – see Image 3.1) some of which are gantries (typically up to 15 m in height – see Image 3.2) within proposed CSE compounds or existing or proposed substations
  - Approximately 25 km of 400 kV underground cabling (some of which is located through the Dedham Vale National Landscape (an AONB))
- Six new CSE compounds each with a permanent access, to connect the overhead lines to the underground cables

3.1.2 A new 400 kV EACN Substation, with a new permanent access, on the Tendring Peninsula. This is proposed to be an Air Insulated Switchgear (AIS) substation<sup>5</sup>

- Substation extension works at the existing Norwich Main, and Bramford Substations and works within the existing Tilbury Substation to connect and support operation of the new transmission connection
- Temporary works associated with the construction of the Project

3.1.3 The Waveney Valley Alternative is also being considered and is the subject of consultation and ongoing assessment. The design alternative, if taken forward, would result in changes to those elements of the Project set out below. This would comprise:

- Installation of approximately 157 km of new 400 kV overhead line
- Installation of approximately 27 km of 400 kV underground cabling (some of which is located through the Dedham Vale National Landscape (an AONB))
- Eight new CSE compounds (each with a permanent access) to connect the overhead lines to the underground cables

3.1.4 All other works other than those listed above would remain consistent with either alternative.

3.1.5 The Waveney Valley Alternative, if taken forward and based on the 2024 preferred draft alignment, would comprise approximately 2 km less new 400 kV overhead line and approximately an additional 2 km of 400 kV underground cabling and two additional new CSE compounds, each with a permanent access, to connect the overhead lines to the underground cables.

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<sup>5</sup> A substation where the components are not enclosed.

- 3.1.6 In addition, third party utilities diversions and / or modifications would also be required to facilitate the construction of the Project. There would also be land required for mitigation, compensation and enhancement of the environment including BNG.
- 3.1.7 As well as the permanent infrastructure, land would also be required temporarily for construction activities including for example working areas for construction equipment and machinery, site offices, welfare, storage and temporary construction access.
- 3.1.8 Further details of the Project are included within Chapter 4: Project Description in Volume I of the PEIR.

Image 3.1 - Example of a 400 kV double circuit lattice pylon

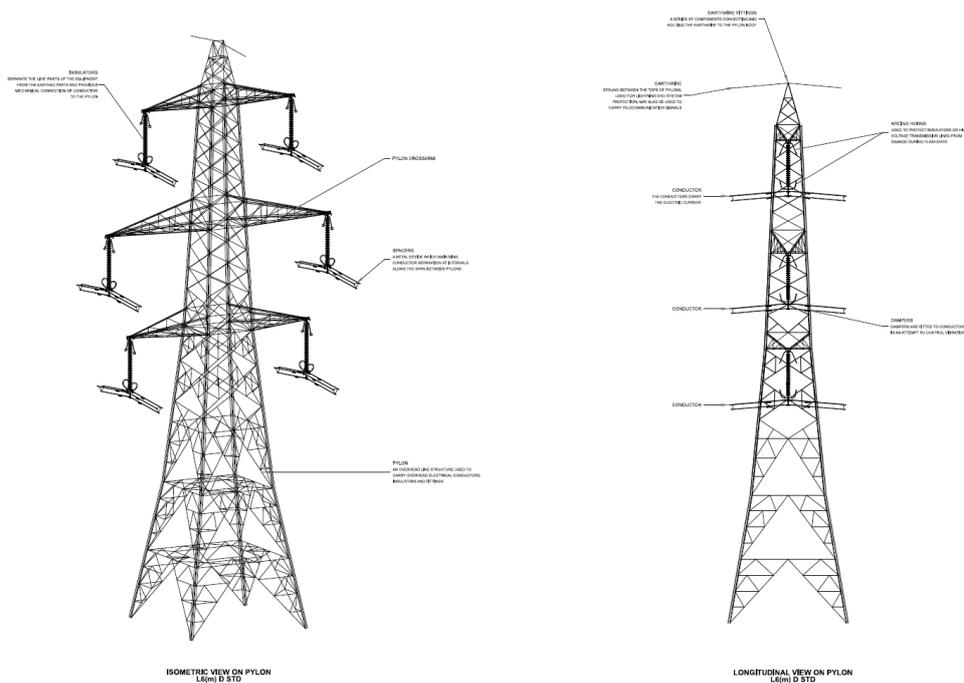


Image 3.2 - Example CSE compound with Gantry<sup>6</sup>



<sup>6</sup> Gantries, and compound sizes and/or layouts within the Project may differ from that presented in this image.

3.1.9 The Project has been broken down in eight geographical sections (referred to throughout the PEIR), based largely on Local Authority boundaries. These are presented on Figure 1: Environmental Constraints Plan and comprise:

- Section A – South Norfolk Council
- Section B – Mid Suffolk District Council
- Section C – Babergh District Council, Colchester City Council and Tendring District Council
- Section D – Colchester City Council
- Section E – Braintree District Council
- Section F – Chelmsford City Council
- Section G – Basildon Borough Council and Brentwood Borough Council (including part of Colchester City Council)
- Section H – Thurrock Council

## 3.2 Construction Programme and Timings

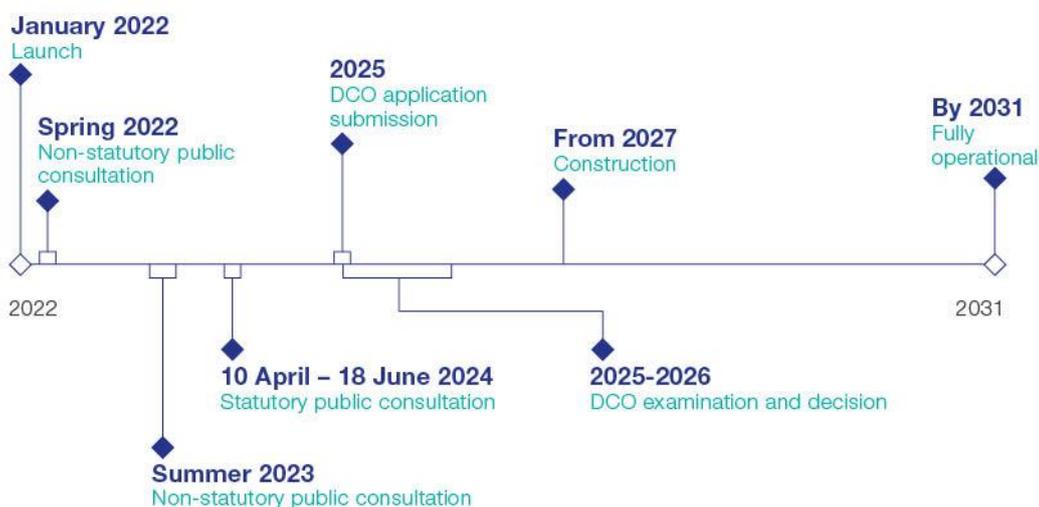
3.2.1 Should consent be granted in 2026, it is anticipated that access and construction of the Project would commence in 2027, starting with enabling works including, site clearance activities, the installation of construction compounds and access roads. It is expected that the main construction works would continue through to 2031 (four years).

3.2.2 While the phasing of the construction programme is yet to be confirmed, further information will be included in the Environmental Statement.

3.2.3 Certain advance works (such as archaeological trial trenching and protected species mitigation) would likely take place in advance of the main construction period as they are not construction works.

3.2.4 An indication of the Project timelines through to operation is provided in Image 3.3.

Image 3.3 - Indicative Project Timeline



## 4. Approach and Methodology

### 4.1 What is the Preliminary Environmental Information Report and EIA?

- 4.1.1 The PEIR presents a preliminary assessment of the likely significant environmental effects of the Norwich to Tilbury Project, to inform consultation.
- 4.1.2 The purpose of the PEIR is to enable members of the public, consultation bodies, and other stakeholders, to develop an informed view of the preliminary likely significant effects of the Project and comment on aspects of interest (see section 6 on how to provide feedback). Feedback received through the consultation process will be used by National Grid to inform the ongoing development of the Project design, and additional measures to address any identified significant environmental effects.
- 4.1.3 The PEIR has been prepared at a point in time during the EIA process when the design of the Project is still being refined, the likely significant environmental effects are still being assessed and the potential for mitigation measures is being fed back into the design.
- 4.1.4 The full findings of the EIA process will be presented in an Environmental Statement that will be submitted as part of the application for development consent. The Environmental Statement provides the public and relevant organisations (such as the Environment Agency, Natural England and Historic England) with the environmental information needed to understand and comment on a development and provides decision-makers with the environmental information to allow a decision to be made whether to grant consent for the development.
- 4.1.5 Key aims of the EIA process are to understand the current environmental conditions and predicted changes to them in the future (the 'baseline' and 'future baseline' respectively) and how those conditions may change as a result of a proposed project. Those changes are assessed in terms of how 'significant' they would be, and EIA is primarily concerned with 'likely significant effects' and not those considered unlikely to be significant. The EIA process also identifies and incorporates mitigation measures to avoid, reduce or offset any likely significant negative effects, which includes opportunities to enhance the environment through design.

### 4.2 Scoping, Consultation and Engagement

- 4.2.1 Engagement has been undertaken with consultees, stakeholders and other interested organisations.

#### Early Engagement

- 4.2.2 Central to the delivery of the EIA has been, and will continue to be, the focus on engagement with statutory and non-statutory consultees, community stakeholders, and other interested organisations and individuals.
- 4.2.3 A Scoping Report was submitted to the Planning Inspectorate in November 2022. The Scoping Report identified the potentially significant effects requiring assessment, determined the subject matter of the assessment and the methodologies for undertaking

the assessment. The Planning Inspectorate subsequently provided a Scoping Opinion, which included comments from a range of stakeholders, on behalf of the Secretary of State, in December 2022. The Scoping Opinion and the consultee responses have subsequently informed the preliminary assessment work and further design evolution to date. Responses to the comments received in the Scoping Opinion together with agreement on what has been scoped out of the assessment is provided in Appendix 5.1: National Grid's Responses to the Scoping Opinion in Volume III.

## Non-Statutory Consultation and Engagement

- 4.2.4 In addition to the formal scoping process, a programme of ongoing non-statutory consultation and engagement has been and continues to be undertaken with key stakeholders to inform the Project's design.
- 4.2.5 The PEIR has also been informed by non-statutory consultations undertaken by National Grid in 2022 and 2023. Feedback received in 2022 is detailed within the 2022 Non-statutory Consultation Feedback Report (National Grid, 2023) and feedback received in 2023 is detailed within the 2023 Non-statutory Consultation Feedback Report (National Grid, 2024) which is provided alongside the PEIR.

## 4.3 PEIR Approach and Methodology

- 4.3.1 EIA is a process for identifying the likely significant environmental effects (positive and negative) of a proposed development to inform the decision-making process for development consent orders.
- 4.3.2 The EIA considers all relevant topics that may be impacted, such as landscape, historic environment etc. The topics to be included or excluded (or 'scoped out') in the EIA were agreed with the Planning Inspectorate and other stakeholders through the scoping process, with the Planning Inspectorate providing a Scoping Opinion. The Scoping Opinion states the information that the Planning Inspectorate requires to be included (and agreed can be excluded) within an Environmental Statement.
- 4.3.3 The PEIR presents the preliminary EIA findings which are based on the information available at this stage of the process and the Project. A separate PEIR chapter presents the detailed findings for each topic that has been assessed.
- 4.3.4 A detailed description of the existing 'baseline' and where relevant 'future baseline' has been produced for the draft Order Limits, and where appropriate the area around the draft Order Limits, through a combination of desk-based studies, engagement and consultation and site-specific surveys.
- 4.3.5 Consideration has then been given to how any potential effects could be avoided, reduced or offset. This is referred to as mitigation. Mitigation measures include those that are intrinsic to and built into the design of the Project (also known as 'embedded mitigation'); good practice control and management measures (also known as 'standard mitigation') included within a Draft Outline Code of Construction Practice, and other measures that are added to the design purely to mitigate an effect (also known as 'additional mitigation').
- 4.3.6 At this preliminary stage the surveys and assessment work have been progressed to differing degrees for different technical assessment, and mitigation measures have not all been defined or designed.

- 4.3.7 Following the identification of mitigation all preliminary residual<sup>7</sup> 'potential effects' arising from the construction and operation (and maintenance) of the Project have been identified, for example loss of habitat or change in noise levels. The assessment considers the level of significance of each effect on each 'receptor' (the receiving environment such as water, air, land or specific species). The assessment has been undertaken by EIA specialists including ecologists and archaeologists. The general approach to determining 'significance' of an effect is to consider the sensitivity of a receptor alongside the nature and severity of the change. Details of how effects have been determined to be significant or not-significant for each aspect is provided in each topic chapter of the PEIR.
- 4.3.8 All preliminary residual potential effects are considered as part of the EIA process. However, 'likely significant effects' are the key issues that are identified when considering the level and type of effect and the sensitivity of the environmental receptor.
- 4.3.9 EIA also requires the consideration of potential cumulative effects:
- Intra-project effects (also referred to as 'inter-relationships between topics') occur when a receptor, resource or group of receptors is potentially affected by more than one source of direct environmental impact resulting from the same development. For example, a community may be affected by noise and dust impacts resulting from the construction phase activities of a single development
  - Inter-project effects (also referred to as 'cumulative effects') occur when a resource or receptor or group of receptors is potentially affected by more than one development at the same time and the impacts act together additively and / or synergistically (IEMA, 2011). For example, the construction traffic effects of a development combined with the construction traffic effects of another development may result in additional cumulative effects on the surrounding highway network
- 4.3.10 At this stage a preliminary assessment has been undertaken to identify the planned developments or other development within the area around the Project which has the potential to result in cumulative effects.

## 4.4 PEIR Structure

- 4.4.1 The PEIR comprises:
- PEIR Non-Technical Summary (this report)
  - Volume I: PEIR Main text
  - Volume II: PEIR Figures
  - Volume III: PEIR Technical Appendices

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<sup>7</sup> After mitigation has been applied.

# 5. Preliminary Environmental Assessment

## 5.1 Introduction

5.1.1 This section provides a summary of the preliminary assessment of likely residual significant effects to resources and receptors including:

- Agriculture and Soils
- Air Quality
- Ecology and Biodiversity
- Contaminated Land, Geology and Hydrogeology
- Health and Wellbeing
- Historic Environment
- Hydrology and Land Drainage
- Landscape and Visual
- Noise and Vibration
- Socio-economics, Recreation and Tourism
- Traffic and Transport
- Cumulative Effects

## 5.2 Agriculture and Soils

### Scope

5.2.1 The potential interaction between the Project and Agriculture and Soils is assessed in Chapter 6: Agriculture and Soils Volume I of the PEIR. The assessment covers effects on the following, during construction and operation (and maintenance):

- Soils
- Agricultural Land Classification (ALC), including Best and Most Versatile (BMV) land
- Land Use

### Study Area

5.2.2 The study area for the assessment comprises the area directly affected by the Project (the draft Order Limits) and a 1 km buffer around the draft Order Limits.

## Existing Baseline

- 5.2.3 A desk study was undertaken drawing on information from existing mapping from the British Geological Survey, Ordnance Survey, Soilscape mapping, Agricultural Land Classification (ALC) mapping and maps of agri-environmental, woodland and forestry schemes.
- 5.2.4 Best and most versatile (BMV) agricultural land is defined as land of Grades 1, 2 and 3a (excellent, very good and good quality land), which national policy advises should be avoided where possible. Provisional ALC Mapping shows that the study area predominately comprises of Grade 2 and 3 land, with a large area of Grade 1 land recorded around the Burnt Heath area (Section C). This mapping does not distinguish between ALC Grades 3a and 3b and so while this cannot be used to inform site-specific assessments it does provide an indication of the likely land classification. The Provisional ALC information available suggests that a large proportion of the study area may comprise BMV land.
- 5.2.5 There are areas of land within the study area under specific environmental agreements in relation to how the land is managed, including areas under Countryside Stewardship Agreements (Middle and Higher Tier), with areas of land to the south of Great Tey and Edney Common being under both entry level plus higher-level stewardship, as well as areas under organic entry level plus higher-level stewardship agreements.
- 5.2.6 The study area also includes small areas of fen peat soils near Roydon and Diss in south Norfolk (Sections A and B).

## Mitigation

- 5.2.7 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routeing and siting.
- 5.2.8 Standard mitigation is included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help minimise potential effects that could affect agriculture and soils receptors. These include reinstatement of land used temporarily to its pre-construction condition and use; undertaking works in accordance with standard practice soil handling techniques; and where practicable maintaining access to land either side of the construction working area throughout the construction period.
- 5.2.9 The Waveney Valley Alternative is likely to require the need for greater mitigation as the underground cabling would likely affect fen peat soils. Mitigation would need to be discussed and agreed with Natural England once soil characteristics are understood following the completion of surveys if this option was taken forwards.

## Preliminary Assessment

- 5.2.10 The potential effects of the Project on agriculture and soils include temporary and permanent loss of BMV land from agricultural production within the areas required for construction and operation (including maintenance works). Both temporary and permanent losses of BMV land have the potential to result in significant effects. There is also the potential for soil handling during construction to affect soil properties and

therefore affect soil function and soil quality<sup>8</sup>. It is considered that effects on soil quality and its associated ecosystem services would be significant during construction.

- 5.2.11 The Project has the potential to affect agricultural operations during construction and operation (including maintenance works). However, with appropriate standard practice measures implemented during these phases, effects are considered to be not significant.

### **Waveney Valley Alternative**

- 5.2.12 The Waveney Valley Alternative passes through sensitive peat soils, as does the overhead line option. The use of open cut techniques in the Waveney Valley Alternative could increase the risk of negative effects on soil materials when compared to the overhead line design. However, good practice standard handling and soil management practices would minimise the potential for permanent reduction in soil quality and function, although special consideration would be needed for areas of sensitive peat soils (within the draft Order Limits). Should trenchless techniques be used where there are fen peat soils this would limit the potential effects to this sensitive receptor.
- 5.2.13 If the Waveney Valley Alternative is taken forwards, although the magnitude of effects may be greater, the overall assessment of significance would be the same as for the overhead line design – both designs have the potential to result in significant effects.

## **5.3 Air Quality**

### **Scope**

- 5.3.1 The potential interaction between the Project and air quality is assessed in Chapter 7: Air Quality in Volume I of the PEIR. The assessment covers the effects of the following during construction:
- Dust
  - Traffic emissions
  - Generator and Non-Road Mobile Machinery (NRMM) emissions

### **Study Area**

- 5.3.2 The study area for the assessment comprises the area directly affected by the Project (the draft Order Limits) and a 2 km buffer around the draft Order Limits.
- 5.3.3 This study area is in accordance with the Institute of Air Quality Management (IAQM) dust guidance (IAQM, 2024). The study areas' sensitivity to dust soiling, health and ecological effects have been determined through assessing the number of receptors and their sensitivity to dust soiling and health effects within 20 m, 50 m, 100 m, and 250 m from the draft Order Limits.
- 5.3.4 The study area for construction traffic emissions has been determined from Primary Access Routes and predicted traffic numbers. For the assessment of construction traffic emissions, the criteria from the IAQM / Environmental Protection UK (EPUK) guidance

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<sup>8</sup> Soils provide a range of functions (which deliver a range of soil ecosystem services), such as a medium for plant (including food and biomass) growth, regulating water, storing carbon, a biological habitat, a platform for structures and supporting cultural heritage. These functions and the associated ecosystem services are delivered best when soils are healthy; soil quality refers to the ability of soils to continue to function in the long-term in a way that is appropriate to the soil characteristics.

(IAQM, 2017)<sup>9</sup> have been used to determine the affected road network (ARN). In areas where the above criteria are met, human receptors within 200 m of the road within the ARN are scoped into the assessment.

## Existing Baseline

- 5.3.5 The baseline study area has included a review of sources and available monitoring data within 2 km of the draft Order Limits. A review of the existing baseline has been undertaken to establish an understanding of the baseline air quality environment to identify areas that are likely to be sensitive to changes in emissions as a result of the construction of the Project. This was established through a desk study and through the use of existing monitoring data collected by the relevant local authorities. The review shows that there are three Air Quality Management Areas (AQMAs) within 2 km of the draft Order Limits.
- 5.3.6 There are a number of human and ecological receptors surrounding the Project. This includes settlements such as Gisletham, Offton, Ardleigh, Little Waltham and Thurrock.

## Mitigation

- 5.3.7 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routeing and siting.
- 5.3.8 The assessment of dust emission was used to specify appropriate standard measures which have been included within the Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of air quality effects. This includes management of Heavy Goods Vehicles (HGV) speeds on haul roads, prohibiting bonfires and waste burning, use of specific HGVs and locating generators away from sensitive receptors, where possible.
- 5.3.9 The Waveney Valley Alternative would introduce the need for an additional Primary Access Route, along the A1066 from Thetford, which would be used to bring in cable drums.

## Preliminary Assessment

- 5.3.10 The potential effects of the Project on air quality include construction dust arising from demolition, trackout (transportation of dust and dirt onto the public road network), earthworks and construction activities, increases in Nitrogen Dioxide (NO<sub>2</sub>) and particulate matter concentrations from construction traffic and emissions from construction equipment and plant. However, the preliminary assessment concluded that effects would be not significant in relation to air quality receptors.
- 5.3.11 Further to the above, effects from changes to air pollutant concentrations because of additional road traffic have been modelled in the air quality assessment. For human receptors, no locations are predicted to exceed the NO<sub>2</sub> annual mean standard in 2028<sup>10</sup>.

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<sup>9</sup> Guidance from Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) for the consideration of air quality within the land-use planning and development control processes.

<sup>10</sup> The NO<sub>2</sub> annual mean standard is 40 µg/m<sup>3</sup>

The maximum predicted concentration was 19.8 microgrammes per cubic metre ( $\mu\text{g}/\text{m}^3$ )<sup>11</sup> at a receptor located within the AQMA 24 and adjacent to A1089 Ferry Road, west of Tilbury (Section H). Changes to annual mean  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ <sup>12</sup> are predicted to be negligible at all receptors and all concentrations are below the air quality standards. Therefore, the effects of  $\text{NO}_2$ ,  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  at human receptors, as a result of the Project, are predicted to be not significant. For ecological receptors, the effect is less than 1% of the relevant lower critical load and therefore considered to be not significant.

### **Waveney Valley Alternative**

- 5.3.12 If the Waveney Valley Alternative is taken forwards it is anticipated that effects would be similar to the overhead line design.
- 5.3.13 No additional negative effects from construction dust have been identified in relation to the Waveney Valley Alternative. Although there may be more construction activity associated with undergrounding when compared to the overhead line design, risks associated with dust soiling and to human health would still be high – as per the overhead line design.
- 5.3.14 Current figures suggest that for the Waveney Valley Alternative there would be additional traffic movements. The available traffic data indicates that the screening threshold of 100 AADT of HDVs (>3.5 t) outside of AQMAs is exceeded at A1066 High Road and Lion Road for the Waveney Valley Alternative. However, these are not of a magnitude which could result in a new significant effect.

## **5.4 Ecology and Biodiversity**

### **Scope**

- 5.4.1 The potential interaction between the Project and ecology and biodiversity is assessed in Chapter 8: Ecology and Biodiversity in Volume I of the PEIR. The assessment covers effects on the following receptors, during construction and operation (and maintenance):
- Statutory designated sites
  - Non-statutory designated sites
  - Protected and notable habitats (including ancient woodland and habitats of principal importance)
  - Terrestrial and aquatic biodiversity (including protected, notable, and non-native and invasive flora and fauna)

### **Study Area**

- 5.4.2 The study area for the assessment comprises the area directly affected by the Project (the draft Order Limits) and a buffer around the draft Order Limits. The buffer can vary for different biodiversity receptors based on the area over which changes arising from construction and operation (including maintenance) could lead to ecologically significant effects.

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<sup>11</sup> Microgrammes per cubic metre - A measure of concentration in terms of mass per unit volume. A concentration of  $1 \mu\text{g}/\text{m}^3$  means that one cubic metre of air contains one microgram (10<sup>-6</sup> grams) of pollutant

<sup>12</sup> Particulate matter -  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  – particles of less than 10 and 2.5 micrometres in diameter, respectively.

- 5.4.3 A 2 km buffer was used as for all biodiversity receptors excluding the following:
- SAC<sup>13</sup> where bats are the qualifying feature – 30 km buffer
  - SAC, SPA<sup>13</sup> and Ramsar Sites<sup>14</sup> – 20 km buffer
  - Ancient Woodland and Habitats of Principal Importance in England – 200 m buffer, and
  - Bats – 6 km buffer

## Existing Baseline

- 5.4.4 There are no SACs with bats as the qualifying feature within 30 km of the draft Order Limits. A total of 29 internationally important sites designated for biodiversity are located within the 20 km study area. However, the potential for effects is limited to only five sites (Norfolk Valley Fens SAC, Thames Estuary and Marshes Ramsar site and SPA and Stour and Orwell Estuaries SPA and Ramsar site) which have been considered within the PEIR.
- 5.4.5 Twenty-one nationally important sites designated for biodiversity (all SSSIs) are located within the 2 km study area and an additional three SSSIs (Hangman's Wood and Deneholes, Cattawade Marshes and Stour Estuary) that are beyond the 2 km study area have also been considered following consultation with Natural England. Seventeen of these sites have been identified with potential impact pathways with the Project, including two sites which are within the draft Order Limits. Figure 1: Environmental Constraints Plan shows statutory designated sites.
- 5.4.6 Natural England are considering an extension to Mucking Flats and Marshes SSSI (referred to as North Thames Estuary and Marshes Proposed SSSI). This proposed SSSI affects several land parcels within and immediately adjacent to the draft Order Limits. It is understood that this land, most of which supports open mosaic habitat on previously developed land, is of high importance for invertebrates, birds, and flora. The area of interest does not define a future SSSI boundary but does identify areas of potential importance.
- 5.4.7 It is anticipated that the SSSI notification would occur before the application for Development Consent for this Project will be submitted. Natural England have agreed to share survey data collected as part of their assessment with the Project, allowing a robust assessment of the importance of biodiversity receptors in this area to be included within the Environmental Statement.
- 5.4.8 Thirteen locally important statutory sites designated for biodiversity (all Local Nature Reserves (LNRs)) are located within the 2 km study area. Ten of these sites have been identified with potential impact pathways with the Project, including one site which is within the draft Order Limits.
- 5.4.9 Three hundred and ninety-seven non-statutory sites designated for biodiversity (County Wildlife Sites (CWS), Local Wildlife Sites (LWS) and Roadside Nature Reserves (RNR)) are located within the 2 km study area. One hundred and sixty-eight of these sites have been identified with potential impact pathways with the Project, including 38 sites that are located within the draft Order Limits.

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<sup>13</sup> Sites protected at a European level

<sup>14</sup> Site protected at an international level.

- 5.4.10 Forty-five blocks of Ancient Woodland are also present within the 200 m study area. Of these, four blocks are located within, or extend into, the draft Order Limits (Bullen Wood and Round Wood in Section B and Bushey Wood and Writtle-Writtlepark Wood in Section F).
- 5.4.11 The majority of the land within the draft Order Limits comprises and pastoral farmland with boundary features comprising hedgerows, ditches, and watercourses. Multiple parcels of semi-improved grassland, woodland and areas of open mosaic habitat on previously developed land have also been identified. Priority Habitats (coastal and floodplain grazing marsh, deciduous woodland, good quality semi-improved grassland, traditional orchard, lowland heathland and lowland fens) make up approximately 3% of the land within the draft Order Limits.
- 5.4.12 Protected and notable species known to be present within the draft Order Limits include 14 species of flowering plant, one bryophyte species, four species of reptile, 55 species of bird (of which 27 have been confirmed breeding), ten species of bat, dormouse, otter and badger. Four species on invasive non-native plant have also been recorded within the draft Order Limits.
- 5.4.13 The habitats within the draft Order Limits also have the potential to support protected and notable terrestrial invertebrates, wintering and passage birds, water vole, brown hare, common toad, harvest mouse, hedgehog and polecat.

## Mitigation

- 5.4.14 Embedded mitigation measures designed to avoid or reduce significant effects on biodiversity receptors are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR. This includes the delivery of a minimum of 10% BNG, sensitive routeing and siting, underground cabling, landscape planting and use of clear span bridges to cross large/sensitive watercourses. Trenchless crossing techniques would also be employed at several location as detailed in Table 4.5 in Chapter 4: Project Description in Volume I of the PEIR.
- 5.4.15 Standard mitigation measures are included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help to control and manage impacts that could affect biodiversity receptors and ensure legal compliance.
- 5.4.16 Natural England have agreed to use a District Level Licensing (DLL) approach to mitigate potential effects on great crested newts.
- 5.4.17 Where peat-dependent habitats are present a bespoke compensation package would be developed to compensate for any loss of this irreplaceable habitat.
- 5.4.18 Additional mitigation will be developed and detailed in full within the Environmental Statement and parallel Habitats Regulations Assessment (HRA) and will likely include measures such as receptor-specific mitigation strategies, method statements and derogation licences. The Environmental Statement and HRA will be submitted as part of the DCO application.

## Preliminary Assessment

- 5.4.19 Potential effects of the Project on ecology and biodiversity include both direct and indirect effects to habitat (or land functionally linked to it) and species from construction pollution (i.e. vibration, dust, air quality, light, noise and visual), temporary and permanent habitat loss/fragmentation/loss of habitat quality/function, harm/mortality/disturbance to species,

degradation/fragmentation of retained habitats, and disruption of hydrological links that can affect groundwater dependent terrestrial ecosystems.

5.4.20 The assessment concluded that with the implementation of mitigation measures, effects on all biodiversity receptors are likely to be not significant. There are two exceptions to this:

- Construction-related effects on the North Thames Estuary and Marshes Proposed SSSI which are assessed to be negative and potentially significant. This is largely due to the uncertainty in the extent of land that will be included in the SSSI and reasons for designation at this stage
- Operational effects on Round Wood and Writtle-Writtlepark Wood which are assessed to be positive and potentially significant. This is due to the habitat regeneration that would occur following removal of the existing overhead line in these woodlands

### **Waveney Valley Alternative**

5.4.21 If the Waveney Valley Alternative is taken forwards, it is anticipated to result in an increased magnitude of ecological effects compared to the overhead line design as a result of three main factors:

- Presence of peat-dependent habitats – the extent of fen peat soils within the River Waveney floodplain is not currently known. Lowland fens (a peat-dependent habitat) are considered an irreplaceable habitat and if present would require the development of bespoke compensation with respect to BNG principles
- Wortham Ling SSSI - due to the greater extent of vegetation clearance (less than 1 ha) and temporary drainage installation required within the designation.
- Tree/woodland removal – the draft Order Limits for the Waveney Valley Alternative contain more trees/woodland that would require removal compared to the overhead line design

5.4.22 Mitigation and/or reinstatement for these effects is considered to be more challenging as the Waveney Valley Alternative has a larger construction footprint compared to the overhead line design.

5.4.23 In the absence of mitigation, the effect on peat-dependent habitats is assessed to be negative: likely significant. With mitigation in place, effects are assessed as not likely to be significant – as it is assumed a bespoke mitigation package would be agreed with Natural England, the relevant Local Planning Authority and Suffolk Wildlife Trust.

## **5.5 Contaminated Land, Geology and Hydrogeology**

### **Scope**

5.5.1 The potential interaction between the Project and contaminated land, geology and hydrogeology is assessed in Chapter 9: Contaminated Land, Geology and Hydrogeology in Volume I of the PEIR. The assessment covers effects on the following during construction and operation (and maintenance):

- Contaminated land and the receptors that could be affected by existing contaminants within the soil

- Geology including designated geological sites and minerals
- Hydrogeology including groundwater quality, levels, and flow

## Study Area

5.5.2 The study area comprises the area directly affected by the Project, as defined by the draft Order Limits, plus a 250 m buffer for geology and contaminated land and up to 500 m for hydrogeology.

## Existing Baseline

5.5.3 Baseline conditions have been gathered from desk-based information using information from existing records including British Geological Survey (BGS) geological mapping, hydrogeological maps, Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map, available historical mapping, information from Local Authorities and information held by the Environment Agency.

## Contamination

5.5.4 Earliest available historical mapping indicates the majority of the study area comprises undeveloped agricultural land and farm buildings with generally a very low risk of potential sources of significant existing contamination. Based on the contaminated land risk assessment six sites within the study area have been identified where historical or current land uses may have resulted in a potentially moderate or above risk to sensitive receptors from existing contamination these include; Thornbush Hall - a historical landfill site, two former RAF sites – Raydon and Boxted, land associated with a Highways Depot, land associated with the former Tilbury Power Station landfills and land associated with the former Tilbury Power Station.

## Geology

5.5.5 Superficial deposits beneath the study area comprise the following:

- Sections A, B, D, E and F comprises the Lowestoft Formation (Diamicton). Where river valleys cross the draft Order Limits these areas comprise the Lowestoft Formation (Sand and Gravel), Alluvium, River Terrace Deposits, Head Deposits and Kesgrave Catchment Subgroup
- Section C comprises the river valley deposits described above and large areas of Cover Sands
- Section G and H the superficial deposits is recorded to be absent within much of the sections and where present are dominated by the river valley deposits of Alluvium, River Terrace Deposits and Head Deposits

5.5.6 Bedrock beneath the study area has been identified as:

- Section A comprises bedrock of the White Chalk Subgroup
- Section B comprises bedrock of the White Chalk Subgroup, Newhaven Chalk Formation and Crag Group
- Section C comprises bedrock of the Thames Group and Red Crag
- Sections D, E, F and G comprises bedrock of the London Clay Formation, with the Claygate Member also outcropping within Section F and Section G

- Section H comprises bedrock of the London Clay Formation, Lambeth Group, Thanet Formation and the White Chalk Subgroup

5.5.7 The northern part of the study area within Norfolk crosses mineral safeguarded areas for the following sites Swardeston Quarry, Mangreen Recycling Centre and Mangreen Quarry which are considered as Safeguarded Sites. In Suffolk, the study area crosses through several Mineral Consultation Areas (MCAs) for sand and gravel. Alongside this, the study area also interacts with an existing concrete batching plant (Poundfield Products). In Essex, parts of the study area are located within a Mineral Safeguarded Areas (MSA) for sand and gravel and brickclay. The study area also interacts with some existing minerals sites and the associated MCAs. In Thurrock, parts of the study area are within a MSA for sand and gravel. Three safeguarded existing minerals infrastructure sites interact with the study area, these include Orsett Quarry, Rainbow Shaw Quarry and Tilbury 2 Construction Materials and Aggregates Terminal (CMAT).

5.5.8 One Local Geological Site is located within the study area at White Notley, within Section E, and relates to an example of the White Notley Puddingstone. Three geological SSSIs have been identified within the study area, Hascot Hill Pit, Marks Tey Brickpit and River Ter.

## Hydrogeology

5.5.9 A review of the aquifer designations across indicates that that Superficial deposits across the study area are classified as follows:

- Secondary A Aquifers: Alluvium, Sheringham Cliffs Formation, Happisburgh Glacigenic Formation, Lowestoft Formation – Sand and Gravel, River Terrace Deposits, Ingham Sand and Gravel Formation, Croxton Sand and Gravel Member Glaciofluvial Deposits, Kesgrave Catchment Subgroup and Stanmore Gravel Formation
- Secondary B Aquifers: Cover Sands
- Secondary Undifferentiated Aquifer: Lowestoft Formation – Diamicton and Head Deposits
- Unproductive Strata: Peat

5.5.10 The bedrock deposits are classified as follows:

- Principal Aquifers: White Chalk Subgroup, Crag Group, Newhaven Chalk Formation, Red Crag Formation and Chillesford Church Sand Member
- Secondary A Aquifers: Undifferentiated Thanet Formation, Lambeth Group, Claygate Member, Bagshot Formation and Harwich Formation, and
- Unproductive Strata: Thames Group and London Clay Formation

5.5.11 Most of the study area within Sections A, B, C, D, E and H is within a groundwater Source Protection Zone (SPZ) 3, which is the lowest sensitivity SPZ. In addition to the SPZ3, the study area also crosses a number of SPZ2s and SPZ1s.

5.5.12 Groundwater within the study area is generally classified as ‘Medium’ vulnerability. Small discrete sections of the study area are classified as ‘unproductive’ or ‘Low’ vulnerability, generally where unproductive bedrock is present, and ‘Medium-High’ generally where more granular material are present over the bedrock. There are extremely limited areas of ‘High’ vulnerability within the study area and these are generally located where

Principal Aquifer bedrock is present with no overlying superficial deposits protecting the aquifer.

- 5.5.13 A total of 62 licenced groundwater abstractions and 83 deregulated groundwater abstractions are identified within the study area, of which six licenced groundwater abstractions and two deregulated abstractions are located within the draft Order Limits. Information currently received in relation to Private Water Supplies indicates that there are no supplies within the draft Order Limits.

## Mitigation

- 5.5.14 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routing and siting.

- 5.5.15 Standard mitigation is included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of effects that could affect contaminated land, geology and hydrogeology receptors. These include:

- Undertaking ground investigations and assessment to inform design
- Undertaking a Foundation Works Risk Assessment following detailed design at locations where piled foundations are anticipated Use of appropriate Personal Protective Equipment (PPE)
- Appropriate training of construction and maintenance workers
- Use and storage of chemicals and fuels are to be undertaken in accordance with Environment Agency guidance
- Control of earthworks and materials movement
- Temporary dewatering activities during construction would be undertaken in accordance with Environment Agency guidance and if required, an Abstraction Licence and Environmental Permit (for the discharge) would be obtained
- Protocols for dealing with unexpected contamination
- Potential working restrictions within a SPZ 1 and 2
- Additional assessment where a site within the draft Order Limits is a moderate or above risk to sensitive receptors and would be disturbed by the construction of the Project
- Hydrogeological Risk Assessment post consent within areas outlined within the Environmental Statement, control of run-off and protection of earthworks mounds and stockpiled soil
- A groundwater risk assessment will be undertaken as part of the EIA to inform additional mitigation measures

- 5.5.16 The potential effects of the Project on contaminated land, geology and hydrogeology include:

- Potential damage or loss of Sites of Geological Importance
- Potential sterilisation of safeguarded minerals

- Changes to groundwater levels, quality and recharge rates caused by potential temporary dewatering during construction (at trenchless crossing locations)
- Mixing of aquifer bodies due to the potential connection of aquifer units a trenchless crossing and where piling is required
- Exposure to and/or mobilisation existing potential contamination through ground disturbance during construction activities
- Introduction of new contamination

## Preliminary Assessment

5.5.17 The assessment concluded that effects from the construction and operational (and maintenance) phases would be not significant in relation to contaminated land, geology and hydrogeology.

### Waveney Valley Alternative

5.5.18 If the Waveney Valley Alternative is taken forwards, it is anticipated that effects from the construction and operational (and maintenance) phases would be similar to other areas of undergrounding within the Project which have been assessed as not significant.

## 5.6 Health and Wellbeing

### Scope

5.6.1 The potential interaction between the Project and human health is assessed in Chapter 10: Health and Wellbeing in Volume I of the PEIR. The assessment covers effects on the following:

- Health-related environmental change (for example, air quality, noise, traffic, and transport related effects) during construction and operation (and maintenance) relating to:
  - Both physical and mental health and wellbeing
  - Both the general population, and vulnerable groups/communities (defined<sup>15</sup> by characteristics such as age, ethnicity, economic status, disability, sex/gender) who may be disproportionately affected by such changes

### Study Area

5.6.2 The study area for Health and Wellbeing has been defined using professional judgement and experience of other similar linear projects. The study area is defined by the boundaries of the Local Authorities in which the Project is located. The Health and Wellbeing assessment also takes account of the study areas of related topics that may affect environmental change, notably Air Quality, Contaminated Land, Geology and Hydrogeology, Hydrology and Land Drainage, Landscape and Visual, Noise and Vibration, Socio-economics, Tourism and Recreation, and Traffic and Transport.

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<sup>15</sup> Defined based on legislation, policy, health/equality assessment practice, IEMA guidance etc.

## Existing Baseline

- 5.6.3 In order to understand the existing health and wellbeing baseline, data illustrating the existing health and wellbeing context has been collected through a desk-based study using publicly available sources and documents. Data has been collected regarding ethnicity, deprivation, housing and employment, local health, mental health and vulnerable groups. Gathered data shows that across the study area statistics vary between the local authorities, in comparison with the National average. For example, in Tendring there are high levels of unemployment with a high proportion of people living with long term illness, a high rate of hospital stays for self-harm, many areas in the district suffering from income deprivation and one of the lowest life expectancies for males and females in the study area. While in South Norfolk there is an aging population however, life expectancy is one of the highest in the study area.
- 5.6.4 Health also takes account of baseline data presented in Air Quality, Contaminated Land, Geology and Hydrogeology, Hydrology and Land Drainage, Landscape and Visual, Noise and Vibration, Socio-economics, Tourism and Recreation, and Traffic and Transport in Volume I of the PEIR.

## Mitigation

- 5.6.5 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routeing and siting.
- 5.6.6 Standard mitigation measures have been included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of effects that could affect health and wellbeing. This includes measures to manage dust, waste, water, noise, vibration and soil during construction, informing members of the community and local businesses about construction activities through active community liaison, and management of public rights of way disruptions.

## Preliminary Assessment

- 5.6.7 The potential effects of the Project on health and wellbeing include the creation of additional jobs, changes to landscape character and visual amenity effects, increased traffic flows and severance effects, potential influences on air quality during construction, potential disruption and closures of business, recreation and tourism facilities and potential influences on noise levels. However, the assessment concluded that effects would be not significant in relation to health and wellbeing.

## Waveney Valley Alternative

- 5.6.8 If the Waveney Valley Alternative is taken forwards it is anticipated that with appropriate mitigation, effects from the construction and operational (and maintenance) phases would be similar to the overhead line design. No additional significant effects have been identified when compared to the overhead line design.

## Electric and Magnetic Fields

- 5.6.9 Electric and Magnetic Fields (EMFs) arise from the generation, transmission, distribution, and use of electricity. The Project would be designed in accordance with National Grid's design standards and would be compliant with the guidelines and policies relating to EMF stated in National Policy Statement EN-5 (Department for Energy Security and Net Zero, 2024). Compliance with these documents would mean that the Project would have

designed out potential effects from EMFs to a level to meet health and safety standards. It is acknowledged that the local community may be concerned about the potential health effects associated with EMFs. The effects on health and wellbeing are considered to be not significant. An EMF compliance report will be produced to support the DCO application.

## 5.7 Historic Environment

### Scope

5.7.1 The potential interaction between the Project and historic environment (archaeological remains, historic buildings and historic landscapes) is assessed in Chapter 11: Historic Environment in Volume I of the PEIR. The assessment covers effects on the following during construction and operation (and maintenance):

- Archaeological remains – designated and non-designated
- Historic buildings – designated and non-designated
- Historic landscapes – non-designated

### Study Area

5.7.2 The study area for the historic environment assessment comprises the draft Order Limits plus a 250 m buffer for non-designated heritage assets. In addition, two wider study areas have been defined:

- The first, extends 2 km around the draft Order Limits and is used for all designated heritage assets
- The second, comprises up to 3 km from the draft Order Limits for designated assets of the highest significance (scheduled monuments, grade I and II\* listed buildings and grade I and II\* registered parks and gardens)

### Existing Baseline

5.7.3 Baseline conditions have been gathered from desk-based information and site surveys (including a site walkover and setting survey), where land access has been available. The study area contains 69 scheduled monuments, seven registered parks and gardens (three grade II\* and four grade II) and 54 conservation areas. There are a total of 1,987 scoped in listed buildings within the wider study area, including 117 grade I listed and 146 grade II\* listed. A review of non-designated assets revealed a large number of non-designated heritage assets demonstrating evidence of past human activity in the study area.

### Mitigation

5.7.4 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routeing and siting.

5.7.5 Standard mitigation is included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of

impacts that could affect historic environment receptors. These include signposting/fencing off known archaeological remains or areas where archaeological work is planned to avoid unintentional damage, informing the Local Planning Authority where a previously unknown heritage asset has been discovered or a known heritage asset has proven to be more significant than foreseen at the time of the DCO application, and maintaining elements within the landscape such as vegetation and hedgerows (where practicable) or replacing as appropriate.

- 5.7.6 Additional mitigation to further reduce likely significant effects on the historic environment has been identified. This will be in the form of excavation and recording and will be specified through a draft Heritage Mitigation Strategy and Outline Written Scheme of Investigation (WSI) to be submitted with the DCO application.

## Preliminary Assessment

- 5.7.7 The preliminary findings of the assessment identified that during the construction phase of the Project, significant temporary negative effects may be experienced on the following designated heritage assets:

- Two hundred and fifteen listed buildings
- Five scheduled monuments (including Offton Castle in Section B, Crop mark site S of Ardleigh in Section C, Settlement Site at Ash Tree Corner in Section F, Bulphan World War II bombing decoy – 850 m and 890 m south-west of Doesgate Farm and Earthworks near church, West Tilbury in Section H)
- Six conservation areas (including Badley Church Green in Section B, Ardleigh in Section C, Fordstreet in Section D, Great Waltham and Little Waltham in Section G, West Tilbury in Section H)
- One registered park and garden (Langleys in Section F)

- 5.7.8 These effects would be caused by construction activity, including movement of plant, presence of tall plant such as cranes, associated noise and dust and change to the land use during construction. This would result in changes to elements of the assets' settings that make a notable contribution to their value. There would also be 223 'not significant' negative temporary effects to designated heritage assets during construction.

- 5.7.9 The construction would also result in significant residual permanent negative effects to 94 non-designated heritage assets. These effects would result to archaeological remains from physical effect caused by removal of the whole or a large proportion of the recorded asset for construction working areas. These are permanent because archaeological remains would be removed entirely or damaged and cannot be replaced, therefore reducing their archaeological value. Mitigation in the form of archaeological excavation and recording is proposed for these assets. Furthermore, the preliminary findings of the assessment identified that 351 non-designated assets would experience 'not significant' permanent negative effects.

- 5.7.10 For operation (and maintenance), the preliminary assessment identified 123 significant permanent negative effects to designated heritage assets, including:

- One hundred and nineteen listed buildings
- One scheduled monument (Bulphan World War II bombing decoy, 850 m and 890 m south-west of Doesgate Farm in Section F)
- Two conservation areas (Great Waltham and Little Waltham in Section F)

- One registered park and garden (Langleys in Section F)

5.7.11 These effects would be caused by the presence of the overhead line alignment, CSE compounds and/or new or expanded substations within the setting, and in some cases views, of these assets. For these assets this change would affect an element of their setting that makes a notable contribution to their value. An additional 178 designated assets are assessed as experiencing ‘not significant’ permanent negative effects, including 167 listed buildings, four scheduled monuments and seven conservation areas.

5.7.12 The preliminary assessment identified 14 ‘not significant’ permanent positive effects to listed buildings (in Sections B, C, E and G) and one to a scheduled monument Offton Castle (in Section B). This is the result of removal of existing overhead lines and replacement either with underground cable or the placement of the 2024 preferred draft alignment further away from the asset than the existing overhead line.

### **Waveney Valley Alternative**

5.7.13 The same designated and non-designated assets would be affected by both of the design alternatives at Waveney Valley. If the Waveney Valley Alternative is taken forwards, no additional significant effects would be experienced during the construction phase.

5.7.14 The overhead line option at the Waveney Valley is anticipated to cause a significant effect to the high value Church St Remigius and medium value Grove Farmhouse during operation. If the Waveney Valley Alternative is taken forwards, following reinstatement including historic field boundaries, it is anticipated that this option would cause no change to the setting of this assets and therefore the effect on the heritage value of these assets would reduce from significant to neutral.

## **5.8 Hydrology and Land Drainage**

### **Scope**

5.8.1 The potential interaction between the Project and hydrology and land drainage is assessed in Chapter 12: Hydrology and Land Drainage in Volume I of the PEIR. The assessment covers effects on the following:

- Hydromorphology, surface water quality and existing water interests (abstractions and discharges) during construction
- Land drainage and flood risk from all relevant sources, including consideration of effects on the Tilbury Flood Storage Area during construction and operation (and maintenance)

### **Study Area**

5.8.2 The study area for the hydrology and land drainage assessment comprises the draft Order Limits plus a 500 m buffer around the draft Order Limits.

### **Existing Baseline**

5.8.3 Baseline conditions of the Project were established during a desk-based study.

5.8.4 There are several watercourses in the study area:

- Within Section A (South Norfolk) there are two main rivers (Frenze Beck and the River Waveney) that would be crossed by the draft Order Limits and one main river (River Tas) that is not crossed by the draft Order Limits but flows through the study area
- Within Section B (Mid Suffolk) there are three main rivers (River Waveney, River Gipping and The Channel) that would be crossed by the draft Order Limits and one main river (a tributary of the Gipping) that is not crossed by the draft Order Limits but flows through the study area
- Within Section C (Babergh Colchester and Tendring) there are three main rivers (Belstead Brook, Spring Brook and the River Stour) that would be crossed by the draft Order Limits and three main rivers (River Brett, a tributary of the Belstead Brook and Salary Brook) that are not crossed by the draft Order Limits but flow through the study area. Ardleigh Reservoir is partially located within Section C and its main outflow is the Salary Brook
- Within Section D (Colchester) there are three main rivers (the Roman River, the River Colne and St Botolph's Brook) that would be crossed by the draft Order Limits
- Within Section E (Braintree) there are three main rivers (the River Blackwater, one of its tributaries and the River Brain) that would be crossed by the draft Order Limits
- Within Section F (Chelmsford) there are seven main rivers (River Ter, Straw Brook, River Chelmer, Chignall Brook, River Can, Roxwell Brook and Stock Brook) that would be crossed by the draft Order Limits and one main river (a tributary of the River Wid) that is not crossed by the draft Order Limits but flows through the study area
- Within Section G (Brentwood/Basildon) there are three main rivers (River Wid, Stock Brook and Haverings Grove Brook) that would be crossed by the draft Order Limits and two main rivers (River Crouch and River Wid tributary) that is not crossed by the draft Order Limits but flows through the study area
- Within Section H (Thurrock) there are two main rivers (tributary of Tilbury Main Sewer and an unnamed watercourse between West Tilbury Marshes and East Tilbury Marshes) crossed by the draft Order Limits and there are six main rivers (Mardyke tributaries and unnamed ditch tributaries of the Thames) not crossed by the draft Order Limits but within the study area

5.8.5 Additionally, there are numerous ponds and lakes within the study area, some of which are part of sites designated for nature conservation.

5.8.6 Flood risk from surface water runoff varies across the study area and is summarised below:

- Section A: the draft Order Limits are located almost entirely in Flood Zone 1 (low risk) with parts in Flood Zone 3 (high risk), associated with the River Tas, several of its tributaries, the Frenze Beck and the River Waveney
- Section B: the draft Order Limits are located almost entirely in Flood Zone 1 (low risk) with areas of Flood Zone 3 (high risk) associated with the River Waveney, one of its unnamed tributaries, River Dove tributaries, the River Gipping and two of its tributaries, and The Channel

- Section C: the draft Order Limits are mostly located in Flood Zone 1 (low risk) with areas of Flood Zone 3 (high risk) associated with the Belstead Brook and one of its unnamed tributaries, Spring Brook, Stutton Brook, River Brett/River Stour, Black Brook, Salary Brook, and Ardleigh Reservoir
- Section D: the draft Order Limits are mostly located in Flood Zone 1 (low risk) with areas of Flood Zone 3 (high risk) associated with St Botolph's Brook, the River Colne, Hillhouse Wood Brook and the Roman River
- Section E: the draft Order Limits are mostly located in Flood Zone 1 (low risk) with areas of Flood Zone 3 (high risk) associated with the River Blackwater and one of its tributaries, the River Brain and tributaries of the River Ter and Straw Brook
- Section F: the draft Order Limits are mostly located in Flood Zone 1 (low risk) with areas of Flood Zone 3 (high risk) associated with the Straw Brook, River Ter, River Chelmer, Walthambury Brook, Chignall Brook, River Can, Roxwell Brook, Sandy Brook and River Wid tributary
- Section G: the draft Order Limits are mostly located in Flood Zone 1 (low risk) with areas of Flood Zone 3 (high risk) associated with the River Wid and a tributary, Stock Brook, Haverings Grove Brook, a tributary of the Mardyke and the River Crouch
- Section H: the draft Order Limits are mostly located in Flood Zone 1 (low risk). In the northern and central parts, areas of Flood Zone 3 (high risk) are limited in extent and are associated with the Mardyke tributaries. Flood Zone 3 areas are more extensive in the southern part of Section H in the vicinity of Linford, East Tilbury and between West Tilbury and the Thames

5.8.7 Areas of Flood Zone 3 are shown on Figure 1: Environmental Constraints Plan. The majority of the study area is located in land at very low risk of surface water flooding, with parts at high to medium risk, including the south-eastern corner of the proposed compound to the west of the A134 (in Section D) and parts of Tilbury Substation (Section H).

5.8.8 Data from the Recorded Flood Outline dataset indicates no areas within Section A, B, D and G that have previously been flooded. There is one Recorded Flood Outline in Section C, one Recorded Flood Outline in Section E, two Recorded Flood Outlines in Section F and three Recorded Flood Outlines in Section H.

## Mitigation

5.8.9 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routeing and siting.

5.8.10 Standard mitigation is included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of impacts that could affect hydrology and land drainage. This includes the assumption all works within main rivers or ordinary watercourses would be carried out in accordance with a method approved under environmental permits issued under the Environmental Permitting Regulations; establishment of surface water drainage features, based on Sustainable Drainage (SuDS) techniques, installed at the CSE compound sites, EACN Substation and substation extensions; accordance with the Sequential Test and incorporation of flood resilience measures where construction activities take place in

Flood Zone 3; and retaining riverbank and in-channel vegetation not directly affected by installation works.

- 5.8.11 Following the development of methodologies and strategies for watercourse crossings, additional mitigation measures could include retaining natural bed materials and sizing crossings to maintain existing flow regimes.

## Preliminary Assessment

- 5.8.12 Potential effects of the Project on hydrology and land drainage receptors include increased runoff rates and volumes, pollution, temporary loss of floodplain storage/impediment of floodplain flows and temporary physical disturbance.
- 5.8.13 There is the potential for the Project to increase flood risk during construction. However, the Flood Risk Assessment will outline the proposed mitigation measures/commitments to ensure no detrimental effects on flood risk from rivers and the sea or the functioning of flood defences. Therefore, the effect is anticipated to be not significant. During operation (and maintenance), interactions with Flood Zone 3 are limited to a small number of pylons and permanent access roads and the existing Tilbury Substation. However, through the implementation of measures outlined in the Flood Risk Assessment, potential negative effects on flood risk from rivers and the sea are expected to be not significant.
- 5.8.14 During construction, new crossings of watercourses would be required for temporary access and could result in channel bed/bank modifications causing disruption to flow regimes and effects on hydromorphology. Standard practice measures would reduce pollution risks and the potential effects of the temporary watercourse crossings, therefore, effects on watercourses are anticipated to be not significant. Any potential effects on water quality are considered to be temporary and localised and not significant.

## Waveney Valley Alternative

- 5.8.15 If the Waveney Valley Alternative is taken forwards it is anticipated that the same receptors would be affected by both design alternatives. The Waveney Valley Alternative has greater potential for temporary effects for example, pollution risk on the River Waveney during construction owing to larger scale works in the vicinity and a haul road is proposed over one of the channels. However, with appropriate mitigation these effects are anticipated to be not significant. During the operation (including maintenance), the Waveney Valley Alternative would have very limited effects on surface water receptors. Land and land drainage affected by the Waveney Valley Alternative would be reinstated following construction and all temporary watercourse crossings are expected to be removed. Therefore, the change to flood risk and land drainage regime is assessed to be neutral and effects would not be significant.

## 5.9 Landscape and Visual

### Scope

- 5.9.1 The potential interaction between the Project and landscape and visual receptors is assessed in Chapter 13: Landscape and Visual in Volume I of the PEIR. The assessment covers effects on the following during construction and operation (and maintenance):
- Landscape character and resources, including effects upon the physical elements, character and/or qualities of the landscape

- Visual amenity, including effects upon potential receptors (people) and viewing groups caused by changes in the appearance of the landscape

## Study Area

- 5.9.2 The study area for the landscape and visual assessment comprises a 1 km buffer from the Project (for the underground elements) and a 3 km buffer from the Project (for the above ground elements).
- 5.9.3 More distant viewpoints up to 5 km from the Project are considered where there is the potential for significant visual effects to arise beyond the 3 km study area, for example where there are particularly sensitive visual receptors and where topography allows more far-reaching views.

## Existing Baseline

- 5.9.4 The landscape varies within the study area. In landscape character terms the study area typically comprises a flat to gently undulating plateau, dissected by the valleys of major rivers and their tributaries. These valleys include the Tas Valley (Section A), Waveney Valley (Sections A and B), Gipping Valley (Section B), Stour Valley (Section C), Colne Valley (Section D), Blackwater and Brain Valleys (Section E), and Ter, Chelmer and Can Valleys (Section F). At the southern end of the study area the landscape forms part of the Thames Basin and is flat and low-lying. The land cover within the study area is largely farmland, with some areas having a higher proportion of woodland than others. The River Stour and its enclosing valley sides and plateau edge form part of the Dedham Vale National Landscape (an AONB) (the National Landscape is shown on Figure 1: Environmental Constraints Plan).
- 5.9.5 Visual receptors within the study area include residents, both in larger settlements and smaller or scattered communities. Larger settlements include Diss (Section A), Stowmarket and Needham Market (Section B), Colchester (Section D), Chelmsford (Section F) and Ingatestone, Billericay, Brentwood and Basildon (Section G). Visual receptors also include users of the road network, and recreational receptors on the networks of public rights of way, long distance paths and cycle routes. Existing views within the study area vary considerably, from long-distance and elevated panoramas, to views which are contained by the undulating topography and/or layers of woodland and field boundary vegetation.

## Mitigation

- 5.9.6 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR. These include sensitive routing and siting, underground cabling within Dedham Vale National Landscape (an AONB) and its immediate setting, following the route of existing overhead lines in some locations (which would be undergrounded) and landscape mitigation around the CSE compounds and substations.
- 5.9.7 Standard mitigation is included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of impacts that could affect landscape and visual receptors. These include the protection of sensitive receptors during construction, retention of vegetation where practicable and replacement planting where vegetation cannot be retained and construction lighting to be directional and minimised where possible.

- 5.9.8 As a result of the preliminary assessment, the following additional mitigation measures are required:
- 5.9.9 The construction methods and working widths required for installation of the underground cables will continue to be developed to seek to reduce loss of existing characteristic vegetation within Dedham Vale National Landscape (an AONB) and its setting. Where practicable, commitments will be made to reduce the working area through sensitive locations and the design developed to seek to avoid vegetation loss. Trenchless crossings are proposed at four locations within the National Landscape to cross the River Stour and areas of woodland

## Preliminary Assessment

- 5.9.10 The potential effects of the Project on landscape and visual receptors during construction include temporary changes to landscape character from the introduction of construction activity, including compounds, temporary accommodation and access roads, construction plant and vehicle movements, topsoil stripping and earthworks, storage materials and lighting.
- 5.9.11 The assessment concluded that significant effects on views and visual amenity during construction would largely be contained within approximately 0.5 km to 1 km of the draft Order Limits, where close views of low-level (in height) construction activity would be apparent in certain views. From the wider study area visibility of construction activity would largely relate to views of partially constructed pylons.
- 5.9.12 Significant effects on the landscape during construction would be largely limited to the 'host' Landscape Character Area (LCA) or Landscape Character Type (LCT)<sup>16</sup>, where direct effects would occur. Effects beyond the extents of the draft Order Limits would be indirect and largely related to construction of the partially erected pylons.
- 5.9.13 Most of the effects on landscape and visual receptors during the construction phase are considered to be short to medium-term and largely reversible. The landscape and visual effects arising from the presence of partially constructed pylons, and the cranes used to do this, would be comparable to the operational (and maintenance) effects.
- 5.9.14 During the operational (including maintenance) phase, the assessment concluded that effects on landscape character have the potential to have long-term significant effects across the draft Order Limits and the surrounding landscapes up to approximately 1 km from the Project. Significant effects on views and visual amenity during operation (including maintenance) are predicted to be experienced up to approximately 2 km from the Project. In the longer term, mitigation measures including replacement planting and embedded mitigation within the 'Environmental Areas' around the CSE compounds and substations / substation extensions would reduce effects in some areas.

## Waveney Valley Alternative

- 5.9.15 If the Waveney Valley Alternative is taken forward it is anticipated that the landscape effects on the Waveney Rural River Valley LCA, Wooded Valley Meadowlands and Fens LCT and Rolling Valley Farmlands and Furze LCT would be significant (negative) during construction, as for the overhead line option. The construction of the underground cable, including drive pits and exit pits for the trenchless crossings, together with the construction of two CSE compounds, would affect a greater area and introduce a concentration of construction activity in the valley. As a result, the Waveney Valley

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<sup>16</sup> Generic types of landscape that can occur in different places.

Alternative would have a greater direct negative effect on the fabric of the landscape and on tranquillity during construction.

5.9.16 The operational landscape effects of the Waveney Valley Alternative are likely to be reduced in comparison to the overhead line design. In the longer term the significant effects identified for the Wooded Valley Meadowlands and Fens LCT would be removed. However, effects are likely to remain significant for the Waveney Rural River Valley LCA and Rolling Valley Farmlands and Furze LCT within a localised area. This is because these areas would be directly affected by the introduction of CSE compounds and the overhead line.

5.9.17 The Waveney Valley Alternative is anticipated to result in similar effects as the overhead line design in relation to visual effects during construction, with both options resulting in negative significant effects. The operational visual effects of the Waveney Valley Alternative are likely to be reduced in comparison to an overhead line design – with some negative significant effects being removed. However, some significant (negative) effects would remain because there would be views towards the CSE compounds and ongoing overhead line.

## 5.10 Noise and Vibration

### Scope

5.10.1 The potential interaction between the Project and noise and vibration is assessed in Chapter 14: Noise and Vibration in Volume I of the PEIR. The assessment covers effects from the following:

- Construction noise
- Construction vibration
- Construction traffic noise
- Operational noise from the proposed new EACN Substation
- Operational vibration

### Study Area

5.10.2 A baseline assessment has been informed by a desk-based study and existing site surveys. A buffer of 300 m from the draft Order Limits / proposed construction works has been used for the construction noise study area, with a buffer of 100 m for construction vibration impacts. The study area also included a 50 m buffer from construction traffic routes. A 1 km buffer has been applied for operation noise impacts.

### Existing Baseline

5.10.3 Noise sensitive receptors within the study area include built-up areas including (north to south): Mulbarton, Diss, Gislingham (in Section A), Stowmarket, Needham Market (in Section B), Capel St Mary, Ardleigh (in Section C), Colchester, Aldham (in Section D), Silver End, White Notley (in Section E), Little Waltham, Broomfield, Chelmsford (in Section F), Billericay (in Section G), Horndon on the Hill, Stanford-le-Hope, Orsett, Linford, East Tilbury, and West Tilbury (in Section H). The draft Order Limits also crosses over or is located close to a number of main transport links. The noise and vibration study

area includes a mix of built-up areas and rural environments. The noise climate away from built-up areas and main transport links is therefore considered to have low ambient and background noise levels. It is assumed that existing vibration levels are negligible in the study area.

- 5.10.4 The area around the proposed EACN Substation in Tendring District is predominantly rural in nature with several relatively isolated dwellings in the vicinity and no major sources of noise in the immediate vicinity of the site. The main source of noise in the area is therefore likely to be road traffic on local roads. The noise climate is therefore relatively quiet away from main transport routes.

## Mitigation

- 5.10.5 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routing and siting.
- 5.10.6 With regards to construction noise and vibration standard mitigation is included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR. This mitigation would help the control and management of impacts that could affect noise and vibration. This includes the assumption that construction working would be undertaken within the agreed working hours, construction traffic would be managed through a Construction Traffic Management Plan (CTMP) (a Draft Outline CTMP has been prepared to accompany the 2024 statutory consultation), haul roads would be well maintained, and best practicable means (BPM) would be employed to reduce construction noise and vibration.
- 5.10.7 With regards to operational noise, the proposed EACN Substation would be designed with suitable embedded mitigation, such that noise levels are as low as reasonably practicable.

## Preliminary Assessment

- 5.10.8 The potential effects of the Project on noise and vibration include potential noise and vibration impacts from construction activities, increased road traffic and vibration due to additional movement from construction traffic on the public highway, and impact of operational (and maintenance) noise from the proposed EACN Substation. However, the assessment concluded that effects would be not significant in relation to noise and vibration receptors, with the exception of one receptor which may experience temporary significant adverse (negative) effects from construction traffic. Further assessment of construction noise, construction vibration and operational noise will be undertaken in the Environmental Statement.
- 5.10.9 There are also several noise sensitive receptors located within close proximity of third-party works required to deliver the Project. In most instances the work expected would be relatively minor in terms of noise level and / or duration and therefore effects would not be significant. However, there is insufficient data at this stage to determine specific effects from third party activities. This will be considered further in the Environmental Statement.

## Waveney Valley Alternative

- 5.10.10 The construction noise assessment identified additional receptors that could be affected from the construction of underground cables associated with the Waveney Valley Alternative. However, with appropriate mitigation, these effects would be not significant.

- 5.10.11 In terms of noise from construction traffic a qualitative assessment of the Waveney Valley Alternative was undertaken using 12 hr weekday data recently provided by the FEED. The assessment indicated that construction traffic from the Waveney Valley Alternative would lead to a negligible (neutral) effect, comparable to the overhead line option, with no additional likely significant adverse effects resulting from a 2% worst-case daily increase from the baseline for total traffic on the 12 hr weekday flows. A quantitative assessment will be presented in the Environmental Statement if this option is taken forwards.
- 5.10.12 In addition, the Waveney Valley Alternative would introduce the need for an additional Primary Access Route, along the A1066 Thetford, which would be used to bring in cable drums to avoid highway constraints through Diss. It is anticipated that this would introduce a maximum of six daily AIL movements across a four-month period along this route. This is not likely to result in any additional significant effects when compared to the overhead line design.
- 5.10.13 The assessment also concluded that there would be no additional significant effects from potential vibration generating construction activities or construction traffic associated with the Waveney Valley Alternative. There would be no operational or maintenance effects if the Waveney Valley Alternative is taken forwards as operational noise has been scoped out other than at the EACN Substation.

## 5.11 Socio-economics, Recreation and Tourism

### Scope

- 5.11.1 The potential Socio-economics, Recreation and Tourism effects of the Project are assessed in Chapter 15: Socio-economics, Recreation and Tourism Volume I of the PEIR. The assessment covers potential effects on the following:
- Employment and economic activity during construction
  - Businesses during construction and operation (and maintenance). This excludes potential effects on agricultural businesses, which are considered under Agriculture and Soils
  - Severance and ‘sterilisation’ of land in the context of its potential for future development during construction and operation (and maintenance)
  - Disruption of access to community facilities during construction. This excludes visual amenity, which is considered under Landscape and Visual
  - Disruption to tourism and recreational assets during construction and operation (and maintenance)
  - Pressures on local visitor accommodation during construction

### Study Area

- 5.11.2 The effects of the Project with respect to Socio-economics, Recreation and Tourism are considered at varying spatial levels according to the likely spatial extent of the effect under consideration.

## Existing Baseline

- 5.11.3 The baseline for this topic includes the population and deprivation, employment and economic activity, community facilities, businesses, recreation and tourism assets, recreational routes and public rights of way (PRoW), recreational land and visitor accommodation.

## Mitigation

- 5.11.4 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routeing and siting.
- 5.11.5 Standard mitigation is included in Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of impacts that could affect Socio-economics, Recreation and Tourism. These include provision of training to construction workers, particularly in relation to working hours and the management of emissions (dust, noise, vibration), maintaining access or provision of alternative access where possible during construction, informing members of the community and local businesses about the works through active community liaison and construction of the Project in compliance with the required Environmental Control Plans (ECPs).

## Preliminary Assessment

- 5.11.6 The Socio-economics, Recreation and Tourism effects of the Project include the creation of direct temporary employment opportunities, temporary public rights of way closures/diversions resulting in changes in access to the wider recreational routes network and temporary or permanent closure and disruption to businesses. The Project would also likely have significant temporary negative effects on two planning applications and one Local Plan allocation during the construction phase. However, during operation (and maintenance) given that the location of proposed permanent infrastructure has been designed to minimise effects on these areas it is not expected the Project would sterilise the areas for future development.
- 5.11.7 The preliminary assessment concluded that while there would be some temporary and permanent negative effects overall, the majority of effects would not be significant in relation to Socio-economics, Recreation and Tourism receptors.

## Waveney Valley Alternative

- 5.11.8 The Waveney Valley Alternative would affect a larger part of the Ling / Wortham Ling (less than 1 ha at the eastern edge) within the woodland area predominantly for drainage through removal of vegetation. However, it is anticipated that effects would be similar to the overhead line design and therefore not significant. All other effects and significance reported for the overhead line design would be the same for the Waveney Valley Alternative.

## 5.12 Traffic and Transport

### Scope

- 5.12.1 The potential interaction between the Project and traffic and transport is assessed in Chapter 16: Traffic and Transport in Volume I of the PEIR. The assessment covers effects on the following during construction<sup>17</sup>:
- Increase in baseline traffic flows as a result of the Project, due to the use of the surrounding local highway network being used by construction vehicles

### Study Area

- 5.12.2 The study area for the assessment has been defined based on the area where there is likely to be a transport effects resulting from the construction of the Project. This includes routes along which heavy goods vehicles (HGVs), light goods vehicles (LGVs) and construction worker vehicles would travel during the works programme.
- 5.12.3 The study area contains the roads that form part of the Primary Access Routes, to and from the Project up to its connection with the Strategic Road Network (SRN) and Major Road Network (MRN)<sup>18</sup>. The most prominent surrounding highway network, part of the SRN / MRN is the A11, A12, A13, A14, A47, A120, A127, A128, A131, A140, A143, A176, A1089, A1013, A1089 and B1018.

### Existing Baseline

- 5.12.4 As part of this preliminary environmental assessment, baseline traffic data has been obtained for the roads forming part of the Primary Access Routes within the study area based on the available Department for Transport (DfT) traffic counts and traffic surveys where existing DfT survey data was not available.

### Mitigation

- 5.12.5 Embedded mitigation measures designed to avoid/reduce significant effects are detailed in Table 4.2 in Chapter 4: Project Description in Volume I of the PEIR and include sensitive routeing and siting.
- 5.12.6 Standard mitigation is included within Appendix 4.1: Draft Outline Code of Construction Practice in Volume III of the PEIR which would help the control and management of impacts that could affect traffic and transport. This includes the creation of an Outline Construction Traffic Management Plan (CTMP) which will set out measures to reduce route and journey milage to and from, as well as around the site and prevent nuisance to the residents, businesses and wider community caused by parking, vehicle movements and access residents. A Draft Outline CTMP has been prepared to accompany the 2024 statutory consultation.

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<sup>17</sup> Effects on Traffic and Transport during operation were scoped out. This was agreed with the Planning Inspectorate.

<sup>18</sup> The Strategic Road Network comprises motorways and A roads (T) managed by National Highways. The Major Road Network are important A roads and local roads that are managed by local highway authorities

## Preliminary Assessment

- 5.12.7 The assessment concluded that there is the potential for significant effects at several receptors associated with reduced road safety, non-motorised amenity, pedestrian delay and driver delay. However, the implementation of the proposed embedded and standard mitigation measures is expected to reduce the level of the potential effects to not significant. Additional mitigation measures would subsequently be identified where necessary to reduce any potentially additional significant effects. The assessment will be reviewed further as part of the Environmental Statement to increase the confidence of the findings.

### Waveney Valley Alternative

- 5.12.8 If the Waveney Valley Alternative is taken forwards it is anticipated that there would likely be an increase in construction vehicles when compared to the overhead line design. However, construction traffic flows for both designs would exceed thresholds and require further detailed assessment which will be detailed in the Environmental Statement.
- 5.12.9 The Waveney Valley Alternative would introduce the need for an additional Primary Access Route, along the A1066 Thetford, which would be used to bring in cable drums to avoid highway constraints through Diss. The number of additional construction vehicles along this new route is anticipated to be low (maximum of six daily abnormal indivisible loads (AIL) movements across a four-month period along this route) and further detailed assessment will be provided in the Environmental Statement.

## 5.13 Cumulative Effects

### Intra-Project Cumulative Effects

- 5.13.1 Section 17.5 of Chapter 17: Cumulative Effects in Volume I of the PEIR presents the preliminary intra-project cumulative effects assessment for the Project. This considered the potential significant cumulative effects that may arise from the Project where a single receptor is affected by multiple aspects of a project (e.g, a residential property affected by visual amenity, noise, air quality, traffic and transport etc.) worsening the effect. Where a receptor has been identified as only experiencing one effect or where only one topic has identified effects on that receptor, there is no potential for intra- project cumulative effects.
- 5.13.2 A preliminary review determined there is the potential for likely significant intra-project cumulative effects on Great Waltham and Little Waltham resulting from combined landscape and visual and historic environment effects during construction and operation. However, this will be reviewed following statutory consultation, and an updated assessment will be presented in the Environmental Statement.

### Waveney Valley Alternative

- 5.13.3 There are likely to be additional traffic movements along the Primary Access Route at Diss and an additional Primary Access Route needed for cable drum deliveries from Thetford should the Waveney Valley Alternative be taken forwards – however, following mitigation effects are likely to be not significant. In addition, based on the preliminary assessment there may be additional negative effects on sensitive peat soils as a result of the Waveney Valley Alternative – however, it is anticipated that a successful mitigation package can be developed with the Suffolk Wildlife Trust, Natural England and the relevant Local Planning Authority to avoid significant effects.

5.13.4 During operation (and maintenance) negative effects in this area on visual receptors and specific heritage assets are likely to be reduced. However, following the implementation of mitigation measures as presented in each environmental topic chapter the preliminary effects recorded above would be the same.

## Inter-Project Cumulative Effects

5.13.5 Section 17.6 of Chapter 17: Cumulative Effects in Volume I of the PEIR presents the preliminary inter-project cumulative effects assessment for the Project. This considered the potential significant cumulative effects that may arise from the Project with other developments.

5.13.6 The assessment of cumulative effects from other developments in combination with the Project follows a staged process (as outlined within guidance written by the Planning Inspectorate) as follows:

- Stage 1A: Establish a 'zone of influence' relating to each environmental discipline, within which effects associated with that discipline are considered could occur
- Stage 1B: Develop a long list of other developments which fall within the zone of influence that could have effect interactions with the Project
- Stage 2: Develop a short list of other developments which could have effect interactions with the Project (effectively consider the long list in more detail)
- Stage 3: Gather information available on the shortlisted developments.
- Stage 4: Assess the likely significant cumulative effects of the shortlisted developments with the Project

5.13.7 For the 2024 statutory consultation, Stages 1A, 1B and 2 have been completed for the PEIR. Stages 3 and 4 will be undertaken and presented in the cumulative effects chapter of the Environmental Statement.

5.13.8 As part of the PEIR, a preliminary assessment has been undertaken to provide stakeholders with information regarding the potential for likely significant cumulative effects. At this stage, a qualitative assessment has been undertaken based on professional judgement and using similar project experience.

5.13.9 The preliminary cumulative effects assessment concluded that inter-project cumulative effects are considered to be likely on ecology and biodiversity, landscape and visual, noise and traffic and transport during the construction stage. Potential inter-project cumulative effects during operation have been identified in relation to historic environment and landscape and visual.

### Waveney Valley Alternative

5.13.10 If the Waveney Valley Alternative is taken forwards it is anticipated that there would be no additional effects over and above those identified for the overhead line design.

5.13.11 A detailed assessment of the likely significant inter-project cumulative effects will be undertaken and presented within the Environmental Statement.

# 6. Looking Forward

## 6.1 What Happens Next?

- 6.1.1 Following the close of the consultation all feedback will be collated, reviewed and analysed to understand key themes and concerns. Our proposals will be reviewed and, where appropriate, refined in light of feedback.
- 6.1.2 Based on consultation responses, design refinements and additional information that becomes available from site visits and surveys, the environmental assessment will be reviewed and updated for the Environmental Statement. It is expected that the DCO application will be submitted in Summer 2025 and will be accompanied by an Environmental Statement.

## 6.2 What if I would like further information?

- 6.2.1 This document is a non-technical summary of the PEIR for the proposed Norwich to Tilbury Project. The PEIR Volumes I, II and III provide more detailed and technical information which is available on the Project website:

[Norwich to Tilbury | National Grid ET](#)

- 6.2.2 Further information can also be obtained:

- Via email: [contact@n-t.nationalgrid.com](mailto:contact@n-t.nationalgrid.com)
- Telephone: 0800 915 2497 (lines are open Monday to Friday, 9am-5:30pm)

- 6.2.3 Public information events will also take place as follows:

Date and Time	Venue
Wednesday 24 April 2024 12-5pm	Towngate Theatre, St Martin's Square, Basildon, Essex SS14 1DL
Thursday 25 April 2024 2-7pm	The Brentwood Centre, Doddinghurst Road, Pilgrims Hatch, Brentwood, CM15 9NN
Saturday 27 April 2024 11am-4pm	Chelmsford City Racecourse, Chelmsford, CM3 1QP
Tuesday 30 April 2024 12-5pm	Gislingham Village Hall, Mill Street, Gislingham, IP23 8JT
Wednesday 1 May 2024 11am-4pm	Copdock Village Hall, Old London Road, Copdock, IP8 3JN
Friday 3 May 2024 1-6pm	Needham Market Community Centre, School St, Needham Market, Ipswich IP6 8BB
Saturday 4 May 2024 11am-4pm	Lawford Venture Centre 2000, Bromley Road, Lawford, Manningtree CO11 2JE
Wednesday 8 May 2-7pm	The Civic Hall, Blackshots Lane, Grays, RM16 2JU
Thursday 9 May 2024 1-6pm	Thorpe Hall, Ashwell Thorpe and Fundenhall Community Centre, Muskett Road, Ashwellthorpe, NR16 1FD

<b>Date and Time</b>	<b>Venue</b>
Friday 10 May 2024 1-6pm	Tibenham Community Hall, Pristow Green Lane, Tibenham, Norwich NR16 1PX
Tuesday 14 May 2024 11am-4pm	Witham Public Hall, Collingwood Road, Witham, CM8 2DY
Wednesday 15 May 2024 1-6pm	Diss Town Football Club, Diss, IP22 4QP
Thursday 16 May 2024 2-7pm	Langham Community Centre, School Road, Langham, Colchester, CO4 5PA
Friday 17 May 2024 1-6pm	Great Bromley Village Hall, Parsons Hill, Great Bromley, Colchester, CO7 7JA

6.2.4 Printed copies of the consultation materials, including the PEIR, will be made available for viewing at public information events.

## 6.3 How can I have my say?

6.3.1 We want to hear your views on the proposals for Norwich to Tilbury. You can get in touch in the following ways:

- Completing the feedback questionnaire online via the Project website: [nationalgrid.com/norwich-to-tilbury](https://nationalgrid.com/norwich-to-tilbury)
- Providing feedback by email ([contact@n-t.nationalgrid.com](mailto:contact@n-t.nationalgrid.com)) or in writing (FREEPOST N TO T)
- Completing a paper feedback questionnaire, which can be provided on request, at one of the designated inspection points, or completed in person at the face-to-face events. The questionnaire can be returned free-of-charge using the Freepost address: FREEPOST N TO T (please write this in capitals, you do not need a stamp)

6.3.2 Consultation responses received via any other method than those listed above, such as through social media, may not be formally recorded as part of the consultation.

6.3.3 Responses given orally, such as via telephone or in a meeting, may be considered in exceptional circumstances on a case-by-case basis where someone may not otherwise be able to respond to the consultation.

6.3.4 All responses must be received by 11:59pm on the final day of consultation.

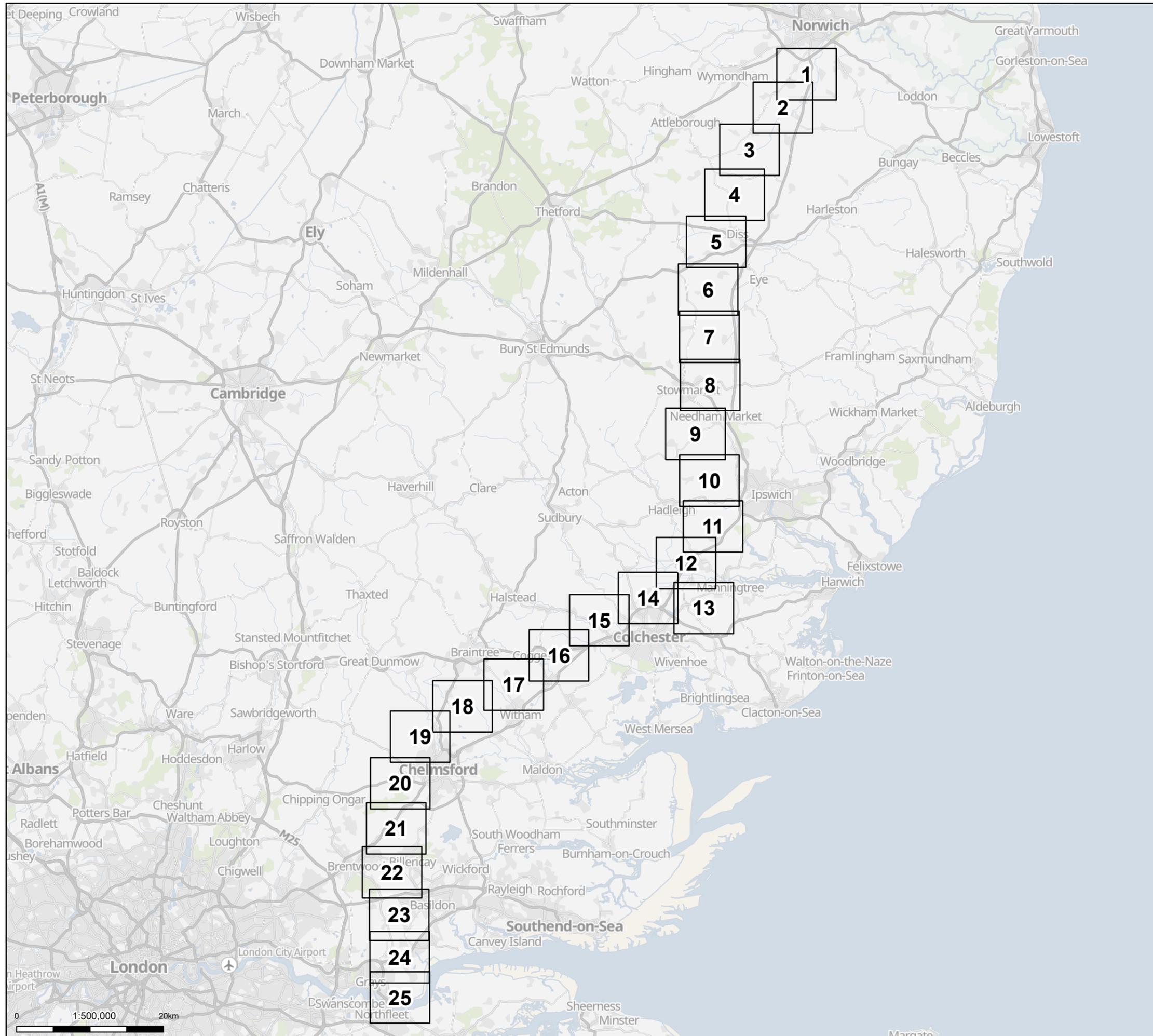
6.3.5 All feedback will be handled in accordance with all applicable laws concerning the protection of personal data, including the UK General Data Protection Regulation (GDPR).

6.3.6 More information on how National Grid will use the information collected about respondents will be made available in the consultation feedback form and on the Project's website during the consultation period.

6.3.7 National Grid may be required to make copies of representations available to the Secretary of State. However, National Grid will request that personal details are not placed on the public record. Personal details will be held securely in accordance with the

relevant data protection legislation and will be used solely in connection with the consultation process and the development of this Project and will not be disclosed to any third parties.

# Figure 1: Environmental Constraints Plan



Pages

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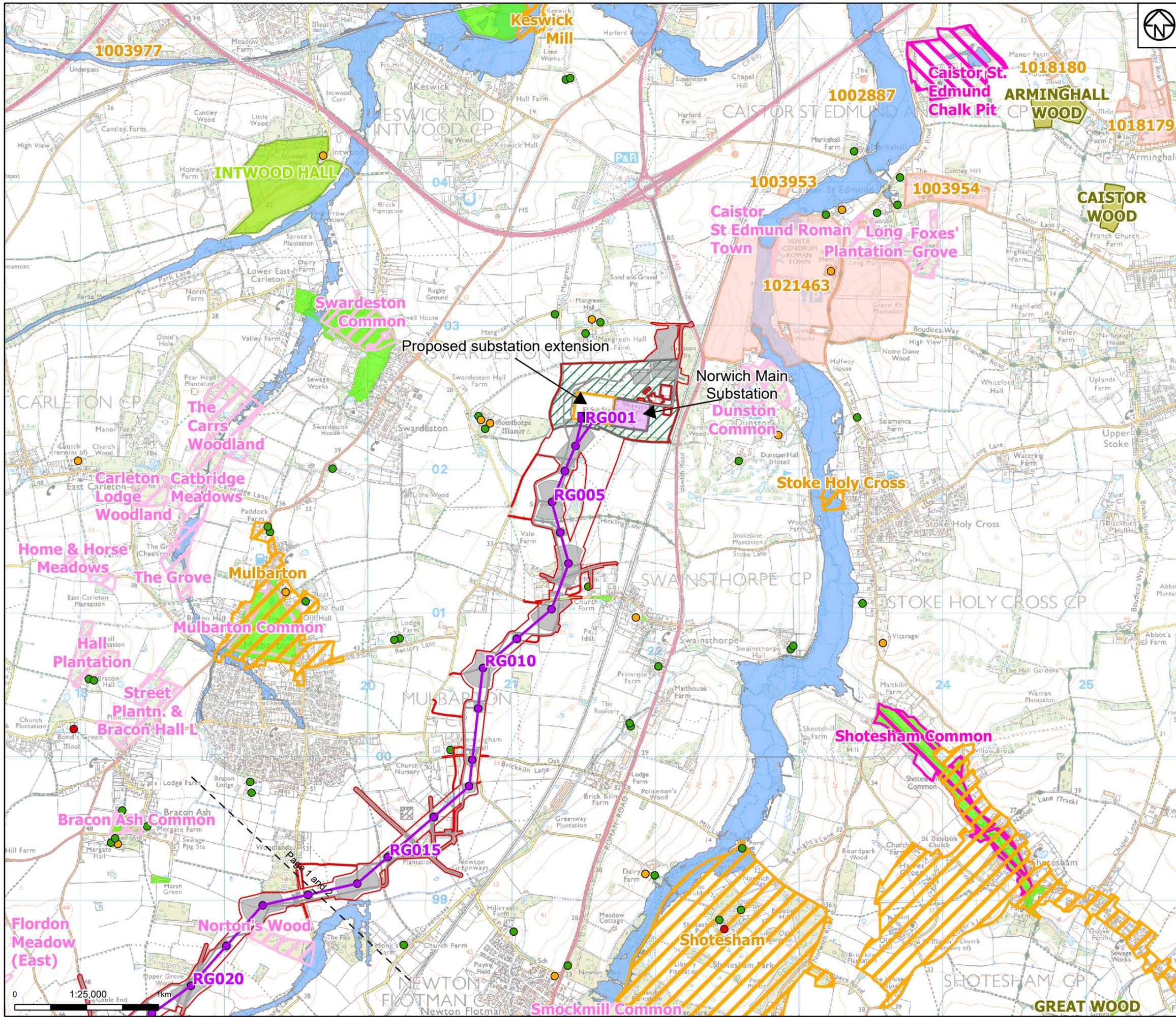
**PROJECT:**  
**nationalgrid** Norwich to Tilbury

**Title:**  
**Figure 1 - Non-Technical Summary - Environmental Constraints Plan Overview**

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Drawn	K. Fischer	Date	April 2024
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**Accepted as Concept Stage**

Drawing Number:	10059280-ARC-EGN-ZZ-DR-ZZ-190	Revision:	A
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**Legend**

- Draft order limits
- Proposed project design details
  - Proposed overhead line alignment
  - Proposed full line tension gantry
  - Proposed pylon position
  - Existing substation
  - Proposed substation extension
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
- Discipline specific constraints
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Registered Parks and Gardens
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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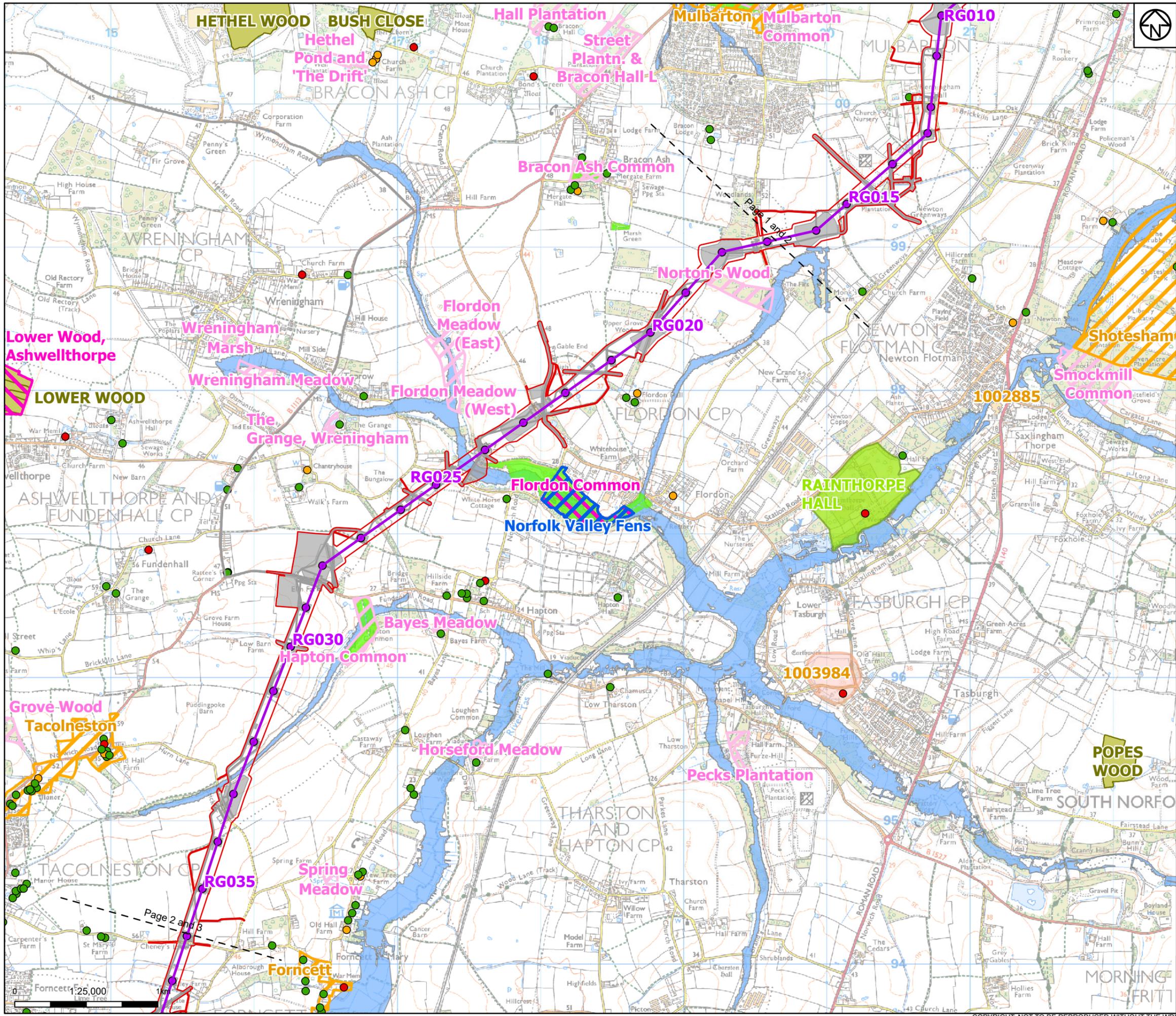
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 Page 1 of 25

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Revision:  
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**Legend**

- Draft order limits
- Proposed project design details**
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
- Discipline specific constraints**
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Special Areas of Conservation
  - Sites of Special Scientific Interest
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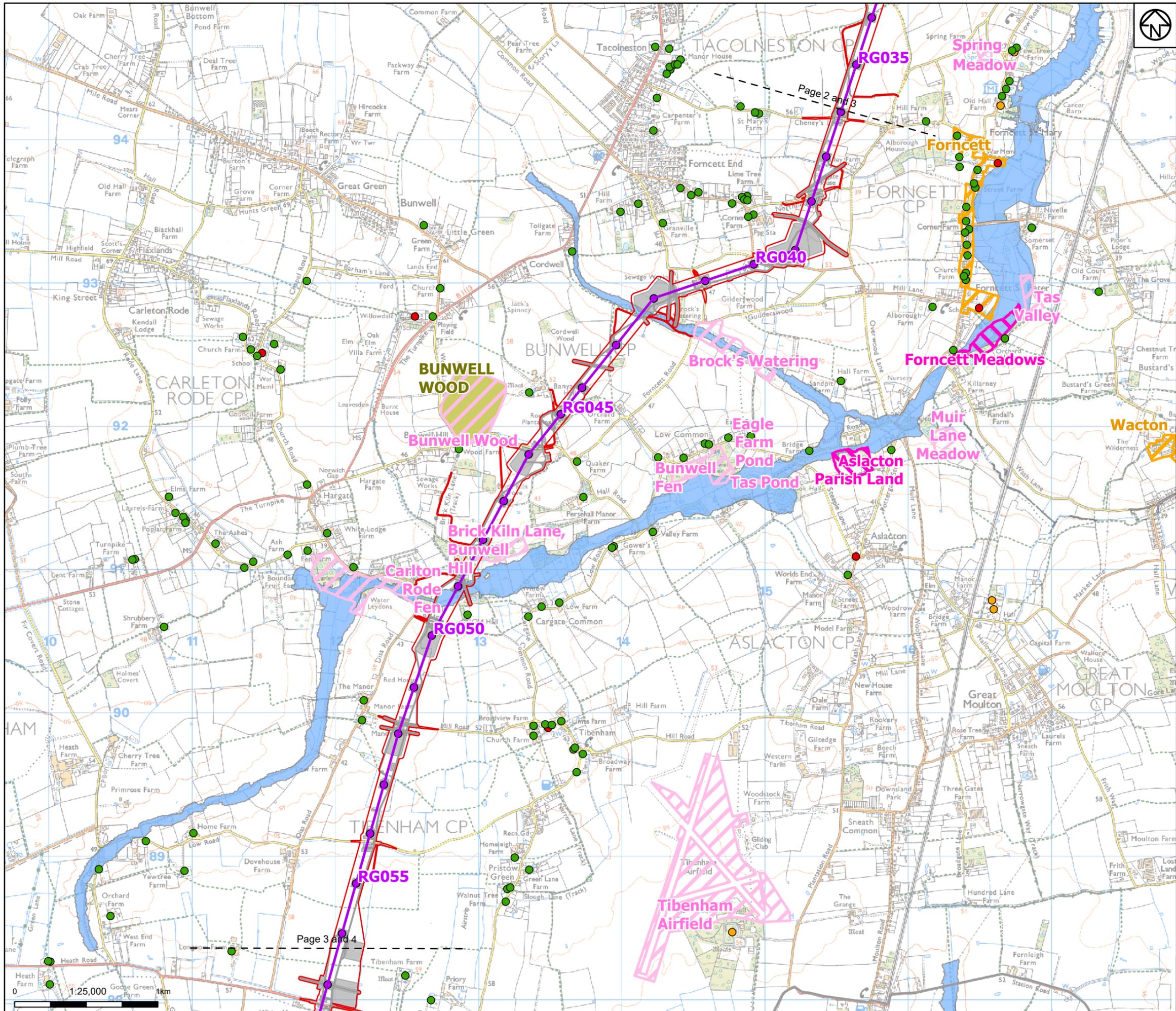
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 Page 2 of 25

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- Draft order limits
- Proposed project design details**
- Proposed overhead line alignment
- Proposed pylon position
- Other temporary and permanent construction and operational works

- Discipline specific constraints**
  - Listed Buildings
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  - Grade II
  - Grade II\*
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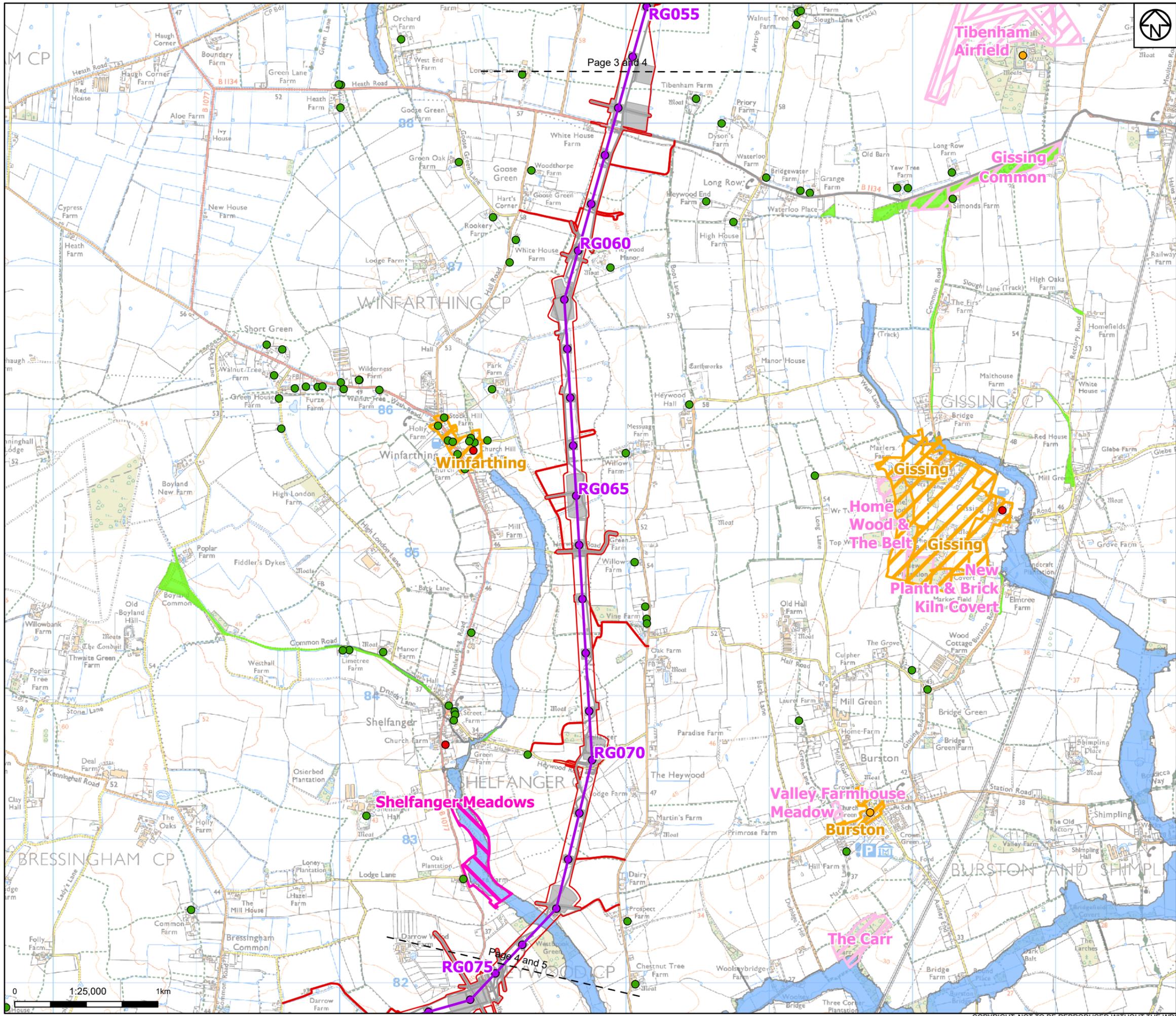
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 Page 3 of 25

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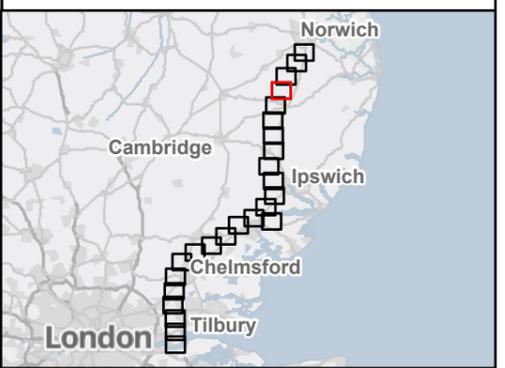


**Legend**

- Draft order limits
- Proposed project design details**
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
- Discipline specific constraints**
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Conservation Areas
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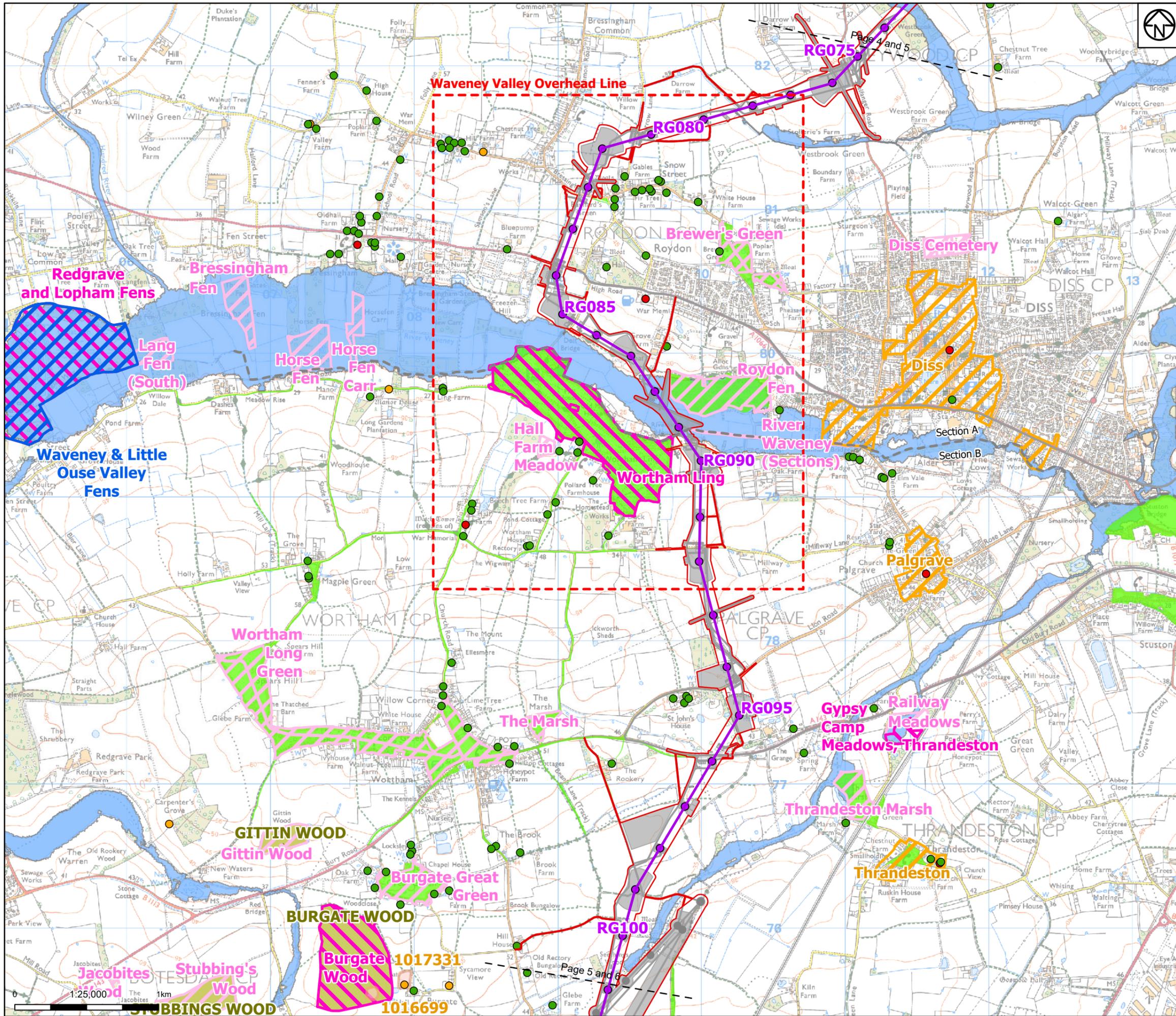
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 Page 4 of 25

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- Draft order limits
  - Project sections
  - Proposed project design details**
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
  - Discipline specific constraints**
  - Listed Buildings**
  - Grade I
  - Grade II
  - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
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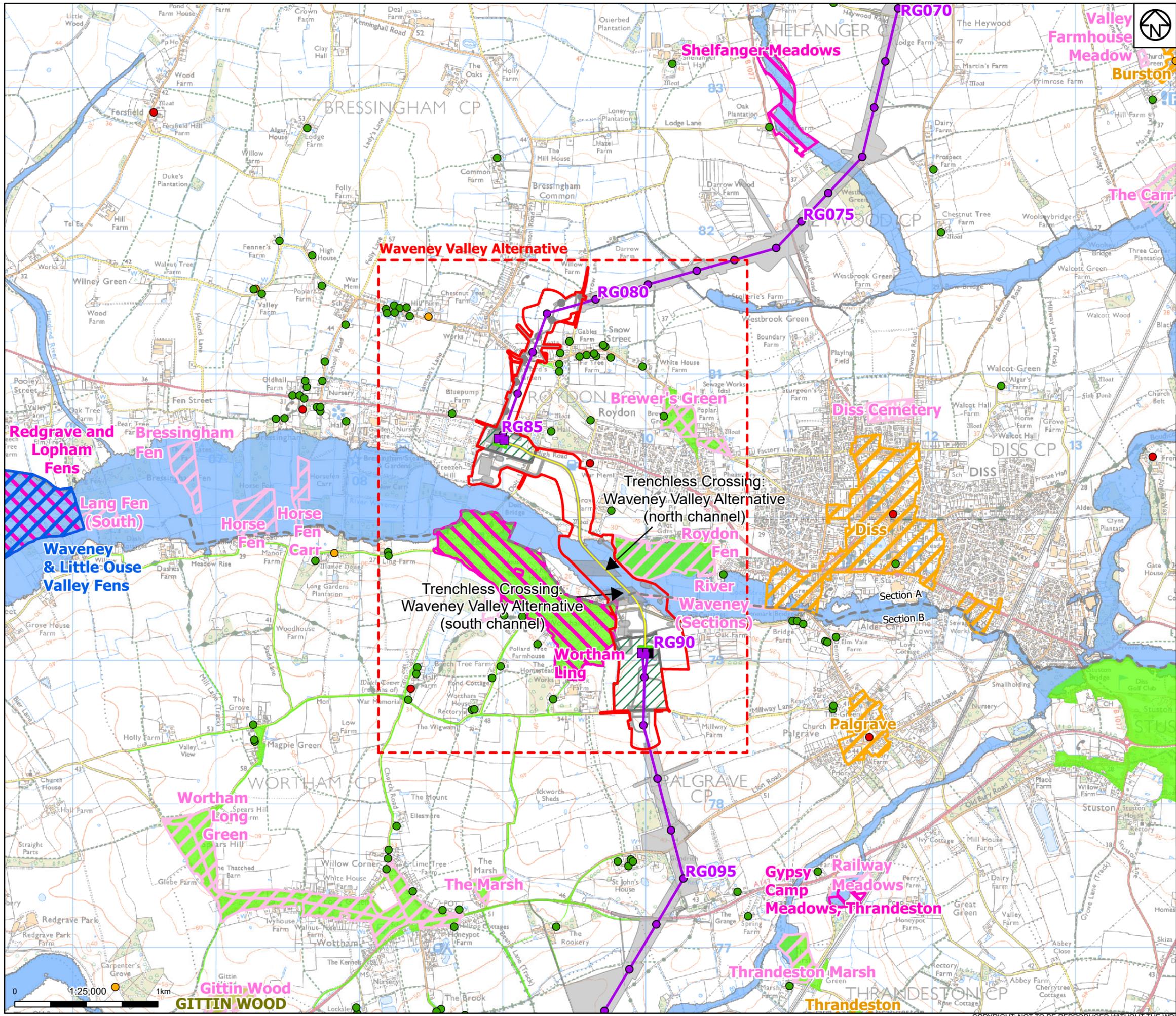
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 Page 5 of 25

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**Legend**

- Draft order limits
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- Proposed project design details**
  - Proposed overhead line alignment
  - Proposed full line tension gantry
  - Proposed low duty gantry
  - Proposed pylon position
  - Proposed underground cable alignment
  - Proposed cable sealing end compound
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
- Discipline specific constraints**
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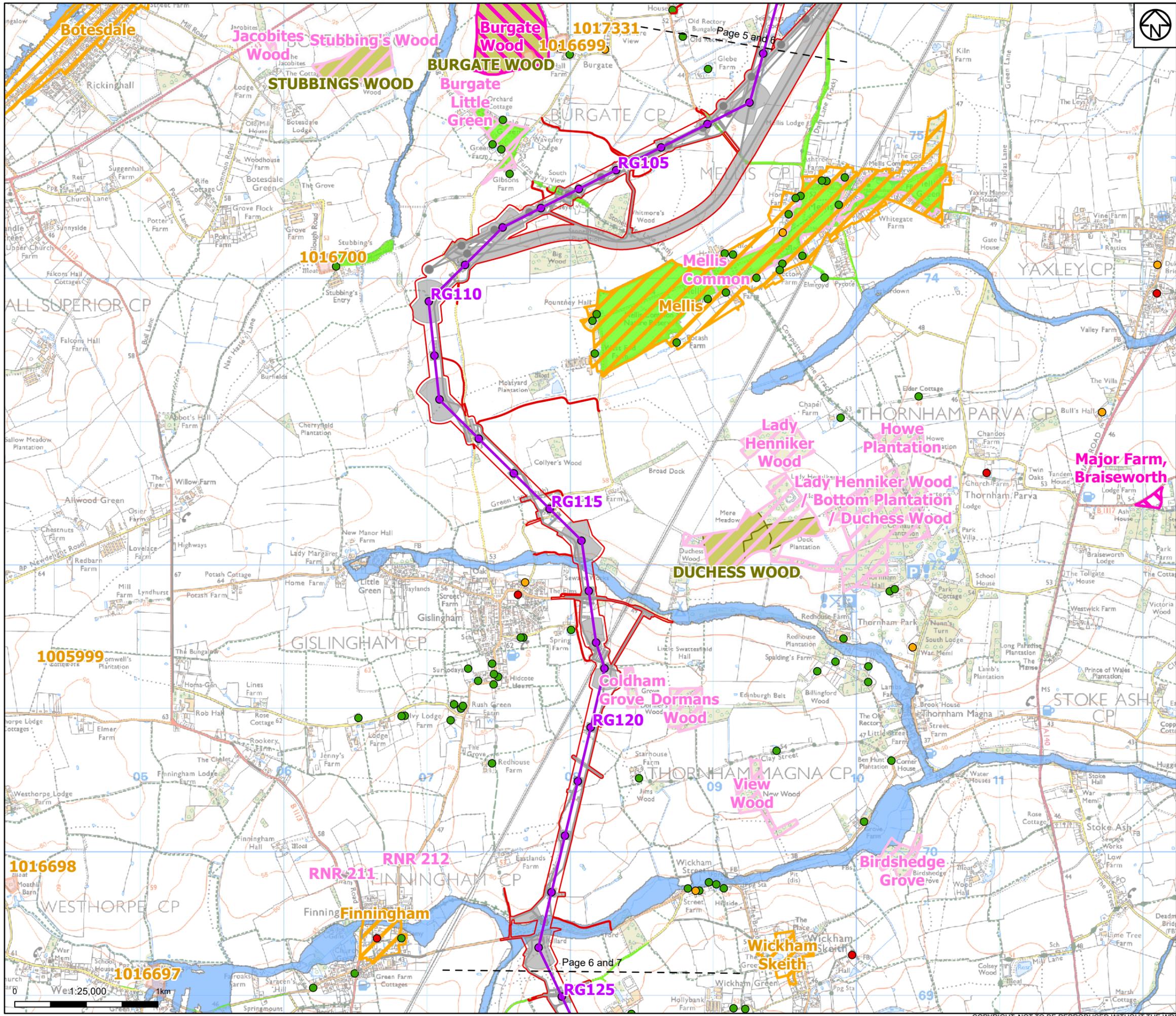
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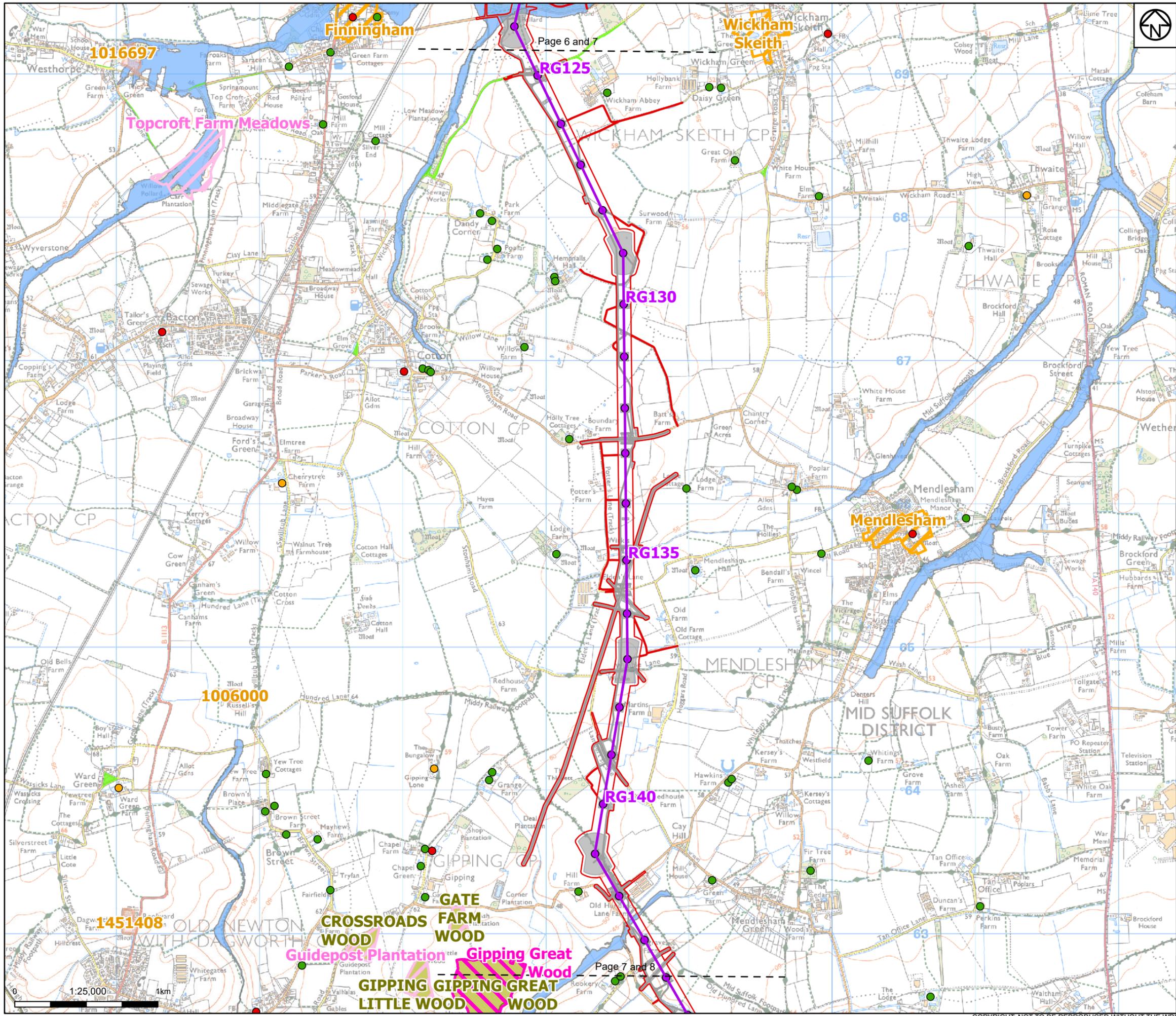
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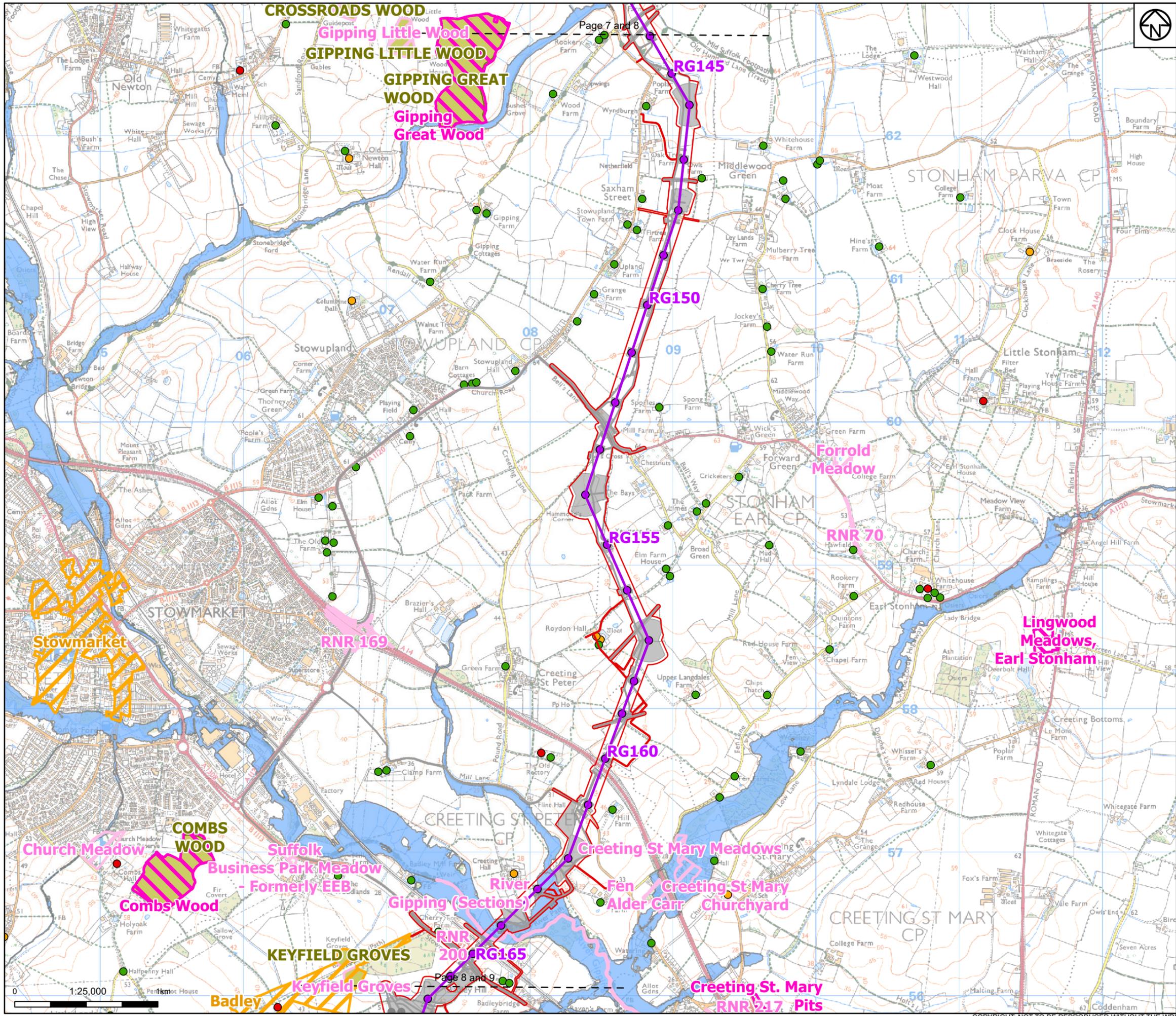
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**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 7 of 25

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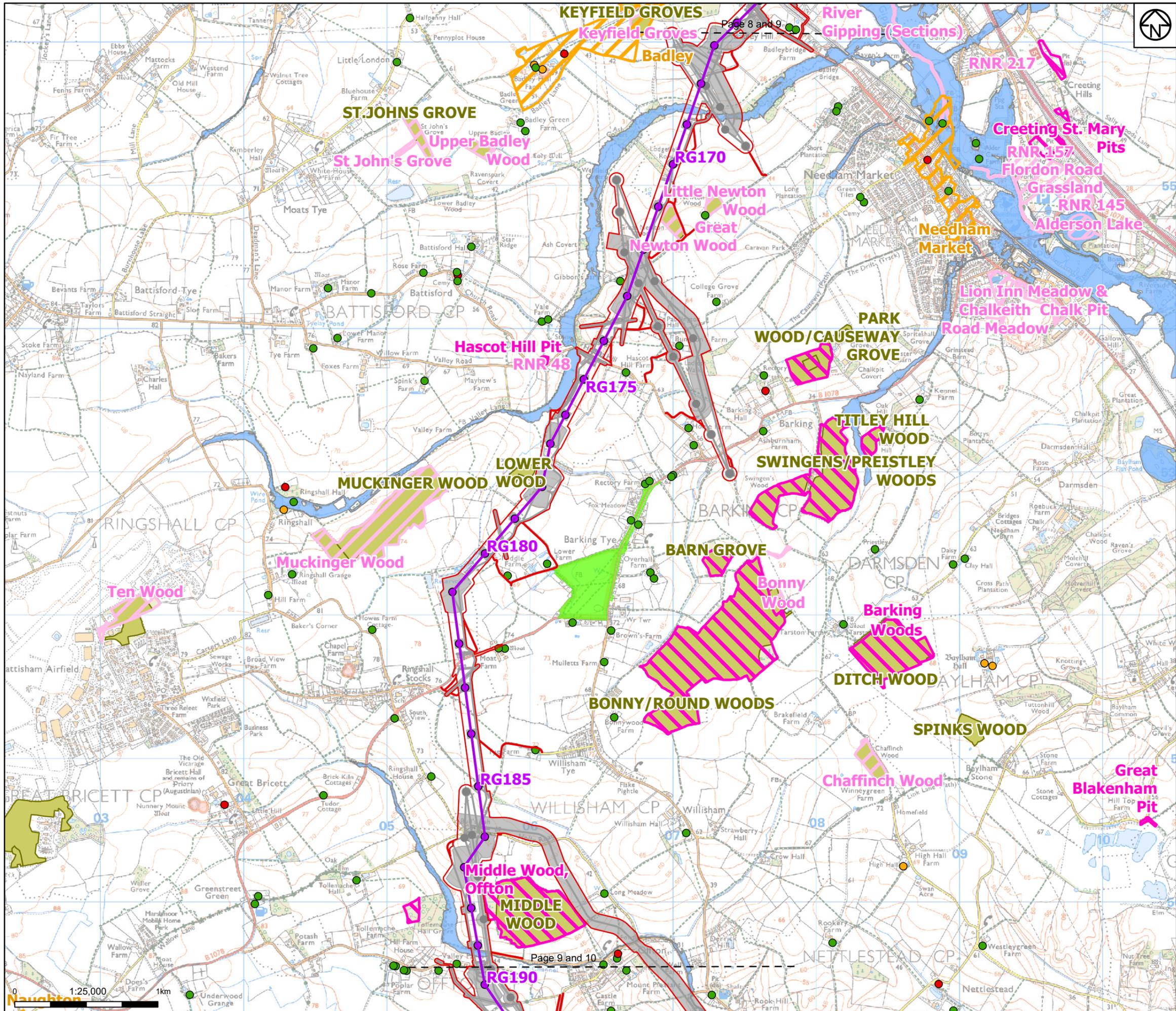
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Page 8 of 25**

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**nationalgrid** Norwich to Tilbury

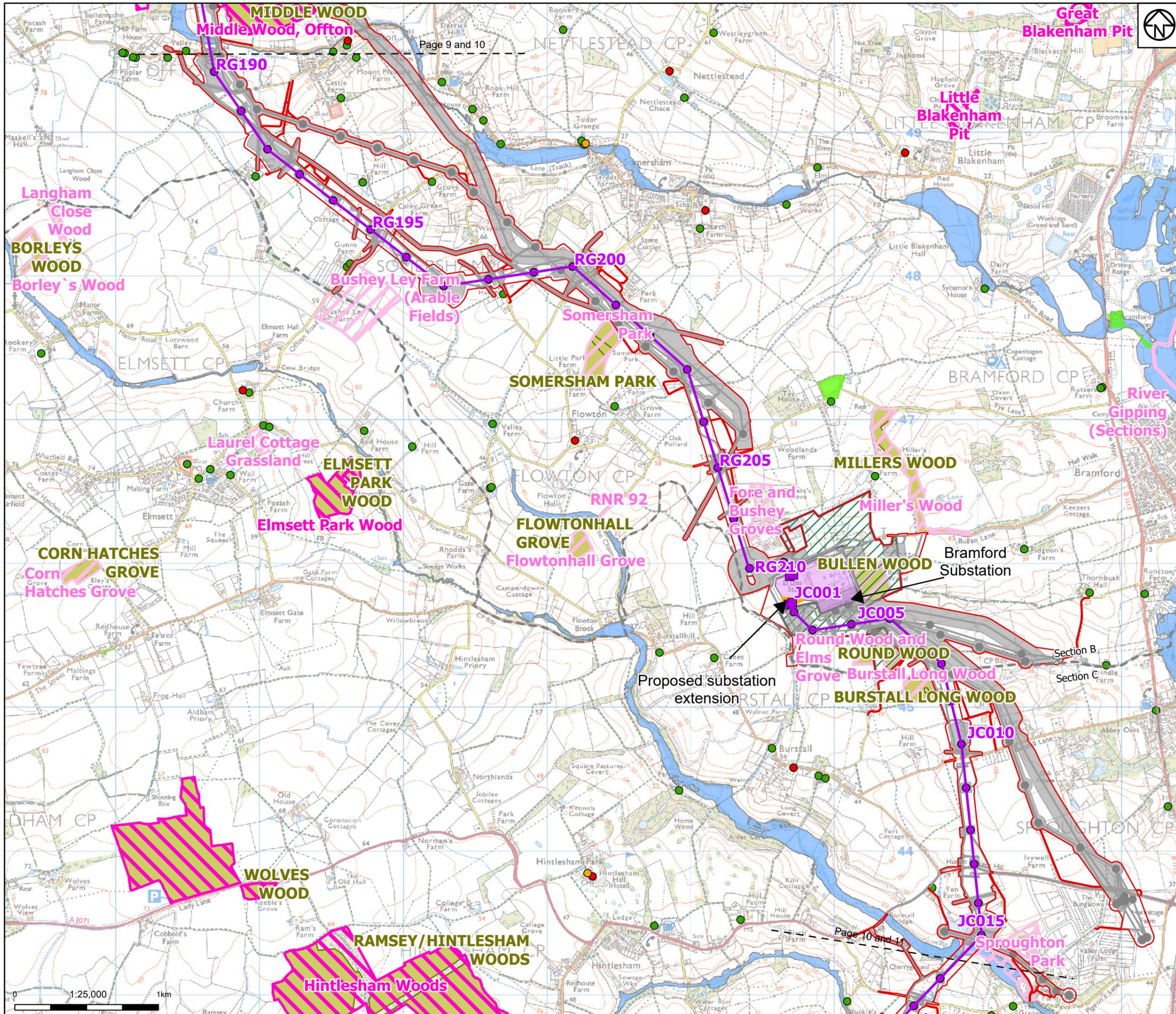
Title:  
**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 9 of 25

Designed	A. Fell	Date	April 2024
Drawn	K. Fischer	Date	April 2024
Checked	A. Fell	Date	April 2024
Approved	K. Burrows	Date	April 2024
Scale:	1:25,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	A2	Project Number:	10059280

Suitability Description:  
 Accepted as Concept Stage

Drawing Number:  
 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



- Draft order limits
  - Project sections
  - Proposed project design details**
  - Proposed overhead line alignment
  - Proposed low duty gantry
  - Proposed pylon position
  - Existing substation
  - Proposed substation extension
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
  - Discipline specific constraints**
  - Listed Buildings**
  - Grade I
  - Grade II
  - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3
- Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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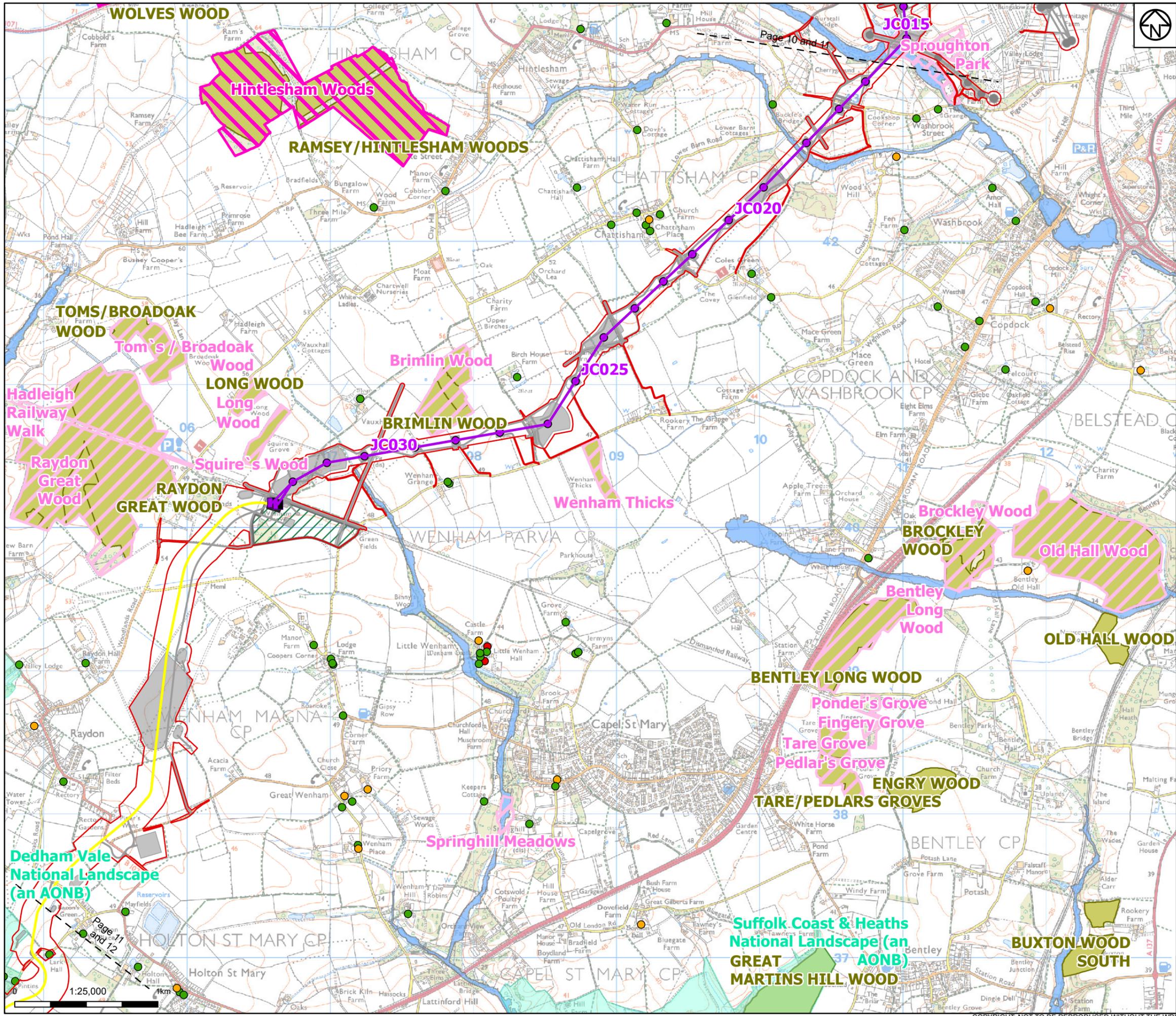
Rev	Date	Description	Drawn	Check	Approv
A	April 2024	FOR STATUTORY CONSULTATION	KF	AF	KB

PROJECT: Norwich to Tilbury  
 nationalgrid

Title:  
 Figure 1 - Non-Technical Summary - Environmental Constraints Plan  
 Page 10 of 25

Designed	A. Fell	Date	April 2024
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Suitability Code:	A2	Project Number:	10059280
Suitability Description: Accepted as Concept Stage			

Drawing Number: 10059280-ARC-EGN-ZZ-DR-ZZ-190	Revision: A
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**Legend**

- Draft order limits
- Proposed project design details**
  - Proposed overhead line alignment
  - Proposed full line tension gantry
  - Proposed pylon position
  - Proposed underground cable alignment
  - Proposed cable sealing end compound
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
- Discipline specific constraints**
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - National Landscape (an Area of Outstanding Natural Beauty)
  - Ancient Woodland
  - Flood Zone 3

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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**nationalgrid** Norwich to Tilbury

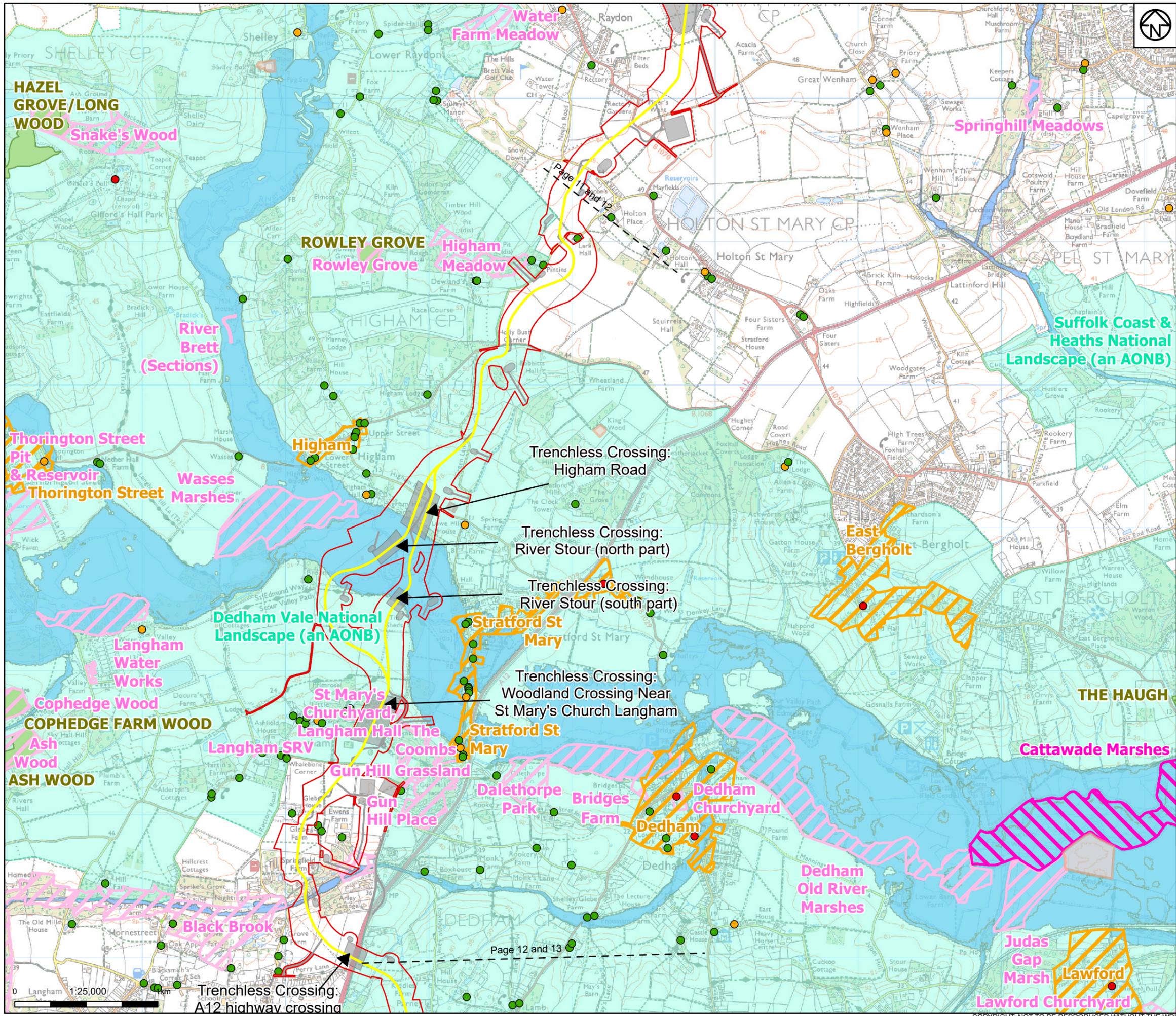
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**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 11 of 25

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Suitability Code:	A2	Project Number:	10059280

Suitability Description:  
 Accepted as Concept Stage

Drawing Number:  
 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



**Legend**

- Draft order limits
- Proposed underground cable alignment
- Other temporary and permanent construction and operational works

**Discipline specific constraints**

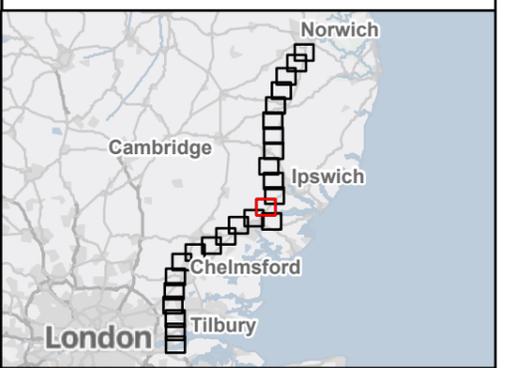
Listed Buildings

- Grade I
- Grade II
- Grade II\*

- Scheduled Monument (With accompanying list entry number)
- Conservation Areas
- Sites of Special Scientific Interest
- County / Local Wildlife Sites
- Countryside and Rights of Way Open Access Land
- National Landscape (an Area of Outstanding Natural Beauty)
- Ancient Woodland
- Flood Zone 3

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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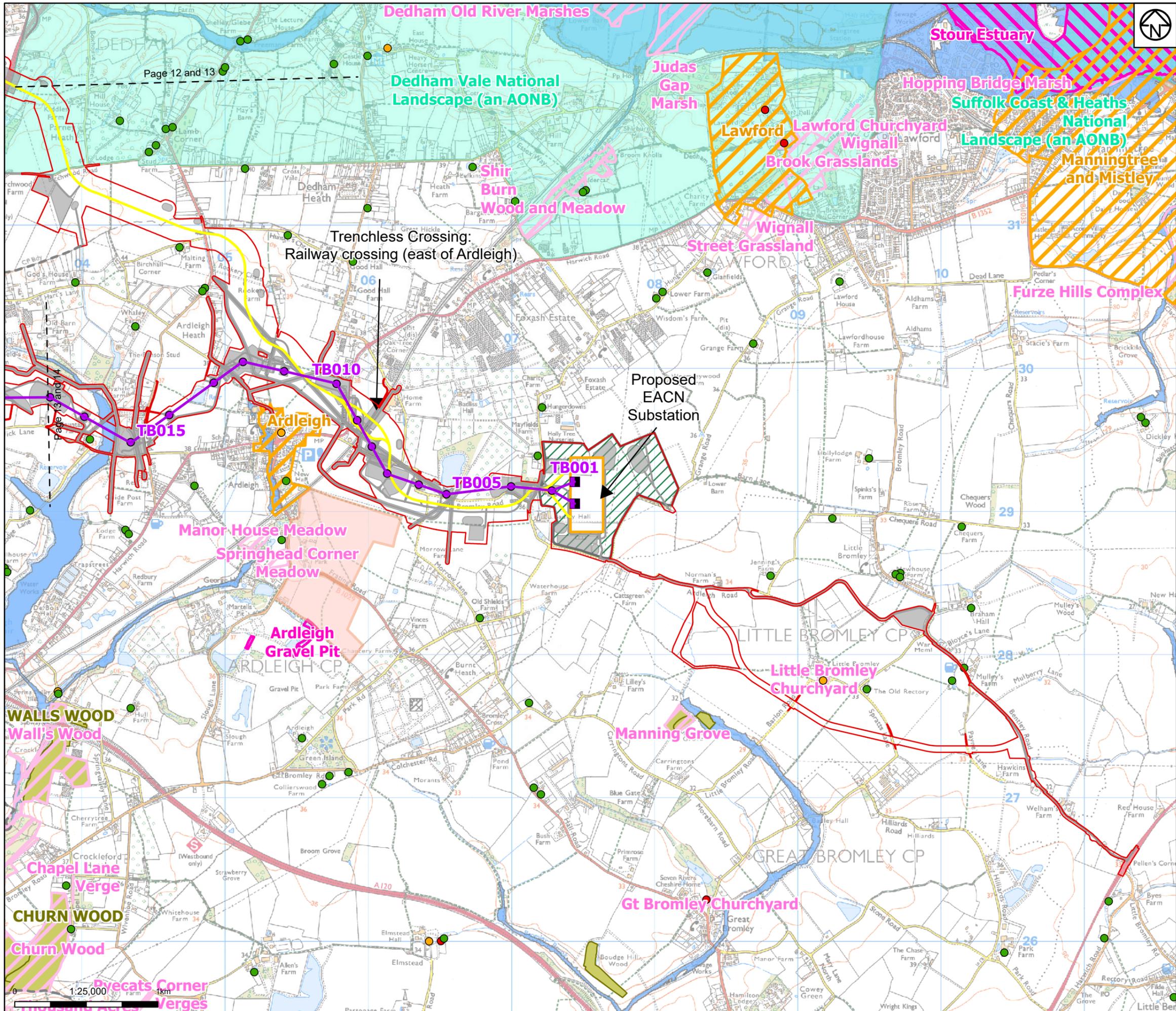


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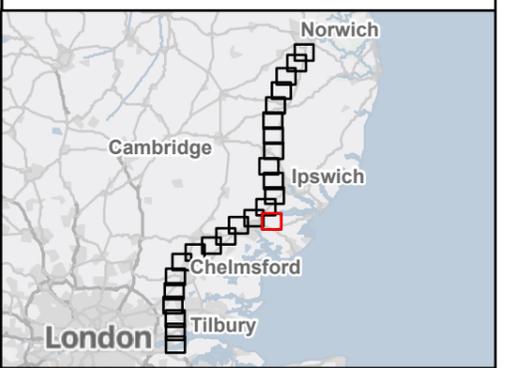
**PROJECT:** Norwich to Tilbury

**Title:** Figure 1 - Non-Technical Summary - Environmental Constraints Plan Page 12 of 25

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Suitability Code:	A2	Project Number:	10059280
Suitability Description: Accepted as Concept Stage			
Drawing Number:	10059280-ARC-EGN-ZZ-DR-ZZ-190		Revision: A



- Draft order limits
  - Project sections
  - Proposed project design details**
  - Proposed overhead line alignment
  - Proposed full line tension gantry
  - Proposed pylon position
  - Proposed underground cable alignment
  - Proposed EACN substation
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
  - Discipline specific constraints**
  - Listed Buildings**
  - Grade I
  - Grade II
  - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Countryside and Rights of Way Open Access Land
  - National Landscape (an Area of Outstanding Natural Beauty)
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- Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.



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**nationalgrid** Norwich to Tilbury

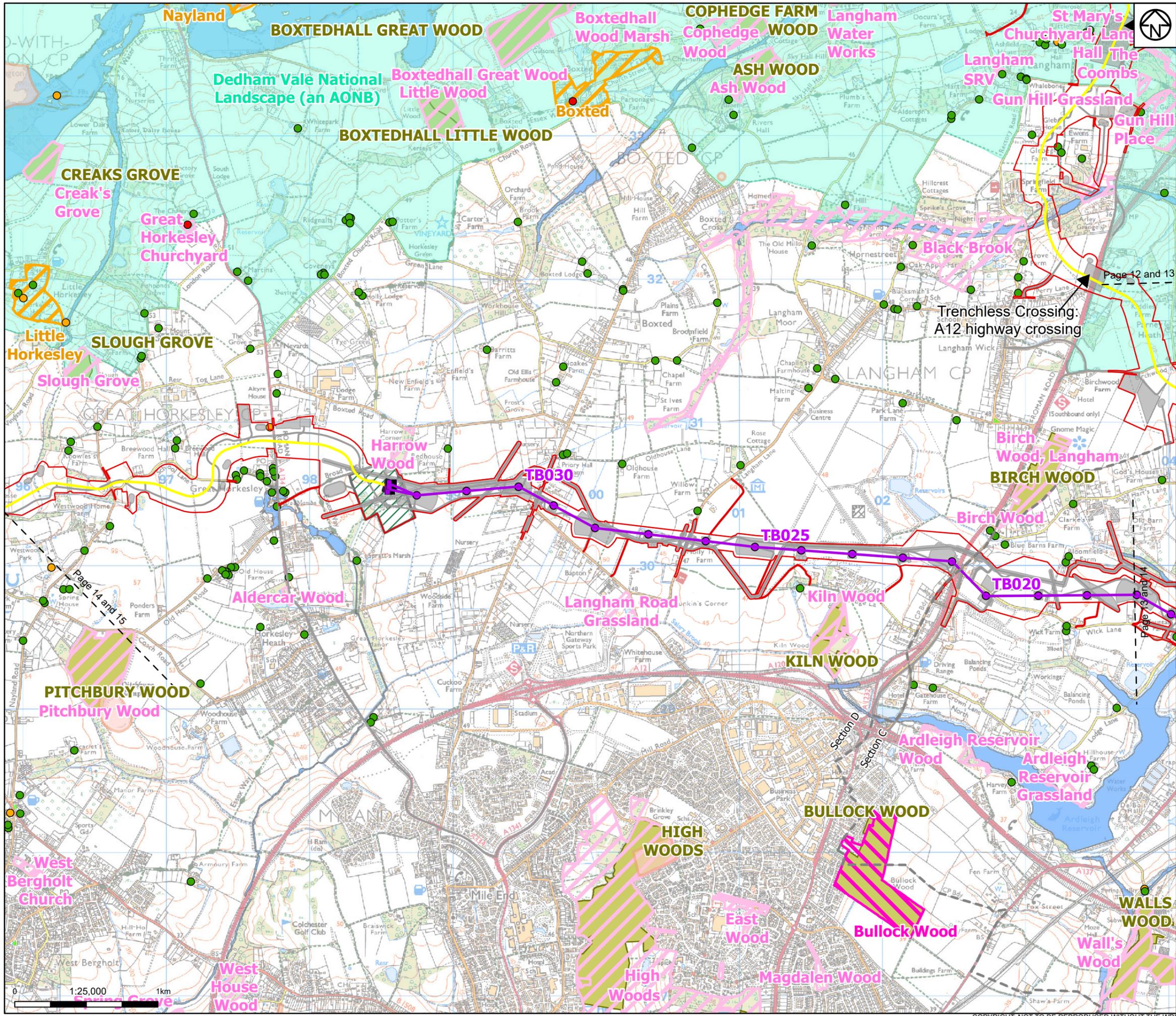
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**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 13 of 25

Designed	A. Fell	Date	April 2024
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Suitability Code:	A2	Project Number:	10059280

Suitability Description:  
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Drawing Number:  
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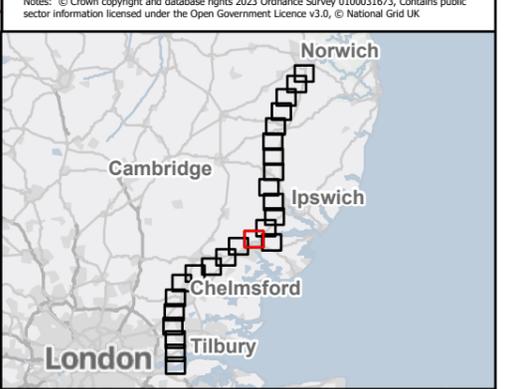
Revision:  
 A



**Legend**

- Draft order limits
- Project sections
- Proposed project design details
  - Proposed overhead line alignment
  - Proposed full line tension gantry
  - Proposed pylon position
  - Proposed underground cable alignment
  - Proposed cable sealing end compound
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
- Discipline specific constraints
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
    - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Countryside and Rights of Way Open Access Land
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  - Ancient Woodland
  - Flood Zone 3

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.



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**nationalgrid** Norwich to Tilbury

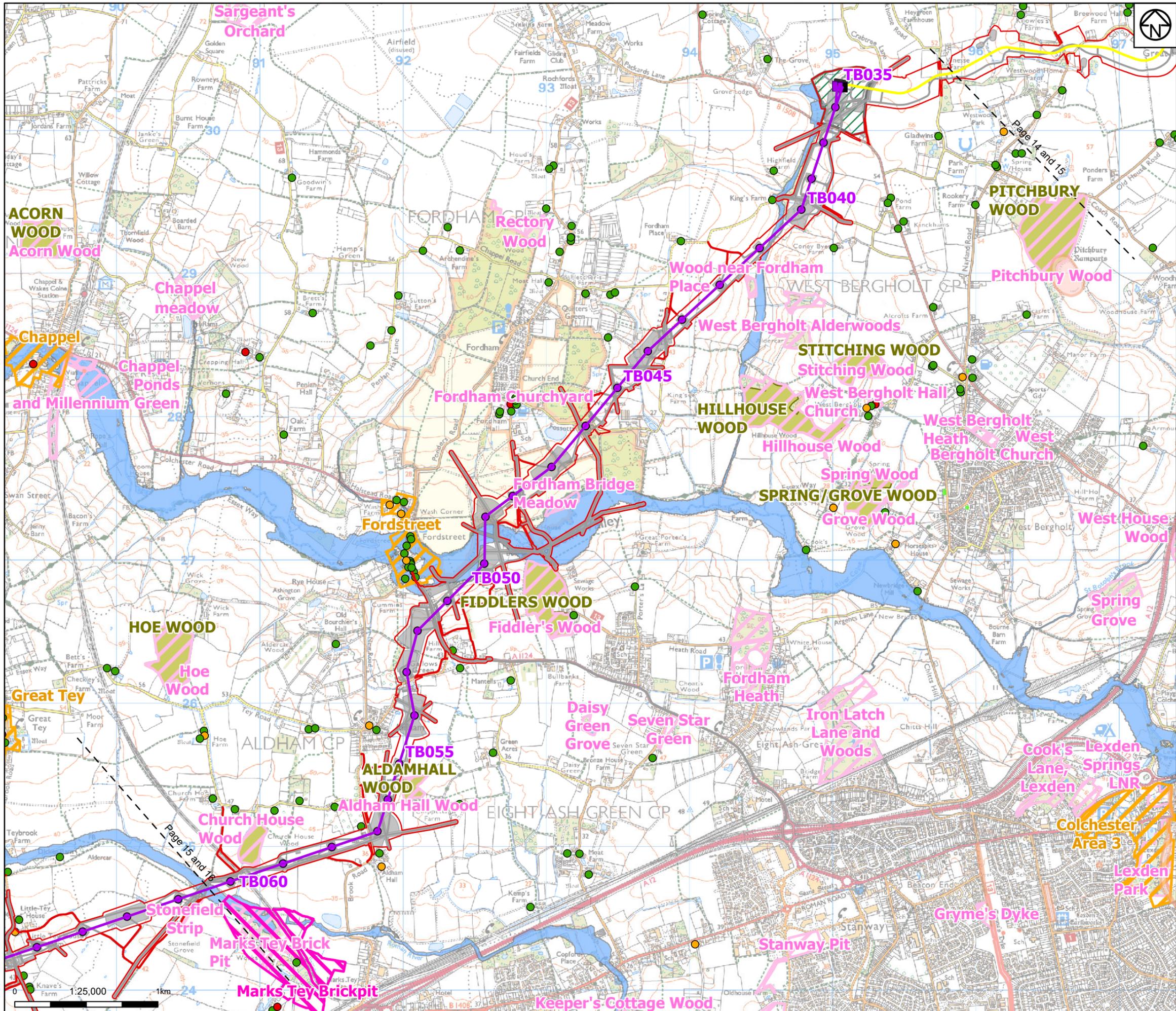
Title:  
 Figure 1 - Non-Technical Summary - Environmental Constraints Plan  
 Page 14 of 25

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Suitability Description:  
 Accepted as Concept Stage

Drawing Number:  
 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



**Legend**

**Draft order limits**

- Red outline

**Proposed project design details**

- Purple line: Proposed overhead line alignment
- Purple square: Proposed full line tension gantry
- Purple circle: Proposed pylon position
- Yellow line: Proposed underground cable alignment
- Blue line: Proposed cable sealing end compound
- Green hatched area: Proposed environmental areas
- Grey hatched area: Other temporary and permanent construction and operational works

**Discipline specific constraints**

**Listed Buildings**

- Red dot: Grade I
- Green dot: Grade II
- Orange dot: Grade II\*
- Orange rectangle: Scheduled Monument (With accompanying list entry number)
- Yellow rectangle: Conservation Areas
- Pink hatched area: Sites of Special Scientific Interest
- Light pink hatched area: County / Local Wildlife Sites
- Light green hatched area: Countryside and Rights of Way Open Access Land
- Dark green hatched area: Ancient Woodland
- Blue hatched area: Flood Zone 3

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.



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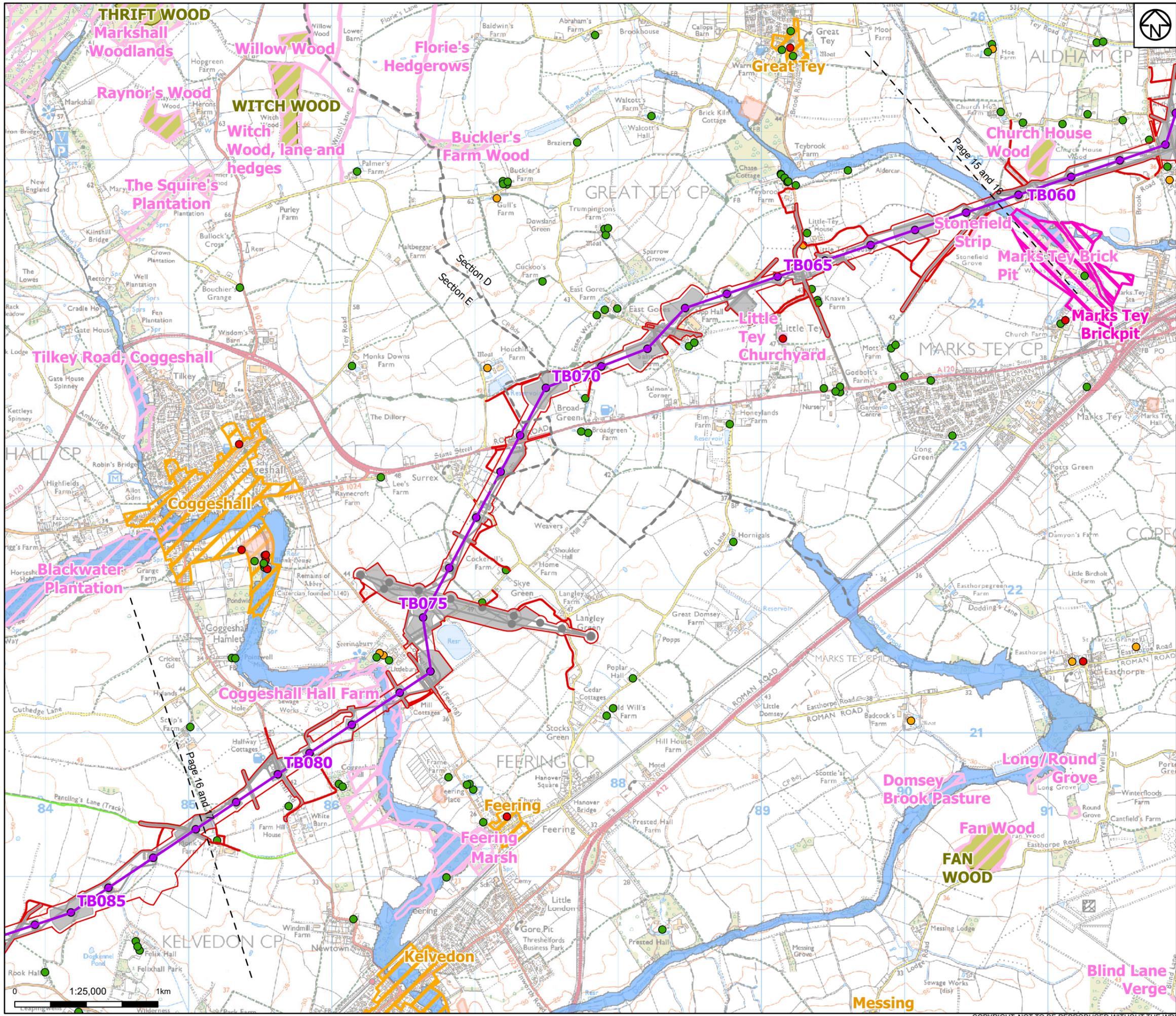
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**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 15 of 25

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Suitability Code:	A2	Project Number:	10059280

Suitability Description:  
 Accepted as Concept Stage

Drawing Number:  
 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



**Legend**

- Draft order limits (Red outline)
- Project sections (Dashed line)
- Proposed project design details**
  - Proposed overhead line alignment (Purple line)
  - Proposed pylon position (Purple dot)
  - Other temporary and permanent construction and operational works (Grey area)
- Discipline specific constraints**
  - Listed Buildings
    - Grade I (Red dot)
    - Grade II (Green dot)
    - Grade II\* (Yellow dot)
  - Scheduled Monument (With accompanying list entry number) (Orange outline)
  - Conservation Areas (Yellow outline)
  - Sites of Special Scientific Interest (Pink outline)
  - County / Local Wildlife Sites (Light pink outline)
  - Countryside and Rights of Way Open Access Land (Light green area)
  - Ancient Woodland (Light brown area)
  - Flood Zone 3 (Blue area)

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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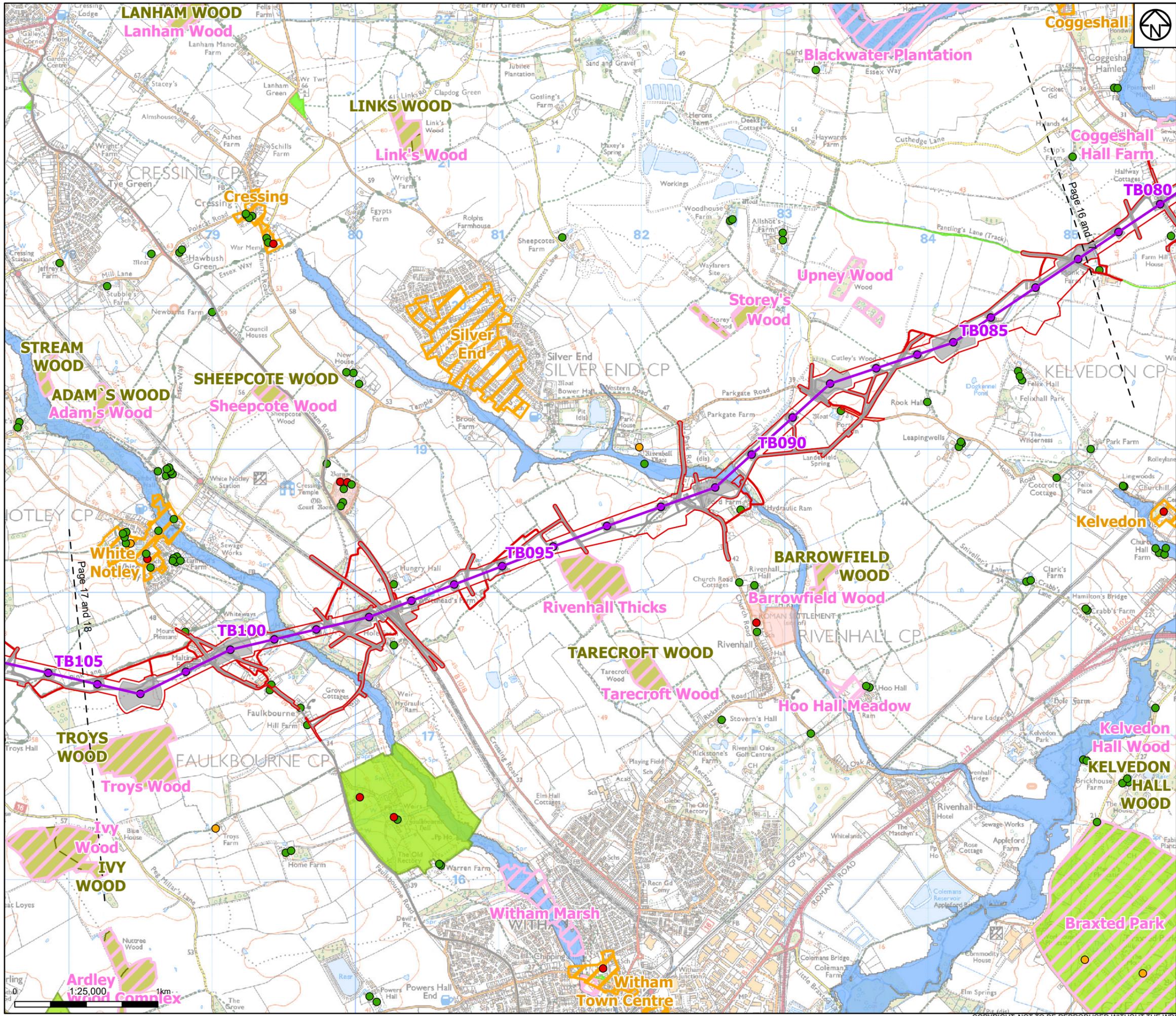
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**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 16 of 25

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 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



**Legend**

- Draft order limits
- Proposed project design details
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
- Discipline specific constraints
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - County / Local Wildlife Sites
  - Registered Parks and Gardens
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3

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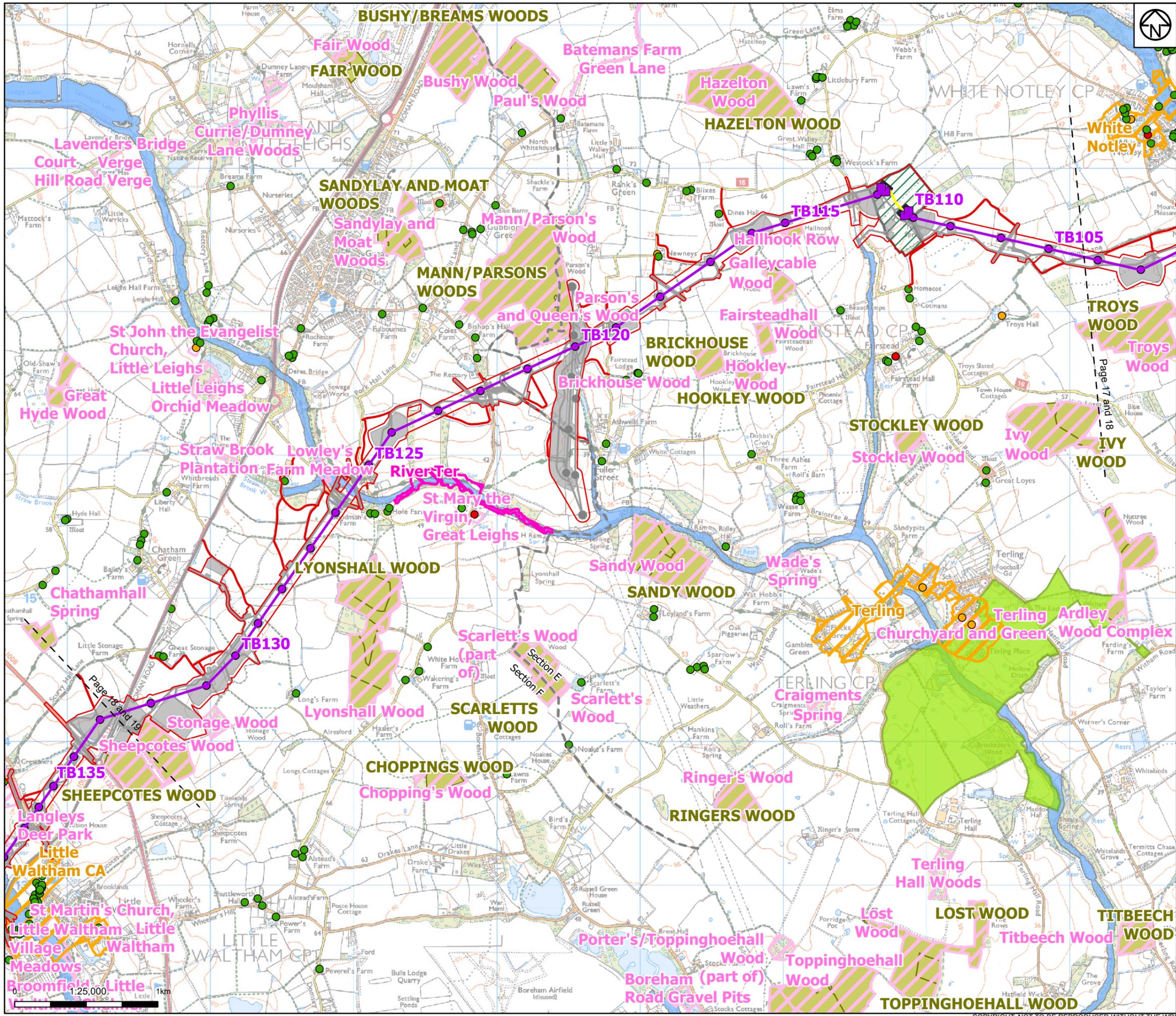
Rev	Date	Description	Drawn	Check	Approv
A	April 2024	FOR STATUTORY CONSULTATION	KF	AF	KB

PROJECT: Norwich to Tilbury  
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Title: Figure 1 - Non-Technical Summary - Environmental Constraints Plan Page 17 of 25

Designed	A. Fell	Date	April 2024
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Original Size:	A3	Grid:	OS
Suitability Code:	A2	Project Number:	10059280

Suitability Description: Accepted as Concept Stage  
 Drawing Number: 10059280-ARC-EGN-ZZ-DR-ZZ-190  
 Revision: A

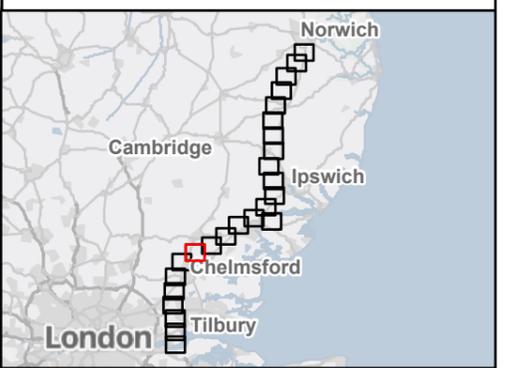


**Legend**

- Draft order limits
- Project sections
- Proposed project design details**
  - Proposed overhead line alignment
  - Proposed low duty gantry
  - Proposed pylon position
  - Proposed underground cable alignment
  - Proposed cable sealing end compound
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
- Discipline specific constraints**
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Registered Parks and Gardens
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3

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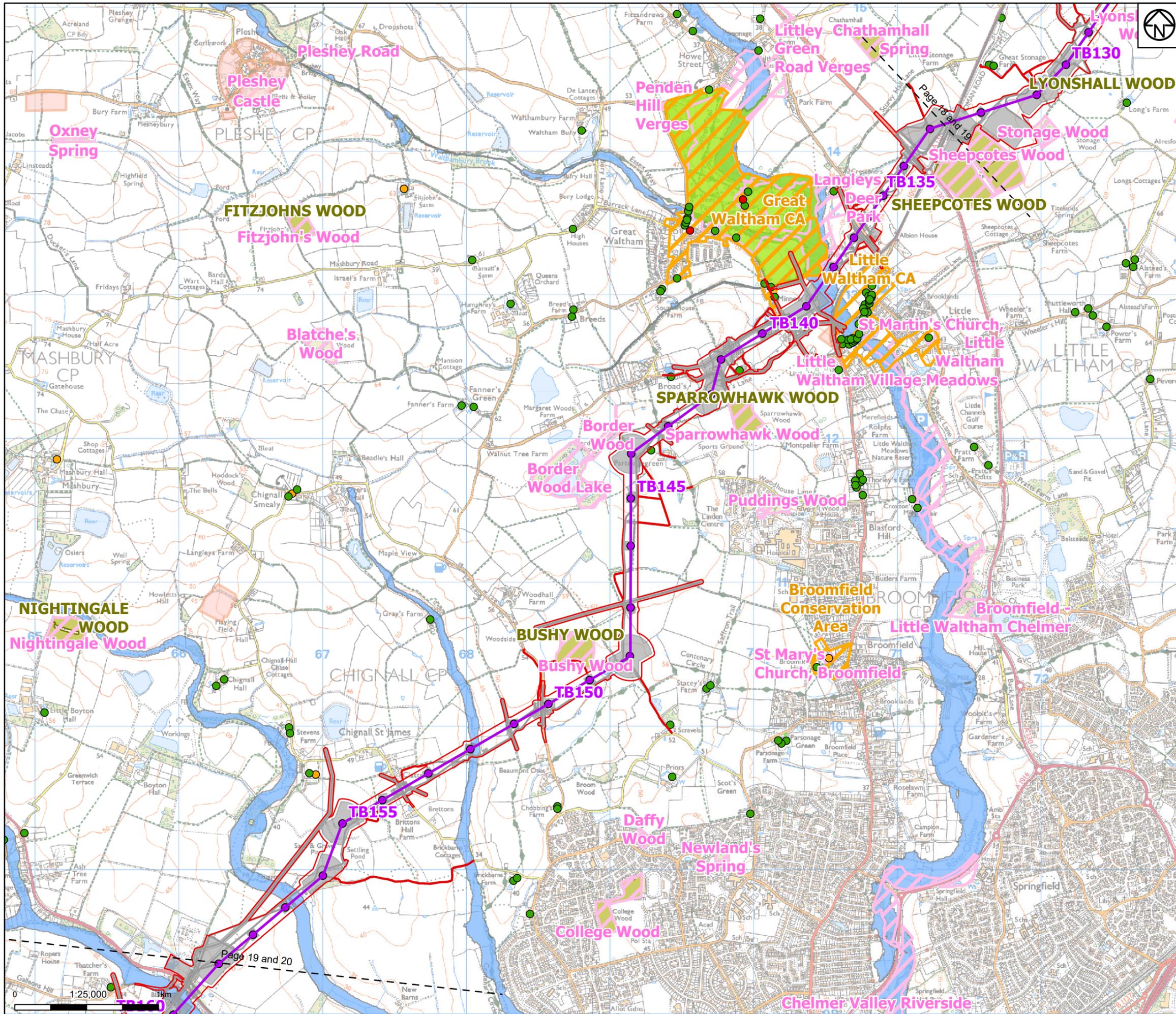
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Title: Figure 1 - Non-Technical Summary - Environmental Constraints Plan Page 18 of 25

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Suitability Code:	A2	Project Number:	10059280

Suitability Description: Accepted as Concept Stage

Drawing Number:	10059280-ARC-EGN-ZZ-DR-ZZ-190	Revision:	A
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**Legend**

- Draft order limits
- Proposed project design details**
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
- Discipline specific constraints**
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - County / Local Wildlife Sites
  - Registered Parks and Gardens
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3

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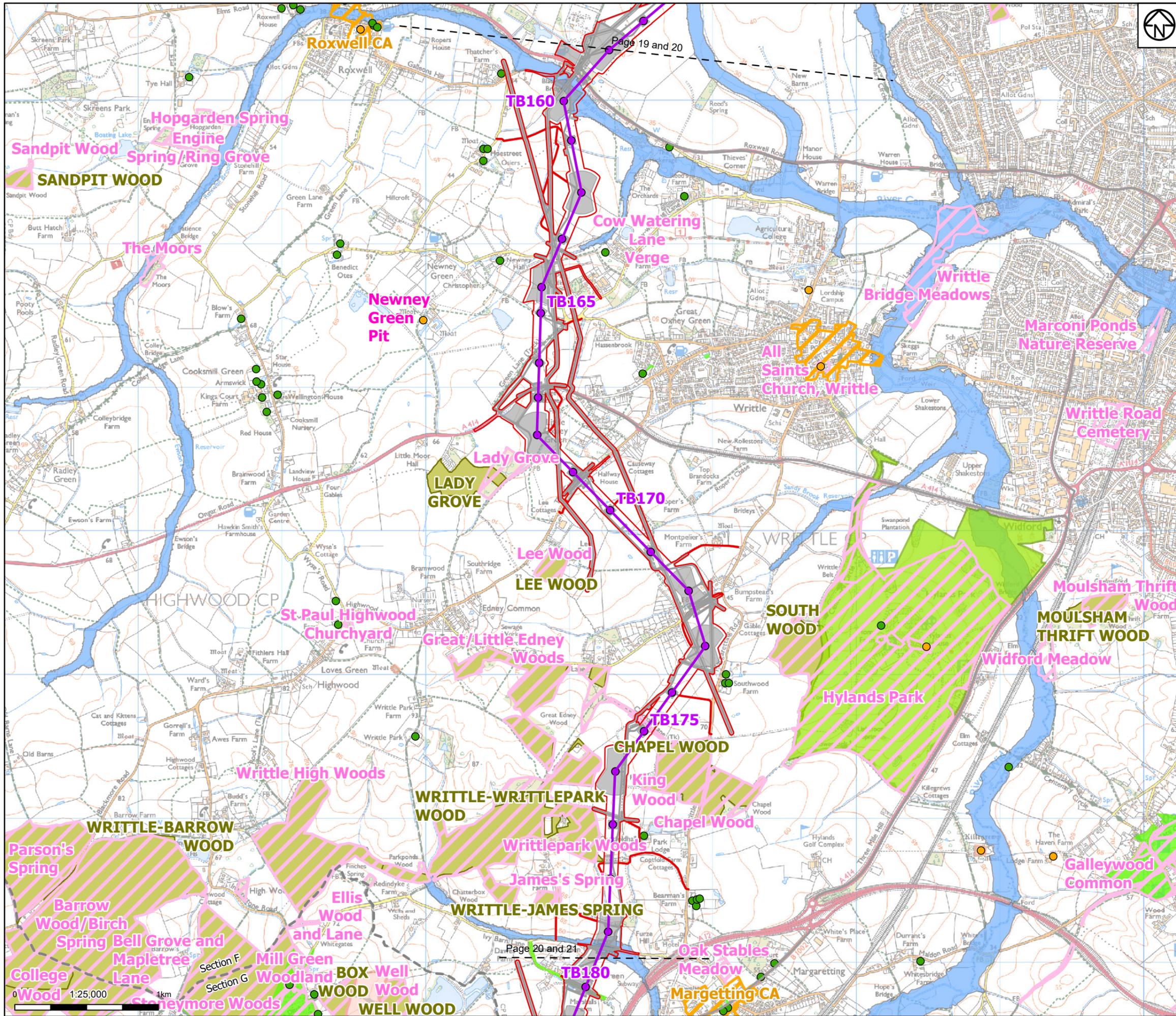
**PROJECT:**  
 nationalgrid Norwich to Tilbury

**Title:**  
 Figure 1 - Non-Technical Summary - Environmental Constraints Plan  
 Page 19 of 25

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Suitability Code:	A2	Project Number:	10059280

Suitability Description: Accepted as Concept Stage

Drawing Number: 10059280-ARC-EGN-ZZ-DR-ZZ-190  
 Revision: A



- Draft order limits
  - Project sections
  - Proposed project design details**
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
  - Discipline specific constraints**
  - Listed Buildings**
  - Grade II
  - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Registered Parks and Gardens
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3
- Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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**nationalgrid** Norwich to Tilbury

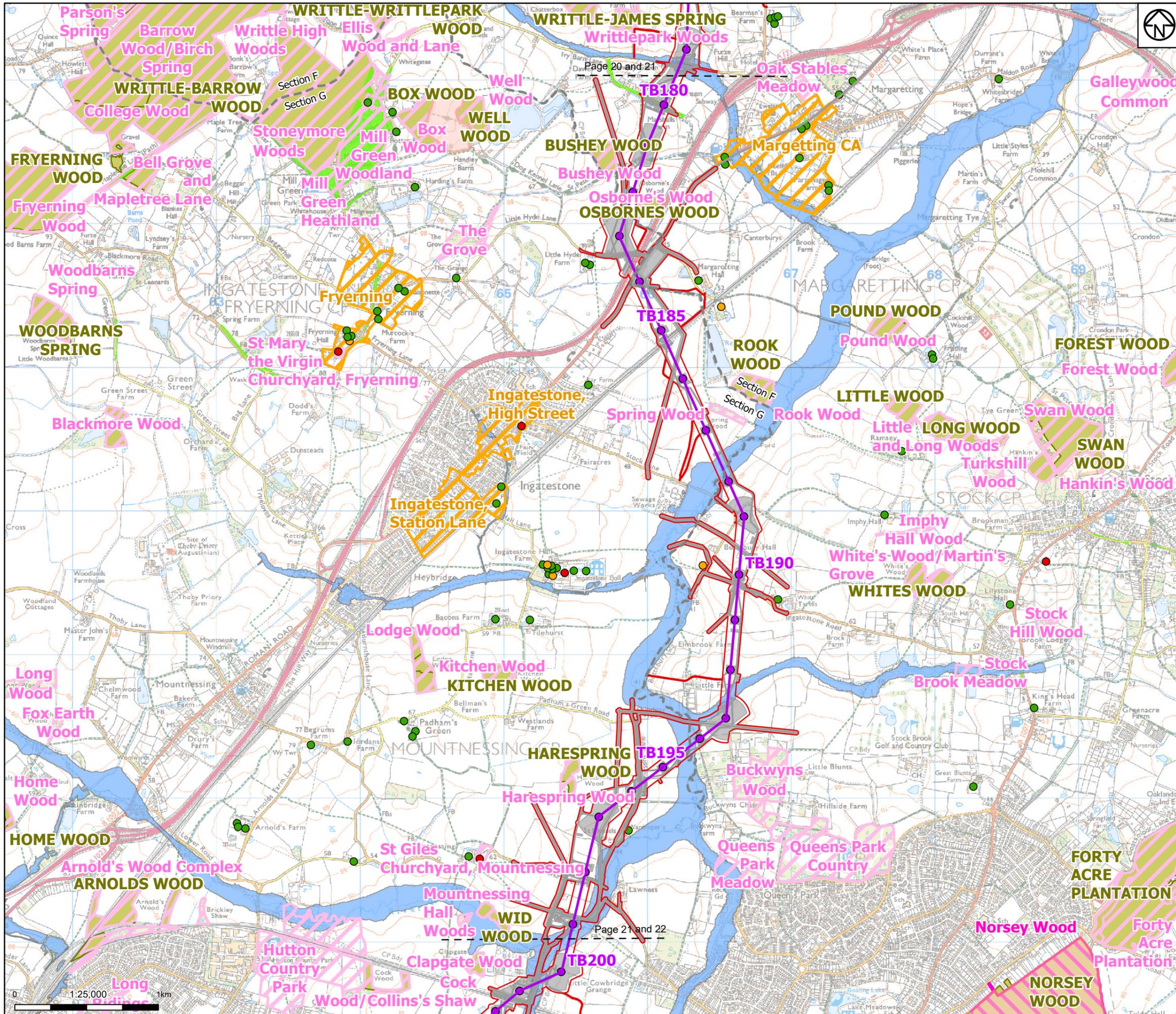
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 Figure 1 - Non-Technical Summary - Environmental Constraints Plan  
 Page 20 of 25

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Suitability Code:	A2	Project Number:	10059280

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 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



- Draft order limits
  - Project sections
  - Proposed project design details**
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
  - Discipline specific constraints**
  - Listed Buildings**
  - Grade I
  - Grade II
  - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
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  - Countryside and Rights of Way Open Access Land
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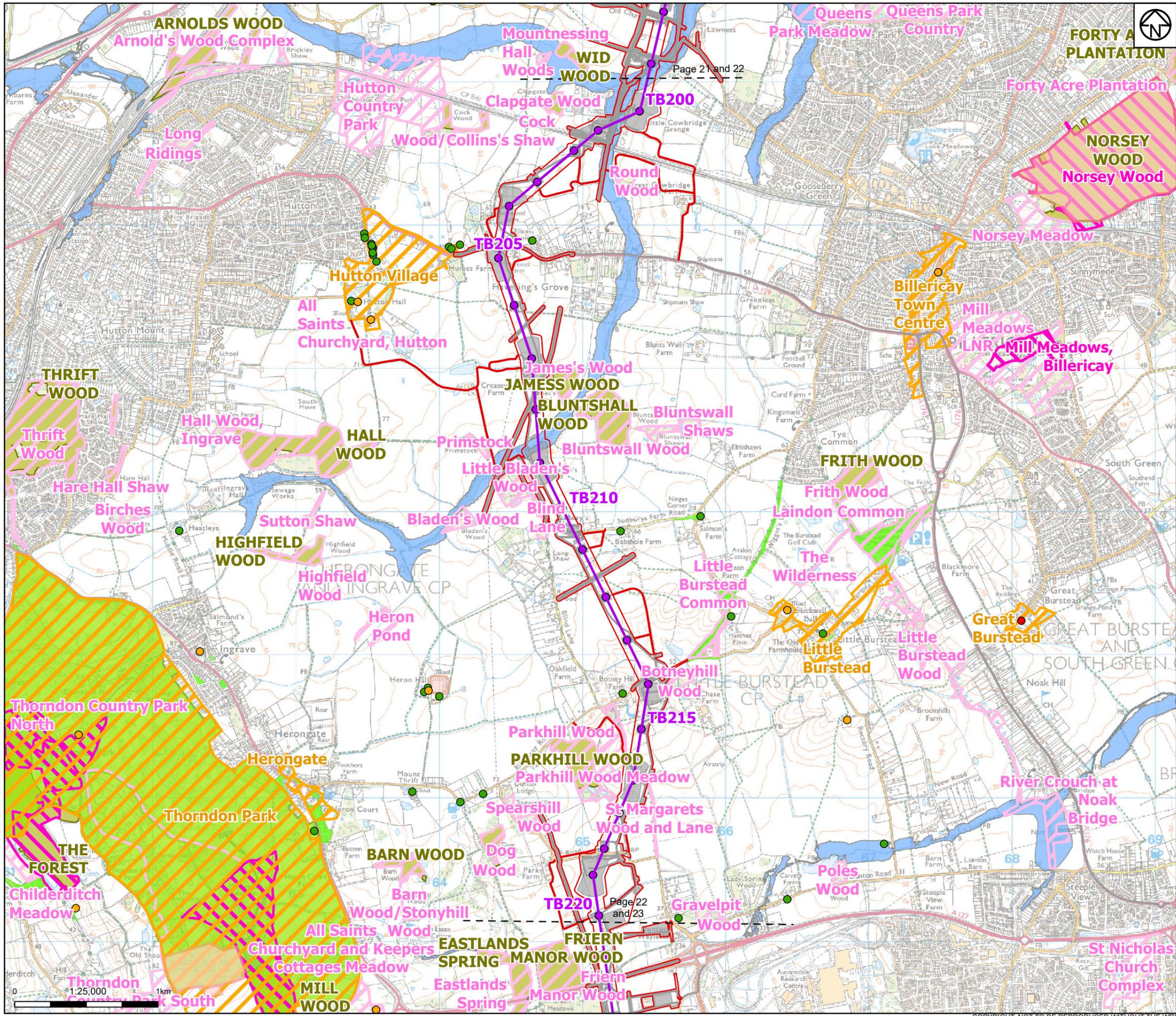
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**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 21 of 25

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Revision:  
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- Draft order limits
  - Proposed project design details**
  - Proposed overhead line alignment
  - Proposed pylon position
  - Other temporary and permanent construction and operational works
  - Discipline specific constraints**
  - Listed Buildings
  - Grade I
  - Grade II
  - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
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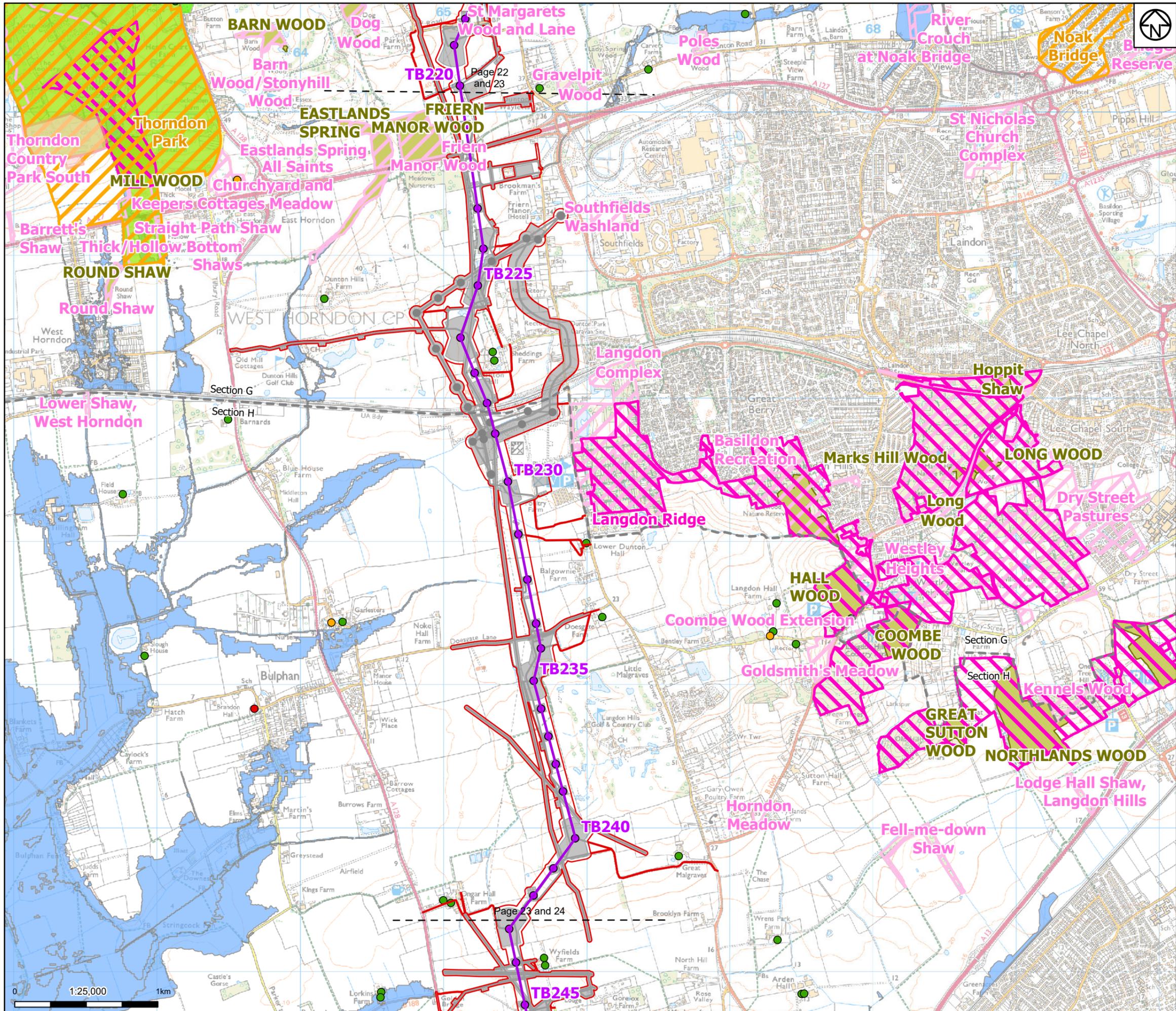
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**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 22 of 25

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Suitability Description:  
 Accepted as Concept Stage

Drawing Number:  
 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



**Legend**

- Draft order limits (Red outline)
- Project sections (Dashed line)
- Proposed project design details**
  - Proposed overhead line alignment (Purple line)
  - Proposed pylon position (Purple dot)
  - Other temporary and permanent construction and operational works (Grey area)
- Discipline specific constraints**
  - Listed Buildings
    - Grade I (Red dot)
    - Grade II (Green dot)
    - Grade II\* (Yellow dot)
  - Scheduled Monument (With accompanying list entry number) (Orange outline)
  - Conservation Areas (Yellow hatched area)
  - Sites of Special Scientific Interest (Pink hatched area)
  - County / Local Wildlife Sites (Light pink hatched area)
  - Registered Parks and Gardens (Light green hatched area)
  - Countryside and Rights of Way Open Access Land (Light green area)
  - Ancient Woodland (Dark green hatched area)
  - Flood Zone 3 (Blue area)

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.



Rev	Date	Description	Drawn	Check	Approv
A	April 2024	FOR STATUTORY CONSULTATION	KF	AF	KB

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**nationalgrid** Norwich to Tilbury

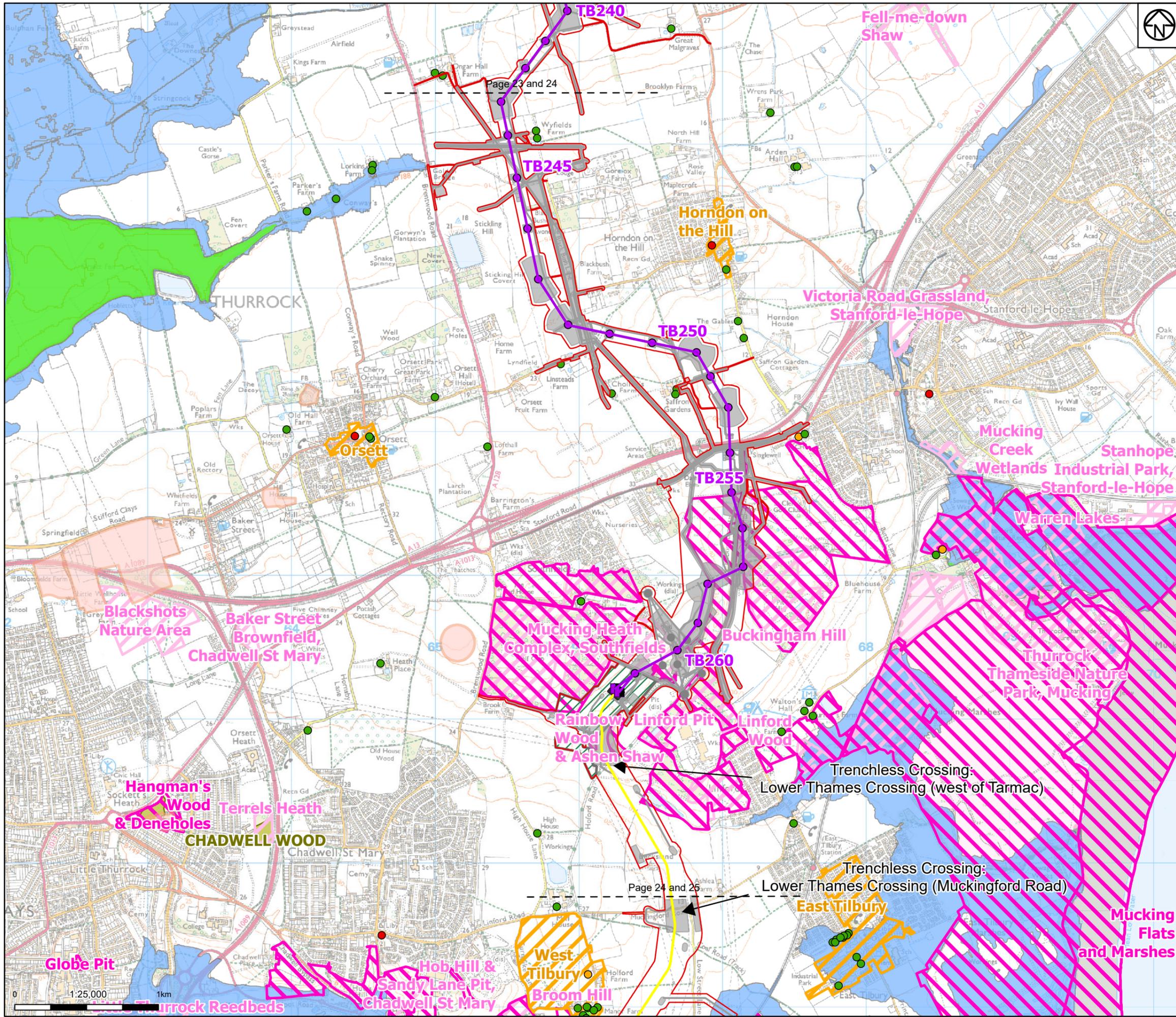
Title:  
**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 23 of 25

Designed	A. Fell	Date	April 2024
Drawn	K. Fischer	Date	April 2024
Checked	A. Fell	Date	April 2024
Approved	K. Burrows	Date	April 2024
Scale:	1:25,000	Datum:	AOD
Original Size:	A3	Grid:	OS
Suitability Code:	A2	Project Number:	10059280

Suitability Description:  
 Accepted as Concept Stage

Drawing Number:  
 10059280-ARC-EGN-ZZ-DR-ZZ-190

Revision:  
 A



- Draft order limits**
- Draft order limits
- Proposed project design details**
- Proposed overhead line alignment
  - Proposed full line tension gantry
  - Proposed pylon position
  - Proposed underground cable alignment
  - Proposed cable sealing end compound
  - Proposed environmental areas
  - Other temporary and permanent construction and operational works
- Discipline specific constraints**
- Listed Buildings
- Grade I
  - Grade II
  - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3
- Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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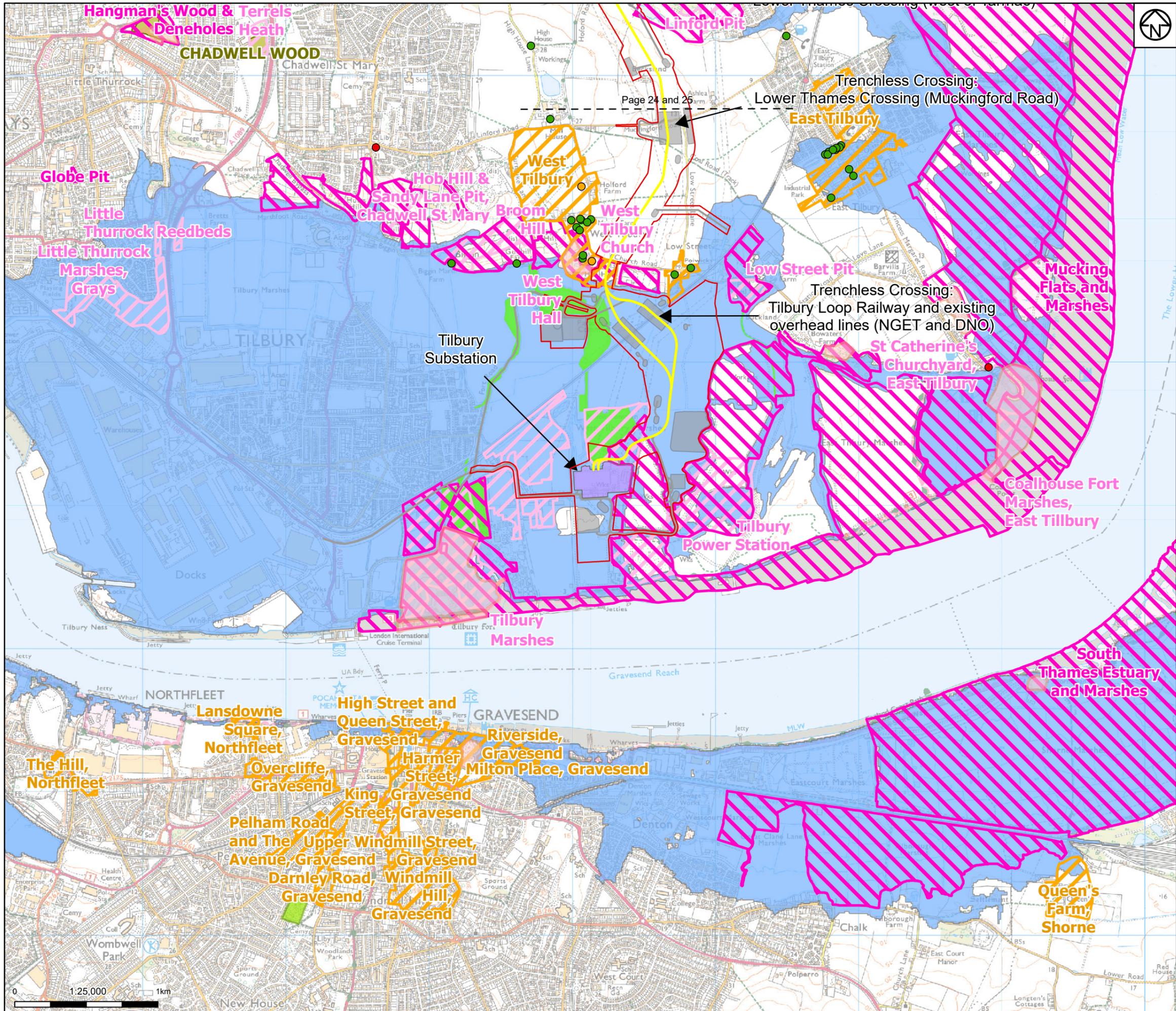
Title:  
**Figure 1 - Non-Technical Summary - Environmental Constraints Plan**  
 Page 24 of 25

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Checked	A. Fell	Date	April 2024
Approved	K. Burrows	Date	April 2024
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Suitability Description:  
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**Legend**

- Draft order limits
- Proposed project design details
  - Proposed underground cable alignment
  - Existing substation
  - Other temporary and permanent construction and operational works
- Discipline specific constraints
  - Listed Buildings
    - Grade I
    - Grade II
    - Grade II\*
  - Scheduled Monument (With accompanying list entry number)
  - Conservation Areas
  - Sites of Special Scientific Interest
  - County / Local Wildlife Sites
  - Registered Parks and Gardens
  - Countryside and Rights of Way Open Access Land
  - Ancient Woodland
  - Flood Zone 3

Note: The proposed overhead line alignment and proposed underground cable alignment together comprise the 2024 preferred draft alignment.

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PROJECT:  
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Title:  
 Figure 1 - Non-Technical Summary - Environmental Constraints Plan  
 Page 25 of 25

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