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# **Bramford to Twinstead 400kV Overhead Line Project**

## **Route Corridor Study for Public Consultation**

### **Executive Summary**

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CV34 6DA

October 2009

## **S.0 BRAMFORD TO TWINSTEAD 400kV OVERHEAD LINE PROJECT**

### **ROUTE CORRIDOR STUDY - EXECUTIVE SUMMARY**

#### **Introduction**

- S.1 A new 400,000 Volt (400kV) double circuit overhead line connection is required between Bramford and Twinstead to reinforce the existing 400kV electricity system in response to the need to connect new generation in the East Anglia region. A Route Corridor Study (RCS) has been undertaken by environmental consultants TEP on behalf of National Grid to identify potential route corridors between an existing substation at Bramford and a tee point on the existing overhead line system in the vicinity of Twinstead. This report summarises the key issues arising from the RCS.

#### **Method**

- S.1 Prior to commencement of the RCS, National Grid undertook an exercise to raise awareness of the connection requirements and the imminent RCS to key statutory and non-statutory stakeholders and to seek any initial responses. Information from this pre-study information exchange was considered in a review of National Grid's guidance and policies on the siting and design of infrastructure and relevant national, regional and local planning policy and guidance. These reviews identified areas of constraint which National Grid seeks to avoid and areas on which it seeks to minimise effects.
- S.2 The identified constraints and influences on routeing were mapped and analysed through desk study and site visits to identify potential overhead line corridors for the required connection. National Grid has recently undertaken technical consultation on the RCS with the officers of the District and County Councils and statutory consultees affected by the proposals and this will be followed by public consultation.

#### **Study Area and Environmental Constraints**

- S.3 The study area for the RCS extends from the existing substation at Bramford to a tee point on the existing overhead line system at Twinstead. The study area falls within the administrative control of the following district and county authorities:
- Mid Suffolk District; Babergh District; and Suffolk County Councils
  - Braintree District; and Essex County Councils
- S.4 The key environmental constraints identified within the study area that influence potential route corridors between Bramford and Twinstead include:
- Dedham Vale Area of Outstanding Natural Beauty (AONB);
  - Several Sites of Special Scientific Interest (SSSI), primarily associated with woodlands;
  - Historical sites including Scheduled Monuments and Listed Buildings;
  - Settlements including the towns of Hadleigh and Sudbury and numerous villages and hamlets many of which include Conservation Areas; and
  - Woodlands.
- S.5 Consideration was also given to Special Landscape Areas (as designated in the Local Plan); and the topography; landscape character and historic landscape character of the area.

## **Broad Route Corridors**

- S.6 A detailed desk based assessment, supplemented with site visits, has identified route corridors which seek to avoid constraints and also ‘opportunity corridors’ which use the routes of existing lines. Existing lines run through areas of high environmental constraint (such as the Dedham Vale AONB which is of national landscape value). However using these routes may result in a lower overall scale of change from the existing situation than would result from the construction of a new line through an area where no line presently exists.
- S.7 The following route corridors have been identified for this connection:
- A new line parallel to the existing 400kV overhead line;
  - A corridor using the route of the existing 132kV line between Bramford and Twinstead; and
  - Two corridors for an entirely new route.
- S.8 The proposed overhead line would use towers similar to those on the existing line between Bramford and Twinstead. The height of the existing standard towers on the existing line is approximately 50m.
- S.9 The environmental constraints and proposed corridors are illustrated on Figure A, and a description of the corridors follows below.

### **Corridor 1 – Parallel to Existing 400kV Overhead Line**

- S.10 Corridor 1 considers the option to parallel the existing 400kV overhead line which runs from Bramford to Twinstead Tee with a new 400kV overhead line. The existing 400kV and 132kV lines between Bramford and Twinstead tee would remain with this option resulting in three overhead lines close to each other.
- S.11 This option proposes a closely aligned corridor to the north or south of the existing line. A distance of 50 -70m from the existing line would be preferred, however this may be difficult to achieve along the full length of the corridor due to close proximity of environmental constraints, requiring offsetting in some places. The existing overhead line runs through Dedham Vale AONB for a distance of approximately 3km.
- S.12 This corridor, following the existing 400kV overhead line between Bramford and Twinstead tee, is 26km in length. It is the shortest of the corridors under consideration.

### **Corridor 2 – Using the Route of the Existing 132kV Overhead Line Route**

- S.13 This option proposes the removal of the existing 132kV overhead line between Burstall and Twinstead and the adoption of its route for a new 400kV overhead line. The existing 132kV overhead line (comprising part of the electrical distribution system) runs from Burstall, 2.5 km to the south of Bramford Substation and is presently 26km in length, although the total length of overhead line required to utilise this route may be up to 28.5km to connect to the substation at Bramford.

- S.14 The existing 132kV overhead line runs close to the existing 400kV overhead line for the majority of the route to Twinstead from a point to the south of Hintlesham Wood. Two options for this corridor exist around the Hintlesham area. Option A runs to the south of Hintlesham along the line of the existing 132kV overhead line and Option B runs to the north of Hintlesham parallel to the existing 400kV overhead line.
- S.15 The existing standard 132kV overhead line towers are approximately 26.5m high and the existing 400kV overhead line towers are approximately 50m high. This option would remove the existing 132kV line and rebuild along its route with 400kV towers approximately 47m high. There would be a perceptible change of scale in views from the local area, including within the AONB.
- S.16 It has been assumed that a new 400kV overhead line using this corridor would be built closely along the existing alignment to minimise the scale of change. However this may not be possible in certain locations as there may be insufficient space to locate the larger 400kV towers due to environmental constraints and to achieve safety clearances, requiring offsetting in some places. The existing overhead line runs partly through Dedham Vale AONB for a distance of approximately 3km.
- S.17 Additional works will be required to the 132kV system to make this route available to National Grid. The extent of this work will likely include a Grid Supply Point (GSP) (400/132kV substation) on the system to the west of Twinstead in Essex. Potential GSP locations under consideration are indicated on Figure B. Discussions between National Grid and the operator of the 132kV system are continuing regarding the extent of this additional work. This GSP is only required if Corridor 2 is taken forward.

### **Corridor 3 – New Route Corridor (Direct Option to the North of Hadleigh)**

- S.18 Corridor 3 has been considered as a potential option to avoid paralleling the existing overhead lines and the installation of a new 400kV overhead line through the northern section of the Dedham Vale AONB.
- S.19 Corridor 3 has sought to take the most direct route between Bramford substation and Twinstead to the north of Hadleigh whilst avoiding the key areas of environmental constraint including the AONB. It does however pass close to some settlements.
- S.20 This corridor is approximately 26.5km in length and is approximately 2-3km distant from the existing overhead lines. The corridor width extends to over 1km in places, although constraints in other areas reduce its width to tens of metres. The corridor offers the opportunity for a number of alignments to be considered should this option be taken forward.

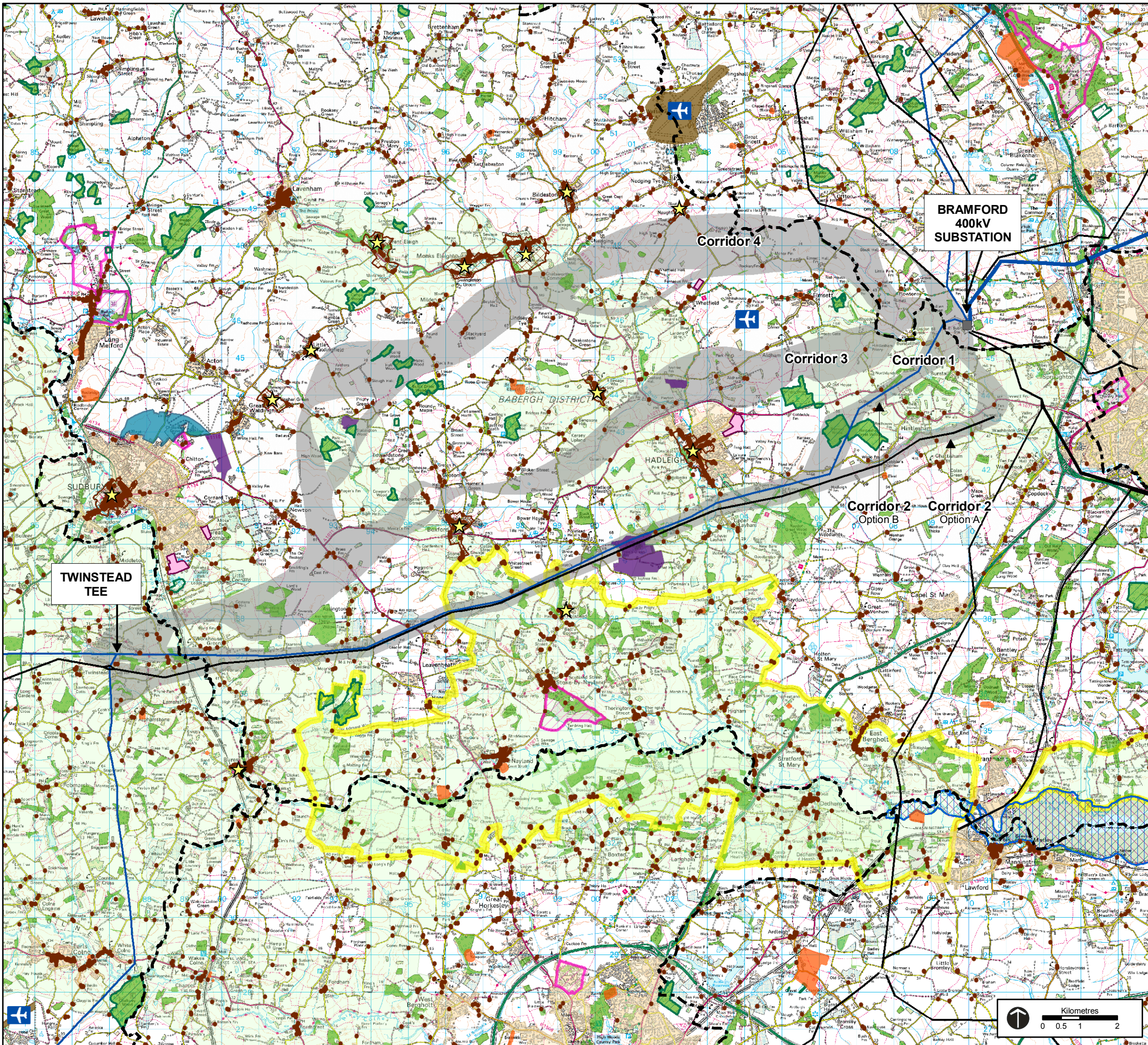
### **Corridor 4 – New Route Corridor (Northerly Option)**

- S.21 Corridor 4 takes a more northerly route and has been considered as a potential option to avoid paralleling the existing overhead lines to the south of Hadleigh and to avoid the installation of a further overhead line through the Dedham Vale AONB. It seeks to address some of the environmental constraints identified in Corridor 3 such as proximity to settlements and intervisibility between overhead lines.

- S.22 This corridor largely avoids areas subject to national and local level planning policy protection for their landscape value. It would however introduce a new overhead line into an area where there is no existing infrastructure and into a landscape that, following initial technical consultation, is regarded as high quality, albeit undesignated.
- S.23 This corridor is the longest under consideration at approximately 30km however its width extends to over 2km in places, offering the opportunity for a number of alignments to be considered should this option be taken forward.

### **Conclusions**

- S.24 National Grid has confirmed that it is prepared to build an overhead line within any of the four corridor options outlined in this feasibility report, with little differentiation in terms of cost or technical achievability.
- S.25 The AONB is the area of greatest constraint in the study area. If no overhead lines were already present in the area, then overhead line routeing practice (in accordance with planning policy) would seek to avoid this designation and would indicate a route to the north of the AONB. The presence of the existing 132kV and 400kV lines presents an opportunity to minimise the scale of change in the wider landscape that a new overhead line would bring.
- S.26 National Grid is now entering a period of public consultation on the route corridor study which will be factored into the decision-making process. National Grid will then put forward its preferred corridor after considering consultation responses. This will be taken forward to a detailed alignment stage, using environmental impact assessment techniques and ongoing consultation to help shape the proposal.



**Key**

- Administrative Boundary
- 400kV Route Corridors Under Consideration

**Existing Infrastructure**

- Existing Substation
- Existing 400kV Overhead Line
- Existing 132kV Overhead Line

**Environmental Constraints**

- Area of Outstanding Natural Beauty
- Special Landscape Area
- Ramsar Site
- Special Protection Area
- Site of Special Scientific Interest
- Scheduled Monument
- Registered Park and Garden
- Historic Building
- Conservation Area
- Woodland
- Settlement
- Housing and Public Open Space Allocation in Development Plan
- Mixed Use/Housing Allocation
- Mineral Reserves
- Airport/Airfield

The following environmental constraints considered in routing do not occur in the study area:

- National Parks
- Heritage Coasts
- Special Areas of Conservation
- National Nature Reserves
- World Heritage Sites
- Registered Battlefields

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Project: **Bramford to Twinstead Route Corridor Study**

Title: **Environmental Constraints and Proposed Corridors**

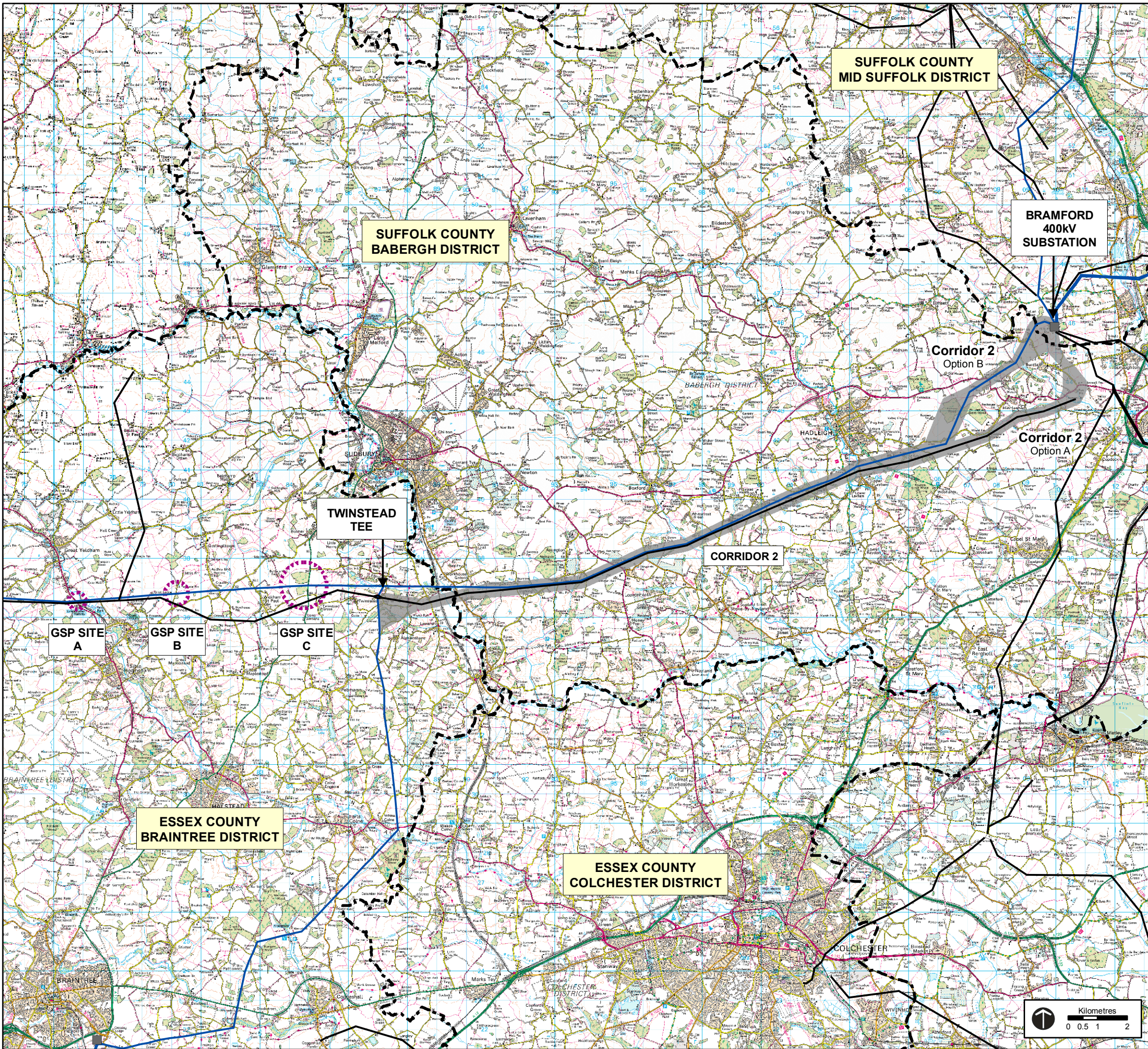
Drawing No: **Figure A**

Date: 13-10-09 TEP Ref No: G1980.041B

Drawn: LC Checked: JB Approved: IJG

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**Key**

- Administrative Boundary
- 400kV Route Corridor 2
- Indicative GSP Search Areas

**Existing Infrastructure**

- Existing Substation
- Existing 400kV Overhead Line
- Existing 132kV Overhead Line

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Project: **Bramford to Twinstead Route Corridor Study**

Title: **Potential Grid Supply Point Locations**

Drawing No: **Figure B**

Date: 13-10-09	TEP Ref No: G1980.043A
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