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Bramford to Twinstead Reinforcement

Volume 7: Other Documents

Document 7.9: Archaeological Framework Strategy

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1. Introduction

1.1 Overview

1.1.1 National Grid Electricity Transmission plc (here on referred to as National Grid) is making an application for development consent to reinforce the transmission network between Bramford Substation in Suffolk, and Twinstead Tee in Essex. The Bramford to Twinstead Reinforcement ('the project') would be achieved by the construction and operation of a new electricity transmission line over a distance of approximately 29km, the majority of which would follow the general alignment of the existing overhead line network.

1.1.2 Order Limits have been defined to encompass the land required temporarily to build the project and permanently to operate the project. The Order Limits include Limits of Deviation (LoD), which represent the maximum locational flexibility for permanent infrastructure, such as the overhead line, pylons, CSE compounds and underground cables. This allows for adjustment to the final positioning of project features to avoid localised constraints or unknown or unforeseeable issues that may arise. The LoD are shown on the Work Plans (**application document 2.5**).

1.1.3 This Archaeological Framework Strategy (AFS) has been produced to support the application for development consent and the accompanying Environmental Statement (ES) under the Planning Act 2008.

1.2 Purpose of this Document

1.2.1 This document sets out the AFS relevant to the project. It provides the principles for the scope of pre-application archaeological desk based and field surveys and the proposed outline scope for post-application field surveys and archaeological mitigation strategy should development consent be granted.

1.2.2 The AFS does not provide the scope for surveys being undertaken in relation to cultural heritage assets, such as site visits to investigate the potential effects arising as a result of changes within the settings of heritage assets.

1.2.3 The AFS is supported by:

- The Code of Construction Practice (CoCP) (**application document 7.5.1**) which sets out the good practice measures that will be undertaken during construction if the project is granted consent;
- An Outline Written Scheme of Investigation (OWSI) (**application document 7.10**) which outlines the aims, objectives, broad methodologies and process by which the programme of archaeological mitigation will be delivered. The OWSI includes a provisional plan of the extent and location of archaeological mitigation to be undertaken pre- and during construction; and
- Detailed Written Schemes of Investigation (WSI) which will be produced by the archaeological contractor(s) for the works pre- and post-application. The detailed WSI will outline the specific aims and objectives for individual sites or regions and the survey method being employed.

1.3 Overarching Principles

1.3.1 Generally, there are two overarching principles that apply to considering the approach to archaeological remains, these are:

- To protect and retain *in situ* any high value archaeological remains that may be found; or
- To excavate (preservation by record) archaeological remains that may be found where retention *in situ* is not warranted.

1.3.2 A programme of desk based and field surveys (see Chapter 2) has been undertaken to establish the extent and significance of archaeological remains so that a proportionate approach to mitigation can be determined. This was achieved through a combination of non-intrusive and intrusive surveys, which have been used to determine an appropriate mitigation strategy. The results of these investigations are summarised in the OWSI (**application document 7.10**). The mitigation strategy generally relates to a suitable programme of archaeological recording and excavation, but could include retention *in situ* where that is warranted. Archaeological evaluation methods which have been undertaken pre-application comprise:

- Desk based survey (DBS);
- Aerial investigation and mapping (AIM) assessment;
- Archaeological geophysical survey (AGS);
- Targeted walkover survey;
- Desk based geoarchaeological and palaeoenvironmental assessment (GPA);
- Watching brief during site investigation works; and
- Archaeological trial trenching (ATT).

1.3.3 As noted above, high value archaeological remains would be protected and retained *in situ* any high value archaeological remains. Where retention *in situ* is not warranted, a range of archaeological techniques would be used to make a permanent documentary record of any archaeological remains removed or damaged by the project (see Chapters 3 and 4). It is likely that these would be comprised of the following methods to be undertaken in the period post-application, prior to, and/or during construction:

- Targeted open area excavation (OAE);
- Archaeological strip, map and sample (SMS); and
- Archaeological watching brief.

1.3.4 Post-excavation work and appropriate and proportionate reporting and publication would be undertaken on completion of the archaeological work (see Chapter 5).

1.3.5 Detailed WSI will be prepared in consultation with the local authority archaeologists at Essex and Suffolk County Council, as advisors to the relevant planning authorities (hereafter 'the local authority advisors') for the archaeological field surveys outlined in Chapter 2.

2. Pre-application Archaeological Surveys

2.1 Desk Based Survey (DBS)

2.1.1 The aim of the DBS is to gain an understanding of the historic environment baseline associated within a defined Study Area based on the location of the project and the associated Order Limits.

2.1.2 The DBS focuses on detailing the baseline conditions for the historic environment. This includes:

- Identifying the known archaeological remains within the study area as recorded in desk based sources; and
- Assessing the potential for further unknown archaeological remains to be present.

2.1.3 The DBS is provided as ES Appendix 8.1: Historic Environment Baseline (**application document 6.3.8.1**) and is used in conjunction with the other intrusive and non-intrusive surveys undertaken to inform the scope of further archaeological works.

2.2 Aerial Investigation and Mapping Assessment (AIM)

2.2.1 The purpose of the AIM is to establish the presence and distribution of archaeological features which may be affected by the project within the Order Limits, as far as reasonably possible using this technique.

2.2.2 An Aerial Photographic Assessment was undertaken by Essex County Council in 2012 (Essex County Council, 2012). This assessment was updated in 2021 to accommodate the design evolution process and to incorporate more recent data sets (Essex County Council Place Services, 2021).

2.2.3 The AIM provides baseline data used to inform the location and scope of further archaeological works. The results of the AIM are included in the DBS in ES Appendix 8.1: Historic Environment Baseline (**application document 6.3.8.1**).

2.3 Archaeological Geophysical Survey (AGS)

2.3.1 The aim of AGS is to establish the presence and distribution of archaeological features which may be affected by the project within the Order Limits, as far as reasonably practicable using this technique. An AGS was undertaken in 2013 for the underground cable sections, using the 2013 route corridor (Bartlett-Clark Consultancy, 2013).

2.3.2 This survey identified potential archaeological remains including two areas of more distinct and well-defined archaeological potential. These areas corroborate the results of the 2012 Aerial Photographic Assessment (Essex County Council, 2012) but also identify three anomalies interpreted as ditched enclosures, which were not previously identified in the aerial imagery. The site of one of these ditched enclosures has been interpreted as a curvilinear enclosure which may relate to Iron Age settlement within the Dedham Vale Area of Outstanding Natural Beauty (AONB).

2.3.3 A supplementary programme of AGS has been undertaken to accommodate the design evolution process and to address any gaps in the baseline data. Areas targeted for supplementary AGS comprised:

- The grid supply point (GSP) substation;
- The cable sealing end (CSE) compounds;
- Any substantial re-routing of the undergrounding cables beyond the 2013 alignment;
- The main construction compound; and
- Specific areas targeted for their potential to inform design refinement.

2.3.4 AGS has not been undertaken along the overhead line sections, where the construction works are more limited to pylon bases and temporary access routes, further details are provided within the OWSI (**application document 7.10**).

2.3.5 The combination of the former AGS, the additional AGS and the AIM is considered to provide suitable coverage of the below ground features in order to inform the scope of further archaeological works.

2.3.6 The results of the AGS are included in the DBS in ES Appendix 8.1: Historic Environment Baseline (**application document 6.3.8.1**).

2.4 Targeted Walkover Survey

2.4.1 The aim of the targeted walkover survey is to better establish the baseline character, condition, and setting of known archaeological remains, and to identify the presence or absence of further archaeological remains or above-ground heritage assets as far as reasonably practicable using this technique. It also aims to look at ground conditions and identify potential constraints to the ability to undertake further archaeological investigations.

2.4.2 A walkover survey was undertaken in 2013 within the underground cable route and a further programme of targeted walkover survey was undertaken in 2022 to accommodate the design evolution process, provide an update to the existing survey data, and to address any gaps in the baseline data due to changes to the alignment. Areas for targeted walkover survey included:

- The GSP substation;
- The CSE compounds;
- The main construction compound; and
- The locations of the proposed undergrounding cable routes.

2.4.3 As noted in Section 1.1, the pylon locations are not be fixed within the application for development consent, in order to retain flexibility during detailed design and construction for unforeseen circumstances. A rapid survey of the overhead line route will be undertaken in conjunction with the built heritage site inspections.

2.4.4 The results of the walkover survey are included in the DBS in ES Appendix 8.1: Historic Environment Baseline (**application document 6.3.8.1**).

2.5 Geoarchaeological and Palaeoenvironmental Assessment (GPA)

2.5.1 The aim of the GPA is to assess the potential effects of the project on palaeoenvironmental and geoarchaeological deposits and to identify the scope of any further work which may be required.

2.5.2 A watching brief was undertaken on ten geotechnical boreholes during ground investigations within Dedham Vale AONB in 2013 (Oxford Archaeology East, 2013). The results of the watching brief predominantly recorded typical valley floor sequences of silty clays and gravels. The boreholes which had the most archaeological value, and included evidence of peat deposition, were two boreholes located in the Box Valley and a further borehole located in the Stour Valley. The report concluded that there is the potential for further deposits of palaeoenvironmental interest focused predominantly within the river valleys.

2.5.3 A desk based geoarchaeological and palaeoenvironmental assessment has been undertaken by a suitably qualified specialist (Headland Archaeology, 2023). This has identified and characterised the lithology for the project, provided deposit models for relevant sections, and assessed the geoarchaeological and palaeoenvironmental significance and potential. This assessment has reviewed the geological and geotechnical data undertaken in 2013 and the trial pit and borehole logs obtained during the 2021 and 2022 programme of ground investigations.

2.5.4 The results of the GPA are included in the DBS ES Appendix 8.1: Historic Environment Baseline (**application document 6.3.8.1**). Any subsequent ground investigation information obtained will be assessed and included as an addendum to the initial GPA report (Headland Archaeology, 2023).

2.5.5 The results of the GPA will inform the location and scope of any further palaeoenvironmental sampling and analysis to be undertaken in conjunction with intrusive archaeological works. Where the project could result in impacts to deposits of palaeoenvironmental or geoarchaeological significance, the post-consent mitigation strategy will include consideration of providing targeted archaeological bore holes to assess the potential for Carbon 14 analysis, and/or the collection of samples to determine the preservation diversity within the deposits of pollen, diatoms or other remains.

2.6 Archaeological Trial Trenching (ATT)

2.6.1 The aim of ATT is to determine the extent, complexity and state of preservation of archaeological remains.

2.6.2 ATT is undertaken to provide a robust understanding of the archaeological resource and thereby a more complete understanding of the potential archaeological impacts of the project. This facilitates the preparation of a more refined and targeted mitigation strategy and reduces the risk of encountering unknown archaeology during construction.

2.6.3 National Grid has completed a targeted phase of ATT in advance of the application for development consent (Cotswold Archaeology, 2023). This has allowed for the results of the targeted ATT to inform the ES and provided evidence to inform the OWSI (**application document 7.10**) for any post-application/pre-construction archaeological work.

2.6.4 It is acknowledged that due to potential land access restrictions and to accommodate design evolution, the ATT will be an ongoing process and further phases of trenching are planned that will not necessarily be available to inform the ES, but will feed into the continuing development of site and area specific archaeological mitigation strategies.

2.6.5 Survey areas for ATT are defined within the Order Limits based on land parcel boundaries and the Order Limits, and individual areas provided with a unique identifier.

2.6.6 Detailed WSI are produced in consultation with the local authority advisors prior to commencement of ATT in each survey area. The detailed WSI outlines site specific objectives and illustrates the trial trench plan for that area.

2.6.7 ATT survey areas have been initially defined using the following guiding principles:

- Trenches have been targeted to areas identified through the non-intrusive surveys as having potential for as yet undetermined archaeological remains; and
- Trenches have been targeted to areas of substantial impact which may result from the project, namely:
  - Underground cable routes;
  - CSE compounds;
  - GSP substation; and
  - The main construction compound.
- Areas of the Order Limits not suitable for ATT have been excluded, this includes areas such as:
  - Highly vegetated or ecologically sensitive areas. For example, no trees or hedgerows will be removed during ATT and appropriate buffers will be given to sensitive habitats and features such as badger setts;
  - Areas with the potential for health and safety concerns. For example, safe working distances will be maintained from known above and below ground services, watercourses, and roads. Areas of steep topography, other unsafe terrain, and identified contaminated ground will not be investigated;
  - Areas of pre-existing ground disturbance. This includes areas of historic landfill, quarry sites, areas which have previously been archaeologically evaluated or excavated, and previously developed land (including hardstanding and existing overhead line pylons);
  - Areas of the Order Limits where no below ground impact from the project is proposed, such as areas where protective matting is used;
  - Areas within the overhead line sections where the proposed locations (such as pylon foundations and temporary access routes) are not currently fixed and only a small area would be affected; and
  - Areas of trenchless crossings (note that the drilling and receiving pits will be included in the ATT where suitable).
- The targeted programme will provide a suitable sample to allow for a reasonable and robust assessment that is proportionate to the archaeological potential and interest of the survey areas; and

- Within each survey area a suitable trenching array is designed to target known anomalies and blank areas with archaeological potential. Trenches typically measure 30m by 1.8m.

2.6.8 The initial phase of targeted ATT has been focussed specifically in areas where the potential for more complex archaeological remains has been identified through DBS, AGS and/or AIM. This is to allow for the character and extent of these sites to be understood and so that the potential for impact on these sites can be fully assessed within the application.

2.6.9 Full excavation of features is not undertaken at the evaluation stage. Care has been taken not to damage archaeological deposits through excessive use of mechanical excavation. Complex structural features are left *in situ*. Masking deposits, e.g. surface deposits, are appropriately sampled by hand. The strategy for environmental sampling is in accordance with Historic England's Environmental Archaeology (Historic England, 2011).

2.6.10 The results of the ATT available at time of authoring are included in the DBS in ES Appendix 8.1: Historic Environment Baseline (**application document 6.3.8.1**).

2.6.11 Where ATT has not been carried out, for instance in the overhead line sections, mitigation will still be applied. This will be proportionate to the potential for the presence of archaeological remains and focussed on the pylon base locations.

3. Ongoing and Post-consent Archaeological Work

3.1 Ongoing Archaeological Work

3.1.1 As set out above, the ATT programme will continue beyond the submission of the application for development consent. The ongoing phase of ATT aims to achieve robust coverage across the undergrounding cable route and accommodate individual land access agreements. The guiding principles outlined above will be applied to the ongoing ATT.

3.1.2 The results of the pre-application and ongoing archaeological surveys will inform the development of the archaeological mitigation strategy, initially set out in the OWSI (**application document 7.10**). The OWSI will be updated as further intrusive survey data is obtained.

3.2 Retention *In Situ* of Archaeological Remains

3.2.1 Where the conservation of the whole or a material part of a heritage asset with archaeological interest is justified (e.g. for archaeological remains of demonstrably equivalent value to a scheduled monument), and where retention *in situ* is warranted, the following techniques will be considered and would be secured through a commitment in the application for development consent, for example as an embedded measure:

- Avoidance of the archaeological remains through a minor variation (within the LoD) in the proposed working area;
- Use of non-opencut techniques, where practicable; and
- Protection of subsoil within the working area (e.g. trackway panels, topsoil retention, or other suitable technique).

3.2.2 Implementation of any of the above techniques would be undertaken in consultation with the local authority advisors and could be influenced by other environmental constraints.

3.2.3 The contractor will be provided with the locations and descriptions of all known archaeological remains within and adjacent to construction works, including project approved commitments to protect specified archaeological features or sites.

3.2.4 The approach to retention *in situ* is outlined in commitment H01 within the CoCP (**application document 7.5.1**).

3.3 Targeted Archaeological Open Area Excavation (OAE) (During Construction Early Works)

3.3.1 Archaeological OAE is a targeted programme of controlled, intrusive fieldwork with defined objectives which examines, records and interprets archaeological deposits, features and structures and, as appropriate, retrieves artefacts, ecofacts and other remains within a specified area or site. The records made and objects gathered during fieldwork are studied and the results of that study published in detail appropriate to the project design.

3.3.2 The aim of OAE is to preserve by record archaeological remains that may be altered damaged or destroyed by construction works.

3.3.3 OAE would be undertaken in targeted locations where evaluations have shown there to be a concentrated or complex area of archaeological remains. Any such areas will be agreed through consultation and set out in the OWSI (**application document 7.10**).

3.4 Archaeological Strip, Map and Sample (SMS) (During Construction Early Works)

3.4.1 An SMS aims to remove overburden under the direction of a suitably qualified archaeologist and ahead of the construction works (the 'strip'). Any exposed features are 'mapped' and a 'sample' of the feature is excavated.

3.4.2 The objective is to allow the monitoring archaeologist a clear view of previously undisturbed horizons which may reveal archaeological features, sites, artefacts or structures. This will allow for preservation through record and an advancement of our understanding of the evidential value of the archaeological remains.

3.4.3 The SMS would be undertaken within specified areas agreed through consultation and set out in the OWSI (**application document 7.10**).

3.4.4 SMS may be used where impacts from the project would likely affect either a known area of more dispersed archaeological remains where no defined concentrations of features have been identified, or an area where a moderate risk of archaeological remains has been assessed but where ATT has not been able to confirm their full extent.

3.5 Archaeological Watching Brief (During Construction)

3.5.1 An archaeological watching brief is a programme of observation and investigation which is carried out during intrusive ground works as part of the construction programme. It allows for the preservation through record of archaeological deposits which may be damaged or destroyed during the normal course of construction works. It also provides the opportunity for the identification of archaeological finds which may require more intensive archaeological investigations to be undertaken prior to construction.

3.5.2 An archaeological watching brief may be undertaken in areas where there is a low potential for significant archaeological remains to be present or where there is a limited potential for impacts on archaeological remains.

4. Unexpected Archaeological Discoveries

4.1.1 The AFS has been designed to establish the method for defining a robust predictive model that reduces the risk of encountering unexpected archaeological discoveries during construction.

4.1.2 In the event of unexpected archaeological discoveries during construction, work will cease within an appropriate, defined area around the archaeology and the appropriate project archaeologist will be contacted immediately. The area must be made safe, sufficient for the archaeologist to inspect the remains and advise on what, if any, further investigations are required.

4.1.3 In the case of small-scale non-complex archaeological remains, the archaeological team may be able to investigate and record them immediately, so that construction work may continue.

4.1.4 In the case of more extensive or significant discoveries, the archaeologist will liaise with National Grid and the local authority advisors in order that suitable mitigation may be agreed and implemented with limited delay.

4.1.5 The approach to unexpected archaeological discoveries is outlined in commitment H02 within the CoCP (**application document 7.5.1**).

4.1.6 The OWSI (**application document 7.10**) further sets out details of roles and responsibilities associated with unexpected archaeological discovery procedure.

5. Dissemination

5.1 Outreach

5.1.1 Avenues for community outreach will be explored during the project and may comprise activities such as:

- Presentations for local community groups;
- Temporary exhibitions;
- Museums;
- Work with schools; and
- Web-based initiatives.

5.1.2 Further details on outreach are included in the OWSI (**application document 7.10**).

5.2 Post-excavation, Publication and Archive Deposition

5.2.1 In accordance with the principles of Management of Research Projects in the Historic Environment (MoRPHE) (Historic England, 2015), once the archaeological work is completed a staged programme of post-excavation analysis, assessment and reporting will be undertaken, as set out in more detail in Chapter 8 of the OWSI (**application document 7.10**).

5.2.2 A site archive will be prepared in accordance with MoRPHE (Historic England, 2015). This will contain all the data collected during the archaeological investigations. Arrangements for the deposition of the archive at an appropriate repository (or repositories) will be agreed with the local authority advisors.

5.2.3 In line with paragraph 5.8.20 in the Overarching National Policy Statement for Energy (EN-1) (Department of Energy and Climate Change, 2011), National Grid is required to publish the results of the archaeological work. The results of the pre- and post-application surveys will be set out in 'grey literature' reports. As a minimum these will be deposited with the relevant historic environment records within a timeframe as set out and agreed within the detailed WSIs.

5.2.4 Additional publication may range from technical volumes (thematic or period-based), journal articles, or booklets, and could include temporary exhibitions, work with schools or web-based initiatives. The East Anglian Archaeology monograph series would be considered as a potential route for publication.

5.2.5 The scope of publication will be proportionate to the results of the archaeological investigations and will be developed in consultation with the local authority advisors.

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