

# Enabling Works Central Section - Location Specific Written Scheme of Investigation for Geophysical Surveys (Greater London, Hertfordshire and Buckinghamshire) 2017

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# 1 Executive Summary

- 1.1.1 This document forms a Location Specific Written Scheme of Investigation (LSWSI) for non-intrusive surveys in Buckinghamshire on the route of the proposed Phase One of High Speed Two.
- 1.1.2 The surveys will be managed by Fusion, the Central Section the Enabling Works Contractor (the *Contractor*), and take place in the spring and summer of 2017. The location, site conditions, geology and archaeology background, and selection rationale for each survey are provided at Appendix 3 of this LSWSI.
- 1.1.3 The surveys will be carried out by Fusion sub-contractor COPA (the *Archaeological Contractor*) who is a ClfA RAO. The surveys will be conducted by qualified and experienced geophysicists specialised in the detection and mapping of near surface structures in archaeology using a variety of techniques.
- 1.1.4 This LSWSI sets out the methodology, deliverables, programme, health, safety and environmental requirements, resources and interfaces necessary to deliver geophysical surveys defined in the Project Plans listed at Appendix 1.
- 1.1.5 The project plans establish the scope, aims, contribution to the Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS) objectives, techniques, deliverables and reporting mechanism for the geophysical surveys.
- 1.1.6 The locations for the surveys have been selected to address construction programme risk to investigate locations required for early habitat creation and other enabling works that will commence in 2017. None of the locations have been subject to previous archaeological survey.
- 1.1.7 The field evaluation will comprise vehicle-based and foot-based magnetic geophysical surveys across all of the sites. The results of the surveys will inform the detailed design of a programme of further archaeological investigations.
- 1.1.8 This LSWSI has been prepared in accordance with the standards and guidance provided by the GWSI: HERDS, the Technical Standards for Specification for historic environment project plans and location specific written schemes of investigation (Document No. HS2-HS2-EV-STD-000-000036) and Specification for Historic Environment Investigations (Document No. HS2-HS2-EV-STD-000-000035) and relevant Historic England and ClfA Standards (See Section 11).

## 2 Project Background

- 2.1.1 High Speed Two (HS2) is a new railway network proposed by Government to provide a new link between London, the West Midlands, the East Midlands, South Yorkshire, Leeds and Manchester. Phase One of HS2 will involve the construction of a new railway approximately 230km (143 miles) in length between London and the West Midlands. Powers for the

construction, operation and maintenance of Phase One are consented under the High-Speed Rail (London – West Midlands) Act 2017.

- 2.1.2 The overall framework within which archaeological work will be undertaken is set out in the Environmental Minimum Requirements (EMR) for HS2. Accordingly, the nominated undertaker or any contractors are required to implement certain control measures in relation to archaeology before construction work begins.

## 3 Overview of the Project Plans

- 3.1.1 This LSWSI has been prepared to provide the necessary specification and site specific information to enable the delivery of the geophysical surveys defined in the Project Plans listed at Appendix 1 of this LSWSI.
- 3.1.2 The project plans establish the scope, aims, objectives, methodology and deliverables for each of the geophysical surveys in accordance with the commitments made in Environmental Minimum Requirements (EMRs) for HS2 Phase One; the objectives set out in the GWSI: HERDS and HS2 Technical Standards (see section 11 of this LSWSI). The project plans also establish the requirements for information management, quality assurance and the results of engagement with the archaeological advisor to the local planning authority.
- 3.1.3 Section 3 of the project plans identify the contribution the results of the geophysical surveys can make to a number of specific research objectives set out in the GWSI: HERDS. Geophysical survey will provide the most suitable method for the identification of archaeological evidence to inform the research objectives. Sections 4 and 5 of the project plan provide a methodology and deliverables for the trial trench evaluation.
- 3.1.4 The specific aims, research objectives and the potential knowledge outcomes for each site are identified within the project plans, Appendix 1.

## 3.2 Aims and Objectives

### Aims of the Fieldwork

- 3.2.1 The aim of the geophysical surveys is to establish the likelihood/presence/absence, extent of anomalies of probable archaeological origin within the survey areas.
- 3.2.2 The selection of locations for non-intrusive field evaluation was guided by the need for early construction activities on the sites, coupled with the fact that no survey had previously taken place.
- 3.2.3 In some cases, nearby archaeological remains have been previously detected. In other cases, the sites are currently blank, and the geophysical survey is therefore at a reconnaissance stage, designed to detect archaeological features as yet unidentified through desk study and remote sensing methods.
- 3.2.4 The reasons for the individual selection of each survey area are provided in Appendix 3.

## Objectives of the Fieldwork

- 3.2.5 The results of the surveys will be combined with data from other archaeological assessments carried out as part of the project, such as the desk-top studies which contributed to the ES for Phase One of HS2, in order to analyse the archaeological potential of the survey locations; and develop a programme of further archaeological investigation, as required.

# 4 Scheme Design Elements

- 4.1.1 The locations for the surveys have been selected to address construction programme risk to investigate locations required for early habitat creation, utility and highway access enabling works that will commence in 2017. The related works for each survey are described at Appendix 3.

# 5 Programme

- 5.1.1 The geophysical surveys in Buckinghamshire are part of a package of non-intrusive surveys taking place across the Central Section of HS2 Phase 1. Since the majority of the locations are not yet acquired by HS2, the precise works programme shall be developed in liaison with the archaeological contractor, as access is arranged and confirmed via existing licenses, or subject to new Schedule 2 notifications.
- 5.1.2 The earliest start date for the surveys (subject to access) shall be 29 May 2017 and the programme shall continue to the end of June 2017. Where archaeological remains of significance are identified, further investigation in the form of trial trench evaluation or other appropriate mitigation measure may be implemented prior to or concurrent with works required for habitat creation or other site works.

# 6 Methodology

## 6.1 Scope

- 6.1.1 Magnetometer (gradiometer or non-gradiometer) surveys are proposed for 15 sites in Buckinghamshire. Details of survey locations are given in Appendix 3.

## 6.2 General Methodology

- 6.2.1 One week prior to the commencement of the surveys the *Archaeological Contractor* shall complete a site-specific risk assessment and method statement (RAMS) to confirm ground conditions are suitable for survey, check crop status, and identify any hazards or constraints.
- 6.2.2 The *Archaeological Contractor* shall inform the *Contractor* immediately if there are unforeseen obstructions to the survey and the survey needs to be rescheduled.

- 6.2.3 The RAMS shall also address the requirements of this LSWSI and set out the *Archaeological Contractors* method for meeting the required specifications and standards.
- 6.2.4 Magnetometer survey can detect a wide variety of archaeological features and is usually the preferred method of geophysical survey for most sites. It can detect structures including cut features, earthworks, pits, burnt structures such as kilns and hearths, ridge & furrow ploughing and field boundaries.
- 6.2.5 Where appropriate, survey areas have been designed to include the full extent of the individual land parcel/field and the full width of the Railway corridor.
- 6.2.6 Consideration has been given to the geological environment. The local bedrock and superficial deposits have produced successful results in previous surveys of this type.
- 6.2.7 The site locations have been assessed by reference to the most recent satellite aerial photographic imagery available in Google Maps and viewed at a 1:2500 scale. The majority of land is under arable cultivation or pasture. Areas of woodland, disturbed ground, and steeply sloping topography have been avoided.
- 6.2.8 In addition to the standard methodology for gradiometer magnetometer survey described in the Project Plans it is proposed that the *Archaeological Contractor* adopts the use of Alkali Vapour magnetometers to survey land parcels where former ridge and furrow or other site conditions suggest a more sensitive instrument may be beneficial (see Section 6.7).

## 6.3 Site Access

- 6.3.1 The *Archaeological Contractor* will satisfy themselves that each access point is suitable and safe for the delivery of plant prior to the start of the geophysical surveys and will undertake all due care when loading or unloading equipment from either the public highway or private road. The method for and controls placed on Site access/egress will be set out in the *Archaeological Contractor's* Method Statement and will comply with the *Contractor's* Construction Phase Health and Safety Plan.

## 6.4 Site Set-up

- 6.4.1 Prior to the start of the geophysical survey the *Archaeological Contractor* will attend a pre-works site meeting with the *Contractor*. The purpose of this meeting will be to allow the *Archaeological Contractor* confirm the access points, ground conditions, site specific hazards and to agree the location for the welfare facilities and the safe storage of plant and materials.
- 6.4.2 Site set up will be conducted following the relevant guidance set out in the Enabling Works Information W10200 General Constraints (Document No. 1E001-HS2-PR-ITT-000-000098) in particular Sections 6 *Construction site layout and good housekeeping*.

## 6.5 Setting Out

- 6.5.1 Where appropriate, data may be collected using equipment incorporating a live RTK GNSS feed or tracking robotic total station thus negating the need to set out a referenced survey grid.
- 6.5.2 Grid nodes shall be set out with an error no greater than  $\pm 0.1\text{m}$ . Where site conditions allow, referencing shall be carried out using Real Time Kinematic (RTK) GNSS equipment. If the site is unsuitable for GNSS (for example dense tree cover) then a TST shall be used. When taking referencing measurements using a TST, semi-permanent points shall be selected for measurements. These may include features such as buildings or walls, but not poorly defined overgrown field boundaries. If no such semi-permanent feature is accessible then survey markers may be used and left in situ (this must be by written agreement with HS2 Ltd). Magnetometer and earth resistance surveys shall normally be carried out within a grid system. Grids for magnetometer and earth resistance surveys will usually be  $20\text{m} \times 20\text{m}$  or  $30\text{m} \times 30\text{m}$  with temporary markers inserted at each grid node.
- 6.5.3 The Archaeological Contractor shall include details of their surveying methodology within the Contractor's method statement including the setting out of the grid and how they intend to provide the project grid co-ordinates to HS2 with the survey report.
- 6.5.4 Survey methodology and a detailed survey record shall be provided to HS2 within the survey

## 6.6 Methodology for Magnetometer Survey

- 6.6.1 Magnetometer surveys shall be carried out in accordance with Historic England Geophysical Survey in Archaeological Field Evaluation, 2008. Data shall be gathered using Bartington Grad601-2 instruments.
- 6.6.2 As a minimum data shall be gathered every  $0.25\text{m}$  along parallel lines  $1\text{m}$  apart. The total number of data points collected shall be 1600 readings per  $20\text{m} \times 20\text{m}$  grid square or 3600 per  $30\text{m} \times 30\text{m}$  square. If appropriate a closer sample interval and line separation may be required.
- 6.6.3 Wherever possible, data should be collected using equipment incorporating a live RTK GNSS feed or tracking robotic total station thus negating the need to set out a referenced survey grid.
- 6.6.4 Geophysical survey personnel shall be suitable qualified and experienced to undertake the work. When requested, the Contractor will submit copies of staff CVs to HS2 Ltd.

## 6.7 Methodology for Alkali Vapour Magnetometer Survey

- 6.7.1 The methodology for magnetometer survey specified in the HS2 Technical Standard - Specification for Historic Environment Investigations (Document No. HS2-HS2-EV-STD-000-000035) uses fluxgate gradiometer instruments. However, in keeping with HS2 Ltd's commitment to innovation in respect of differing equipment and survey techniques, it is proposed that in areas of former ridge and furrow, using non-gradiometric caesium vapour

magnetic survey instruments maybe more effective. Non-gradiometric instruments are considerably more sensitive to both laminar and deeply buried structures and are less strongly affected by surface magnetic sources.

- 6.7.2 The magnetic survey will be undertaken using a ATV-towed sensor array (using up to six magnetometers), with data collected to meet 1.0m x 0.25m spatial resolution and on board live RTK GNSS feed.
- 6.7.3 All data processing will be minimised and limited to what is essential for the class of data being collected, e.g. reduction of orientation effects, suppression of single point defects (drop-outs or spikes) etc. The initial processing will use proprietary software developed in conjunction with the multisensor acquisition system and includes sensor and GNSS data alignment and reduction of temporal variations through application of 1D temporal or 2D spatial filters depending upon what is required.
- 6.7.4 Gridded data will be ported as data surfaces into Manifold GIS for final imaging and detailed analysis. Additional specialist analysis will be undertaken using proprietary software.
- 6.7.5 As much as possible of the survey areas will be surveyed but artificial obstructions, such as overgrown vegetation, trees, crops, pylons, hedgerows, drains, road, farming equipment etc. may prevent the total area being surveyed. Photographs will be taken of any areas unsuitable for survey.
- 6.7.6 Readings will be stored in the memory of the instruments and regularly downloaded to computer for back-up, processing and interpretation. Records will be made in the field of ground and weather conditions as well as any notable surface features in relation to the survey grid.

## 6.8 Deliverables

- 6.8.1 Archaeological reporting will be completed by the *Archaeological Contractor* in accordance with the Section 4 of the Technical Standard for Historic Environment Investigations (Document No. HS2-HS2-EV-STD-000-000035) and relevant HE and ClfA standards and guidance.
- 6.8.2 The deliverables for the geophysical surveys will be:
- A weekly written progress report throughout the duration of the programme of archaeological works including preliminary survey results, consisting of greyscale plots overlaid on to site base maps (submitted by midday each Monday);
  - An Interim Report compiling greyscale plots, within 7 days of the completion of each survey.
  - A combined Geophysics Report detailing the results from each site within 4 weeks of completion of the surveys;
  - An HER Summary Report within 8 weeks of the completion of the surveys; and

- Digital Archival Material including OASIS/Historic Environment Record summary sheets within 8 weeks of the completion of the surveys.

### Interim Report

- 6.8.3 The interim report will provide the *Contractor* with the information necessary to inform design decisions relating to:
- the next stage of archaeological works (if required); and
  - engineering design.
- 6.8.4 The interim statement shall be brief, and the information contained commensurate with the timescale for production. The report shall be written in a manner which will avoid duplicating effort at a later date and shall draw on the data gathered during the initial assessment undertaken during fieldwork.
- 6.8.5 A processed greyscale plot of fieldwork investigations shall be provided.
- 6.8.6 The interim statement including illustrations shall be submitted as an MS Word and PDF file to HS2 Ltd. CAD files will be GIS compatible and follow standards set out in the Cultural Heritage GIS Standard (HS2-HS2-GI-STD-000-000010).
- 6.8.7 The interim statement shall be submitted in a HS2 Ltd template as a digital document in MS Word file format and PDF file in accordance with HS2 Ltd's BIM requirements.
- 6.8.8 The interim statement shall include an approved report title sheet and QA page.
- 6.8.9 Copies of the Interim Statement shall be provided by the *Contractor* to the *Employer*.

### Geophysics Report

- 6.8.10 The combined geophysics report be produced using the structure set out at Section 4 of the Project Plan. The report will contain figures accompanied by supporting text. As a minimum, both shall be produced in accordance with the requirements of Historic England's Geophysical Survey in Archaeological Field Evaluation, 2008. All figures within the report shall be on the same paper size, where appropriate. All categories of anomaly identified will be labelled with the appropriate assigned number code on the figures, which will be referred to in the text document.
- 6.8.11 The following figures will be included in the geophysics report:
- General plan (mandatory)
  - Engineering design (mandatory)
  - Site location
  - Survey extent
  - Survey results

- Interpretation plots [colourscale plots showing extreme values for magnetometer data may be used in place of X-Y trace plots].
- 6.8.12 All data and reports will be produced in accordance with the HS2 Ltd's BIM requirements and will use the HS2 Ltd report document template.
- 6.8.13 The report shall include reference to the unique land parcel(s) in accordance with the HS2 Asset Information Management System (AIMS).
- 6.8.14 Reports will contain figures accompanied by a supporting text document. As a minimum both shall be produced in accordance with the requirements of Historic England's *Geophysical Survey in Archaeological Field Evaluation*, 2008.
- 6.8.15 All figures within a report shall normally be on the same paper size. Figures may be produced using CAD but final deliverables must be supplied in GIS format. GIS deliverables will follow a standard approach set out in HS2 Ltd's *Cultural Heritage GIS Standard* (HS2-HS2-GI-STD-000-000010).
- 6.8.16 In addition to HS2 Ltd and Historic England Standards, reports will include:
- An OS map at a scale of 1:25,000 or 1:50,000 showing the site location in its wider context.
  - Colourscale plots showing extreme values for magnetometer data may be used in place of X-Y trace plots.
- 6.8.17 All categories of anomaly identified shall be assigned a number code. Each anomaly shall be labelled with the appropriate code on the figures and referred to in the text document. Figures will conform to the Cultural Heritage GIS specification (HS2-HS2-GI-SPE-000-000004).
- 6.8.18 In certain circumstances (usually when there is corroborative evidence from desk based or excavation data) very specific interpretations can be assigned to anomalies (for example, Roman Road, Wall) and where appropriate, such interpretations shall be applied. The list below outlines the categories to be used in the interpretation of the results.
- Archaeology - definitive/probable;
  - Archaeology – possible archaeology;
  - Industrial /Burnt-Fired;
  - Old Field Boundary;
  - Agricultural(ploughing / R&F);
  - Natural – pedological/geological/topographical;
  - Uncertain Origin; and
  - Ferrous / Magnetic Disturbance.

- 6.8.19 The category 'uncertain origin' encompasses those instances where it is not possible to differentiate between archaeology and natural or agricultural anomalies. Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).
- 6.8.20 Data processing shall be carried out using appropriate software. The type of software used shall be identified in the text report stating its name and whether it is commercial software or developed in-house. Processing shall be kept to a minimum. Processing steps shall be listed along with their salient parameters.
- 6.8.21 The Archaeological Contractor will supply preliminary results to HS2 Ltd at weekly intervals. For magnetometer and earth resistance surveys these will consist of greyscale plots, for GPR these shall consist of timeslice plots, and for ERT these shall consist of colour scale cross sections. All shall be image files overlaid on to site base maps. Georeferenced base maps shall be provided to the contractor by HS2 Ltd. Timeslice plots for GPR results should be selected at depths and thicknesses to show the salient features of interest that have been detected. Example radargrams should also be included in the final report to highlight the character of the anomaly.
- 6.8.22 Full draft reports shall be provided to HS2 Ltd for comment by the agreed date. Unless otherwise agreed, HS2 Ltd shall issue comments within ten days and the Archaeological Contractor will re-issue amended reports within five days of receipt of any comments.
- 6.8.23 The final issue of reports shall be issued in accordance with HS2 Ltd document control processes and will comprise:
- A PDF copy of the report;
  - The text of the report in Microsoft Word Format;
  - Figures in the GIS file format in which they were produced;
  - Dataset comprising:
    - All processed raw data as separate file as Geoplot raw grid data (plus minimally processed in ASCII3) plus Geoplot mesh and comp files.
    - Greyscale images georeferenced in accordance with the requirements set out in the HS2 Geographic Information (GI) Standards (HS2-HS2-GI-STD-000-000004).
    - CAD and GIS data in Esri format. Metadata comprising the supply of a data sheet on format of grids, meshes and composites or their equivalent shall be provided. Metadata shall comply with the HS2 GI Standards (HS2-HS2-GI-STD-000-000004).

### Archaeological Summary Report

- 6.8.24 A short summary report of no more than 500 words (the summary report) for the works shall be prepared by the *Archaeological Contractor* for submission to the *Contractor* for subsequent publication within an appropriate journal or publication outlet specified by the *Employer*.

- 6.8.25 The *Archaeological Contractor* shall submit the draft summary report to the *Contractor* for approval within 8 weeks of the completion date of the fieldwork event. The *Contractor* will review the draft summary report and then issue it to the *Employer* for comment and approval. The *Archaeological Contractor* shall allow two weeks in the programme of works for *Contractor* and *Employer* to provide comments.
- 6.8.26 The *Archaeological Contractor* shall include any amendments required by the *Contractor* and *Employer* in the final Summary Report which shall be submitted within one week of receiving comments on the draft report.

### Digital Archival Material including OASIS/Historic Environment Record summary sheets

- 6.8.27 Following completion of the archaeological evaluation the *Archaeological Contractor* will provide the *Contractor* with the required data, metadata and digital material as specified in the Historic Environment Digital Data Management and Archiving Procedure (C262-ARP-EV-SPE-000-000003).

## 7 Delivery Interfaces

- 7.1.1 In order to deliver the works the *Archaeological Contractor* will need to work closely with the *Contractor*. All parties will follow the *Employer's* protocols for intra- and inter-project communication.
- 7.1.2 The key interfaces and contacts for the programme of geophysical survey are:
- The *Contractor* - Fusion is responsible for managing the delivery of the Area Central Enabling Works on behalf of the *Employer*. Fusion have provided a Construction Manager who will be the first point of contact for the *Archaeological Contractor*:
  - Richard Smith – Fusion Construction Manager (Email: [richard.smith@fusion-jv.com](mailto:richard.smith@fusion-jv.com) Tel. 07837 034530)
  - Colin Dunkerton – Fusion Works Manager (Email: [colin.dunkerton@fusion-jv.com](mailto:colin.dunkerton@fusion-jv.com) Tel. 07920 496878)

## 8 Health, Safety and Environment

### 8.1 Health and safety values

- 8.1.1 Safety is a core HS2 Ltd value, and is expressed as caring for your workforce, our passengers and the public by creating an environment where no one gets hurt.
- 8.1.2 The HS2 Health and Safety Strategy (Document: HS2-HS2-HS-STR-000-000002) describes HS2's approach, vision, mission, and values with respect to health and safety.
- 8.1.3 All archaeological works will be undertaken in accordance with the *Employer's* Health and Safety Policy (Document No. HS2-HS2-HS-POL-000-000001), the policies and guidance set

out in the Enabling Works, Works Information (WI0900) and the *Contractor's* Health and Safety Policy and Construction Phase Health and Safety Plan.

## 8.2 Risk Assessment and Method Statement

- 8.2.1 Prior to the start of the geophysical surveys the *Archaeological Contractor* shall prepare and submit a draft Health and Safety Plan and Risk Assessment and Method Statement (RAMS) for the works to the *Contractor* for review and approval.
- 8.2.2 The *Archaeological Contractor's* Method Statement will clearly identify the methods and processes that will be implemented to fulfil the aims, objectives and requirements of the Project Plans and this LSWSI. The Method Statement will be prepared in liaison with the *Contractor*, taking account of the *Contractor's* Urgent Works Package 1 Environmental Management Plan and other relevant site information provided by them and requirements for the works set out in the Works Information (e.g. relating to health and safety, security, engineering design requirements and attendances).
- 8.2.3 The Method Statement shall include, as appropriate:
- a) A resource plan and programme and CV's;
  - b) The *Archaeological Contractor's* IT capability and proposed IT plan (including specific survey methods for on-site recording of stratigraphic profiles and sub-surface topographic modelling;
  - c) The *Archaeological Contractor's* approach to Archaeological Science;
  - d) The methods for survey and setting out works;
  - e) The methods to address the specific event types required (trial trench, area excavation etc);
  - f) The safe method of working whilst excavating trenches or pits including any temporary works required;
  - g) The method for disposing of water from trenches and test pits in waterlogged ground;
  - h) Site management plan to include details of the method for preparing safe access route to the working areas, the proposed site accommodation, services and welfare;
  - i) The retention and disposal policies for samples and artefacts recovered during the work;
  - j) The method for excavating and recording inhumations and cremations in compliance with the HS2 Human Remains and Monuments Procedure (Document No. HS2-HS2-EV-PRO-000-000008);
  - k) The method for preparation of the required reports, archive and all associated deliverables;
  - l) The procedures for assessment of potential for analysis (post-excavation assessment); analysis and publication proposals;
  - m) The method for preparation of the digital dataset, digital drawings, and digital report deliverables in line with the *Employer's* Technical Standards ;

- n) The *Archaeological Contractor's* methods and approach for undertaking the site based works and off site processes to completion.
- o) The Health and Safety Plan and Site-Specific Risk Assessment (including unexploded ordnance);
- p) The Quality Assurance Plan;
- q) The procedures for on- and off- site security and emergency response plan (including environmental incidents);
- r) The method for complying with project generic and site specific environmental and consent requirements; and
- s) The *Archaeological Contractor's* requirements and specification for services and facilities and attendances required to be supplied by the *Contractor* or the *Employer*.

8.2.4 The *Archaeological Contractor* will prepare the Risk Assessment and Method Statement in liaison with the *Contractor* to ensure the health and safety requirements for the works are fulfilled. The Risk Assessment and Method Statement will be submitted to the *Contractor* for comment and approval.

8.2.5 No ground intervention or other survey shall be made without approval of the *Archaeological Contractor's* Health and Safety Plan, Risk Assessment and Method Statement by the *Contractor*.

## 8.3 Site Inductions

8.3.1 Prior to the start of the geophysical surveys the *Archaeological Contractor's* site operatives will complete an Area Central Enabling Works induction provided by the *Contractor* and undertake a mandatory drugs and alcohol test.

## 8.4 PPE

8.4.1 Mandatory PPE to be worn by all members of the *Archaeological Contractor's* personnel will comprise:

- Full orange High Visibility jacket/vest and trousers;
- Hard Hat;
- Gloves;
- Light Eye Protection;
- Lace-up boots with ankle support, safety insoles and toe caps (rigger boots are not permitted).

8.4.2 For further information please refer to the Works Package Information for the Enabling Works Contract.

## 8.5 Site Specific Constraints

### Agriculture

- 8.5.1 The *Archaeology Contractor* shall undertake the geophysical surveys in a way which causes minimal disturbance of any crop or the agricultural quality of the land.

### Site Vehicles

- 8.5.2 Site vehicles and equipment operated by the *Archaeological Contractor* shall be physically inspected, along with the required documentation, before delivery to the survey areas and before being used on Site.
- 8.5.3 Records of daily/weekly inspections, including fault reporting, will be maintained on Site by the *Archaeological Contractor* and will be available for inspection by the *Contractor*.
- 8.5.4 Details of equipment operators shall be maintained by the *Archaeological Contractor* and evidence of periodic checks that the equipment has been adequately calibrated and maintained shall be obtained.

### Construction Traffic

- 8.5.5 The archaeological works will be undertaken in advance of Enabling Works and Main Works construction activity. With the exception of vehicles provided by the *Archaeological Contractor*, it is not anticipated that there will be any other construction traffic operating within each site during the geophysical surveys.

### Unexploded Ordnance (UXO)

- 8.5.6 A review of UXO Risk assessment data held on HS2's gViewer GIS system has been undertaken by the *Contractor*. This has identified the UXO risk within each of the geophysical survey areas is a Low Hazard.
- 8.5.7 In the unlikely discovery of any UXO's the *Archaeological Contractor's* site supervisor will follow the *Contractor's* emergency procedure<sup>1</sup>:
- Evacuate the area ensuring the completion of a roll call.
  - Verify the location of the UXO and ensure it is quarantined.
  - Contact the most *Contractor's* Project Manager to report issue and await instruction. The *Contractor's* Silver or Gold Command will contact the appropriate emergency services and contact any 3rd parties who have an interest in the site e.g. the *Employer's* Project Manager
  - The *Contractor's* Silver or Gold Command will contact UXO Specialists.

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<sup>1</sup> Fusion, 2017. Incident Management Plan (Document No. 1EW03-FUS-HS-PLN-C000-000001)

8.5.8 The emergency procedure will be described in the *Archaeological Contractor's Risk Assessment and Method Statement*.

### Public Rights of Way

8.5.9 Where a public right of way crosses an area selected for geophysical survey The *Archaeological Contractor* will ensure that:

- All operatives are briefed on the location of the footpaths and interaction with members of the public; and
- Vehicles, materials and welfare facilities will not obstruct or be stored within the route of the footpaths, which will be kept clear at all times.

### Interaction with the general public

8.5.10 If approached by members of the public or local residents about any aspect of the archaeological evaluation the *Archaeological Contractor* shall maintain a cautious and polite response, record the event, and in the first instance direct enquiries to the HS2 Helpline 020 7944 4908.

### Ecology

8.5.11 The *Contractor* will complete a review of ecological constraints at each site prior to the start of the archaeological works. Any protected or invasive species present will be clearly identified for the *Archaeological Contractor*. Where appropriate the requirements for ecological monitoring will be determined and implemented by the *Contractor*.

8.5.12 If during the course of the works the *Archaeological Contractor* becomes aware of evidence for protected species such as, *inter alia*, badgers, reptiles or Great Crested Newts are revealed, works shall be suspended in that location and area fenced to clearly demarcate the ecological constraint. The *Archaeological Contractor* will immediately inform the *Contractor*, who will notify the *Employer*.

8.5.13 The *Contractor* will assess the requirements for ecological mitigation and advise the *Archaeological Contractor* on the appropriate measures to changes to their working method that should be adopted. All archaeological works will be undertaken in accordance with the *Contractor's Urgent Works Package 1 Environmental Management Plan*.

## 8.6 Environment

8.6.1 The following precautions will be taken:

- There shall be no damage made to any vegetation unless specified in the site clearance scope.
- Field gates/fences to be secured and left in the same condition as found
- No litter to be abandoned on site
- Noise shall be kept to a minimum

## 8.7 Site safety and security

- 8.7.1 Following site set-up the geophysical surveys will be conducted in accordance with the information provided in the Project Plans and LSWSI and the safe methods of work described in the *Archaeological Contractor's* Risk Assessment and Method Statement.
- 8.7.2 In addition to the site induction the *Archaeological Contractor's* site supervisor will give daily start of shift briefings and will maintain a record of site attendance for each day that there is a team in the field.
- 8.7.3 All staff involved in the geophysical survey should be CSCS qualified to a minimum standard as an 'Operative'. Staff CVs will include CSCS qualifications.
- 8.7.4 All site personnel will be provided with the *Archaeological Contractor's* Risk Assessment and will familiarise themselves with the following:
- Emergency and evacuation procedures for each Site;
  - Each Site's health and safety coordinator;
  - The first aiders; and
  - The locations of the nearest hospital and doctor's surgery.
- 8.7.5 The *Archaeological Contractor* shall take precautions to ensure that all equipment and materials are securely stored within the limits of each Site. Particular care should be taken to securely lock welfare and site accommodation when not occupied.
- 8.7.6 Resident overnight security teams, CCTV and secure compounds shall be provided by the *Contractor* where required. The *Archaeological Contractor* shall liaise and cooperate with the *Contractor's* security team.

### Accident and incident reporting

- 8.7.7 Accident and incident reporting will follow the guidance and procedures set out in the *Employer's* Works Information and the *Contractor's* Standard for Accident and Incident Investigation and Reporting (Document No. SH2 STD1) and Incident & Emergency Preparedness Plan (Document No. 1EW03-FUS-HS-PLN-C000-000001).
- 8.7.8 The *Archaeological Contractor's* Risk Assessment and Method Statement will include a clear procedure for responding to an incident and list of emergency contacts including the *Contractor's* Duty Manager and SHEQ Manager.
- 8.7.9 All accidents and incidents must be recorded in the site accident book and entered onto the *Contractor's* SHEQ Tracker within 24 hours as well as the HS2 AssessNet incident reporting database. All incidents MUST be reported to the *Contractor's* Duty manager and SHEQ department immediately in person or by telephone.

- 8.7.10 Accidents and incidents defined by the *Employer* as level 1 or 2 are also to be immediately reported to the employers helpdesk on 0207 944 6570 which is available 365 days of the year, and open 24 hours.
- 8.7.11 Records of accidents or incidents reportable under the Reporting of Incidents Diseases and Dangerous Occurrences Regulations (RIDDOR) are confidential and must be stored securely on site.
- 8.7.12 Should the public or a utility be involved in an accident or incident, ensure that public liability claim forms are completed if necessary. All near misses and learning events MUST also be reported to the *Contractor's* SHEQ department

### Core Working Hours

- 8.7.13 The *Archaeological Contractor* shall adhere to the core working hours below unless otherwise agreed with the *Contractor* and *Employer's Project Manager* and the relevant Third Party through a Consent.
- 8.7.14 The core working hours are from 08:00 to 18:00 on weekdays (excluding public holidays) and from 08:00 to 13:00 on Saturdays.
- 8.7.15 The *Archaeological Contractor* may utilise a period of up to one hour before and up to one hour after core working hours for start-up and close down of activities. Start-up and close down activities shall not include operation of plant or machinery likely to cause a disturbance and shall not be considered an extension of core working hours.

## 8.8 Welfare and First Aid

- 8.8.1 The *Archaeological Contractor* will provide adequate that welfare and first aid in-line with the *Contractor's* Integrated Management System (IMS) standards and guidance. The welfare and first aid provision must be detailed in the *Archaeological Contractor's* Method Statement and Risk Assessment.
- 8.8.2 The *Archaeological Contractor* will ensure that appropriate numbers of first aid trained personnel and first aid kits are available at:
- All site locations
  - In vehicles where this has been identified as necessary or good practice
  - In strategic locations within office setups.
- 8.8.3 Posters will be displayed in the *Archaeological Contractor's* welfare/site accommodation stating the location of first aid boxes, first aiders, appointed persons and action to be taken in case of an incident.

## 9 Information Management

- 9.1.1 GIS deliverables will be provided in accordance with the *Employer's Cultural Heritage GIS Specification* (HS2-HS2-GI-SPE-000-000004). CAD files will be GIS compatible and follow standards set out in the same Specification. Figures may be produced using CAD but final deliverables must be supplied in GIS format.
- 9.1.2 Mapping and spatial data deliverables will conform to the *Employer's GIS Standards* as set out in HS2-HS2-GI-STD-000-000002 and other associated referenced documents.
- 9.1.3 The *Employer's* standard template for reports (HS2-HS2-PM-TEM-000-000004) will be used.

## 10 Site Monitoring and engagement

- 10.1.1 Prior to commencing the works the *Archaeological Contractor* shall agree a programme of weekly written progress reports and periodic progress meetings with the *Contractor's Historic Environment Manager* and shall be represented at such meetings to the satisfaction of the *Contractor*. The *Archaeology Contractor* shall provide information describing progress on-site to date, the processing of samples and artefacts and feedback from any initial assessment.
- 10.1.2 Where required the *Contractor's Historic Environment Manager* shall arrange site visits with specialist stakeholders and expert bodies to provide advice on-site where this is considered beneficial and agreed with the *Employer*. This will be undertaken within the *Employer's* communication protocols set out in the *Employer's Community Relations Strategy*.
- 10.1.3 Periodic updates on the progress of the Area Central Enabling Works archaeology programme shall be submitted to the *Employer* and Local Authority Archaeologist by the *Contractor's Historic Environment Manager*. The *Archaeology Contractor* shall provide information to the *Contractor's Historic Environment Manager* as requested to inform this reporting.
- 10.1.4 The *Contractor's Historic Environment Manager* shall arrange and convene monitoring site visits with the *Employer* to assess the quality and progress of the archaeological works and their adherence to HS2 technical standards and procedures.
- 10.1.5 The *Employer* may invite the Local Authority Archaeologist to attend these meetings, as appropriate. The *Employer* will be responsible for informing Historic England and the local authority historic environment specialists on the progress of fieldwork activities and findings.
- 10.1.6 In addition to monitoring visits, the *Employer* may plan and host media events or documentary recording, particularly in the event of a significant archaeological discovery. If requested to do so, the *Archaeological Contractor* shall provide the HS2 media team with escorted access to the Site. Any request for media access will be confirmed in advance, in writing, by the *Contractor's Historic Environment Manager*.
- 10.1.7 There shall be no unauthorised access to the works in any other circumstances. Any visits to the works shall be in accordance with the *Contractor's* and Jackson's health and safety, site access and security requirements.

# 11 Quality Assurance

11.1.1 All archaeological works will be delivered in accordance with the *Contractor's* Urgent Works Package 1 Quality Plan (Document No. 1EW03-FUS-QY-PLN-C000-000022) and the standards and guidance set out in the following documents:

- High Speed Rail (London-West Midlands) Environmental Minimum Requirements.
- High Speed Rail (London-West Midlands) Environmental Minimum Requirements Annex 3: Heritage Memorandum (Document No. CS755 02/17).
- High Speed Rail (London-West Midlands) Environmental Minimum Requirements Annex 1: Code of Construction Practice (Document No. CS755 02/17).
- HS2 Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (Document No. HS2-HS2-EV-STR-000-000015).
- HS2 Technical Standard - Specification for historic environment investigations. (Document No. HS2-HS2-EV-STD-000-000035).
- HS2 Technical Standard: Historic Environment Physical Archive Procedure (Document No. HS2-HS2-EV-STD-000-000039).
- HS2 Technical Standard: Historic Environment Digital Data Management and Archiving Procedure (Document No. HS2-HS2-EV-STD-000-000040).
- HS2 Cultural Heritage GIS Specification (Document No. HS2-HS2-GI-SPE-000-000004).
- Historic England, 2008. Geophysical Survey in Archaeological Field Evaluation.
- Chartered Institute for Archaeologists (CIfA), 2014a. Code of Conduct.
- CIfA, 2014b. Standard and Guidance for archaeological geophysical survey.
- CIfA 2014c. Standard and Guidance for archaeological field evaluation.
- English Heritage, 2006. Management of research projects in the historic environment (and associated guides and project planning notes).

11.1.2 The *Archaeological Contractor* undertaking the geophysical survey is expected to have Chartered Institute for Archaeologists (CIfA) accreditation as Registered Archaeological Organisations (RAO) and their supervisory staff to have an appropriate and relevant level of demonstrable experience for the specific task in question i.e. full members of the CIfA, or an equivalent demonstrable professional standing.

11.1.3 All members of the *Archaeological Contractor's* site team shall be suitably qualified, experienced and competent professionals. All site operatives will hold a current and valid CSCS qualification to at least 'Operative' level.

- 11.1.4 The Interim and fieldwork reports will be prepared and conducted by suitably qualified, experienced and competent professionals. The resultant reports will be issued in draft to the *Contractor*, who's Historic Environment Manager will check and review each report prior to issue to the *Employer* for acceptance. Final reports, following comments, will be checked and reviewed again prior to issue.

## 12 Resourcing requirements and budget

### 12.1 General Requirements

- 12.1.1 The *Archaeological Contractor* shall provide project personnel of experience as described below. The personnel shall be approved by the *Contractor*. Approval may be withdrawn by the Employer at their discretion and in accordance with the contract conditions.
- 12.1.2 The *Archaeological Contractor* shall submit CVs of all proposed personnel including any specialists, but excluding site technician grades, to the *Contractor* for approval if this has not already been done as part of the pre-qualification process.
- 12.1.3 The works shall be managed, directed and staffed by appropriately qualified and experienced personnel. The *Archaeological Contractor's* Key Person shall possess at least ten years relevant experience.
- 12.1.4 The survey and recording of the works shall be directed in the field by a Fieldwork Director who is a Member of the Institute of Field Archaeologists (MIFA) The Fieldwork Director shall be on site throughout the fieldwork stages.
- 12.1.5 The *Archaeological Contractor's* project team shall be staffed by technician grades with minimum six months experience in appropriate aspects of excavation and recording.
- 12.1.6 Specialist staff employed on any aspect of the works, including post-excavation assessment or analysis of any kind including the writing of reports, shall be suitably qualified and shall be supervised by personnel with a minimum of ten years of relevant experience in their field (this may be inclusive of post-graduate studies).
- 12.1.7 Specialist staff shall be available, at 24 hours' notice, for the duration of the works to provide advice on any specialist tasks to be undertaken.

# 13 Fieldwork sign off sheet

| Historic Environment Fieldwork Sign-off Sheet                                                                                                                                                       |      |       |           |    |  |    |  |    |  |    |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|-----------|----|--|----|--|----|--|----|--|
| Work Package Reference                                                                                                                                                                              |      |       |           |    |  |    |  |    |  |    |  |
| Historic Environment Investigation Type                                                                                                                                                             |      |       |           |    |  |    |  |    |  |    |  |
| Contractor                                                                                                                                                                                          |      |       |           |    |  |    |  |    |  |    |  |
| Fieldwork Conducted by (Site Director)                                                                                                                                                              |      | Dates |           |    |  |    |  |    |  |    |  |
| Summary of Results                                                                                                                                                                                  |      |       |           |    |  |    |  |    |  |    |  |
| <div>Document References</div> <table border="1"> <tbody> <tr><td>1.</td><td></td></tr> <tr><td>2.</td><td></td></tr> <tr><td>3.</td><td></td></tr> <tr><td>4.</td><td></td></tr> </tbody> </table> |      |       |           | 1. |  | 2. |  | 3. |  | 4. |  |
| 1.                                                                                                                                                                                                  |      |       |           |    |  |    |  |    |  |    |  |
| 2.                                                                                                                                                                                                  |      |       |           |    |  |    |  |    |  |    |  |
| 3.                                                                                                                                                                                                  |      |       |           |    |  |    |  |    |  |    |  |
| 4.                                                                                                                                                                                                  |      |       |           |    |  |    |  |    |  |    |  |
| Compiled by                                                                                                                                                                                         | Name | Date  | Signature |    |  |    |  |    |  |    |  |
|                                                                                                                                                                                                     |      |       |           |    |  |    |  |    |  |    |  |
| Checked by                                                                                                                                                                                          | Name | Date  | Signature |    |  |    |  |    |  |    |  |
|                                                                                                                                                                                                     |      |       |           |    |  |    |  |    |  |    |  |
| Approved by                                                                                                                                                                                         | Name | Date  | Signature |    |  |    |  |    |  |    |  |
|                                                                                                                                                                                                     |      |       |           |    |  |    |  |    |  |    |  |

# 14 References and glossary of terms

## 14.1 Glossary of terms

14.1.1 The following terms have been used in this report:

- Archaeological Contractor – the organisation undertaking the specific historic environment works for the Contractor.
- Contractor – the organisation undertaking the Enabling Works on behalf of the Employer.
- Detailed Desk Based Assessment (DDBA) – analytical document that builds on the information gathered previously in the Environmental Statement to address particular issues, questions or uncertainties within a given area. It may be developed to provide a more detailed understanding of the resource in an area to inform design development or construction programming.
- Employer – HS2 Ltd, the organisation responsible for delivery of HS2 Phase One Scheme and all terms and conditions, policies, procedures, and payments
- Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS) – the framework for delivering all historic environment investigations undertaken as part of the HS2 Phase 1 programme.
- Location – a specific HS2 worksite or group of worksites that are being addressed as a combine historic environment investigation programme of assessment, evaluation and investigation.
- Project Plans – specification document for each specific package of activity (e.g. a survey, desk based assessment, excavation, recoding project). The plans would respond to the Specific Objectives set out in the GWSI: HERDS and be delivered within an agreed budget.
- Works – the specific historic environment assessment, evaluation or investigation works at each location.

## 14.2 References

| Title                                                                                                                | Reference                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| ClfA, 2014a. Code of Conduct                                                                                         | -                                                                                                                             |
| ClfA, 2014b. Standard and Guidance for archaeological geophysical survey                                             | -                                                                                                                             |
| ClfA, 2014c. Standard and Guidance for archaeological field evaluation                                               | -                                                                                                                             |
| High Speed Rail (London-West Midlands) Environmental Minimum Requirements Annex 3: Heritage Memorandum               | CS755 02/17                                                                                                                   |
| High Speed Rail (London-West Midlands) Environmental Minimum Requirements Annex 1: Code of Construction Practice     | CS755 02/17                                                                                                                   |
| Historic England, 2006. Management of research projects in the historic environment                                  | -                                                                                                                             |
| Historic England, 2008. Geophysical Survey in Archaeological Field Evaluation                                        | -                                                                                                                             |
| HS2 Phase One Environmental Statement and Supplementary Environmental Statements                                     | CH-001-018, ES 3.5.2.25.4<br>CH002-018, ES 3.5.2.25.5<br>CH003-018, ES 3.5.2.25.6<br>CH003-018, ES 3.5.2.25.7<br>ES 3.5.1.4.4 |
| HS2 Technical Standard: Cultural Heritage GIS Specification                                                          | HS2-HS2-GI-SPE-000-000004                                                                                                     |
| HS2 Technical Standard: – Temporary Works                                                                            | HS2-HS2-CV-STD-000-000005                                                                                                     |
| HS2 Technical Standard: Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy | HS2-HS2-EV-STR-000-000015                                                                                                     |
| HS2 Technical Standard: Specification for historic environment investigations                                        | HS2-HS2-EV-STD-000-000035                                                                                                     |
| HS2 Technical Standard: Specification for Project Plans and Location Specific Written Scheme of Investigations       | HS2-HS2-EV-STD-000-000036                                                                                                     |
| HS2 Technical Standard: Historic Environment Physical Archive Procedure                                              | HS2-HS2-EV-STD-000-000039                                                                                                     |
| HS2 Technical Standard: Historic Environment Digital Data Management and Archiving Procedure                         | HS2-HS2-EV-STD-000-000040                                                                                                     |

|                                                                          |                              |
|--------------------------------------------------------------------------|------------------------------|
| HS2 Enabling Works Information WI0200<br>General Constraints             | 1E001-HS2-PR-ITT-000-000098  |
| Fusion Standard for Accident and Incident<br>Investigation and Reporting | SH2 STD1                     |
| Fusion Construction Phase Health and Safety<br>Plan                      |                              |
| Fusion Incident & Emergency Preparedness<br>Plan                         | 1EW03-FUS-HS-PLN-C000-000001 |
| Fusion Urgent Works Package 1 Quality Plan                               | 1EW03-FUS-QY-PLN-C000-000022 |

## 14.3 List of acronyms

|             |                                                                                              |
|-------------|----------------------------------------------------------------------------------------------|
| AIMS        | Asset Information Management System                                                          |
| BIM         | Building Information Modelling                                                               |
| CIfA        | Chartered Institute for Archaeologists                                                       |
| CoCP        | Code of Construction Practice                                                                |
| DDBA        | Detailed Desk Based Assessment                                                               |
| EIA         | Environmental Impact Assessment                                                              |
| EMR         | Environmental Minimum Requirement                                                            |
| ES          | Environmental Statement                                                                      |
| GIS         | Geographical Information Systems                                                             |
| GWSI: HERDS | Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy |
| HE          | Historic England (formerly English Heritage)                                                 |
| HER         | Historic Environment Record                                                                  |
| LLAU        | Limits of Land to be Acquired or Used                                                        |
| LOD         | Limit of Deviation                                                                           |
| LS-WSI      | Location Specific Written Scheme of Investigation                                            |
| OASIS       | Online Access to the Index of archaeological investigations                                  |
| PDF         | Portable Document Format                                                                     |
| PGM         | Permanent Ground Markers                                                                     |
| QA          | Quality Assurance                                                                            |
| RTK         | Real Time Kinematic                                                                          |
| TBM         | Temporary Bench Mark                                                                         |
| TSA         | The Survey Association                                                                       |
| TST         | Total Station Theodolite                                                                     |

# 15 Figures

Table 1 - Figures

| Figure title                      | Drawing No.                |
|-----------------------------------|----------------------------|
| Figure 1.1 to 1.18 Site locations | Provided for in Appendix 3 |
| Figure 2 Heritage assets          | Not Used                   |
| Figure 3 Previous Investigations  | Not Used                   |
| Figure 4 Scheme design            | Not Used                   |
| Figure 5                          | Not Used                   |
| Figure 6                          | Not Used                   |
| Figure 7                          | Not Used                   |
| Figure 8                          | Not Used                   |
| Figure 9 Utilities locations      | Not Used                   |

# 16 Appendices

## Appendix 1 Project Plans

Project Plans are in draft and will be added when approved by HS2.

Code 2 - Accepted with Comments

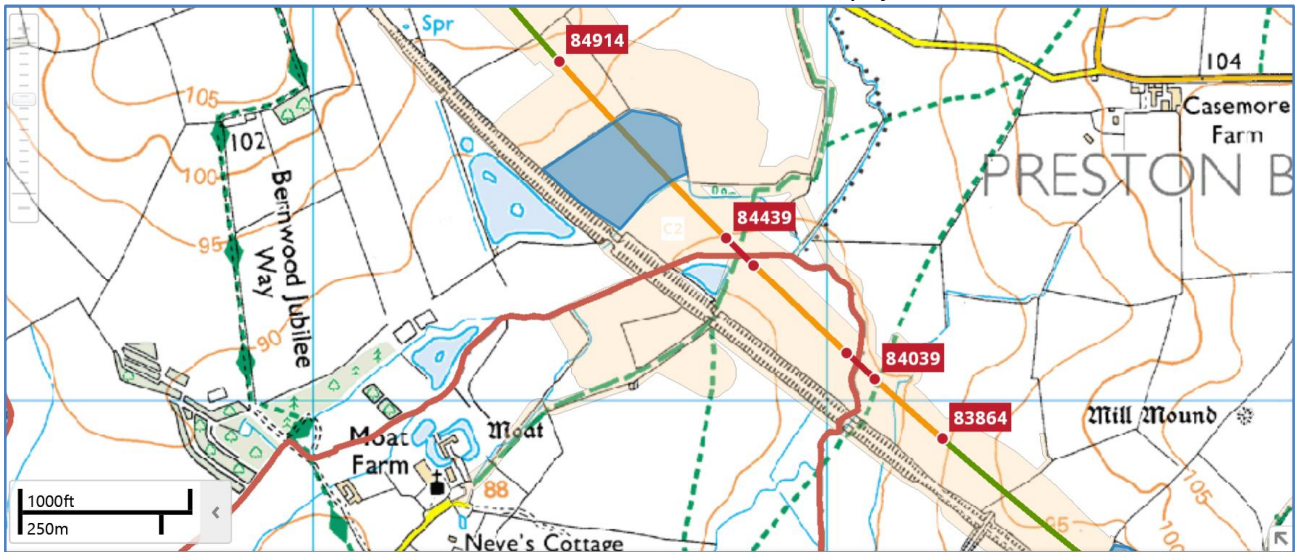
## Appendix 2 Risk Assessment Method Statement (RAMS)

Refer to *Archaeological Contractor's* documentation.

Code 2 - Accepted with Comments

## Appendix 3 Geophysical Survey Sites

| Main Asset          | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA |
|---------------------|--------------------|-----------|------------|---------|
| Chetwode Embankment | North of Moat Farm | 1444      | Geophys    | 3.6343  |



Project Plan Document no.: 1D037-EDP-EV-REP-040-000023

### Site conditions:

Arable crop use evident on recent aerial photographs (Google Earth 2017). There are no visible constraints to survey, and no overhead services. Presence of any underground services not currently known. Geology (from Project Plan) The solid geology is principally made up of mudstones of the Peterborough Member, no superficial deposits are recorded within the main part of the site, however to the south is alluvium, consisting of clay, silt, sand and gravel, located along the floodplain Padbury Brook. The site largely level at 90m aOD.

### Archaeological background

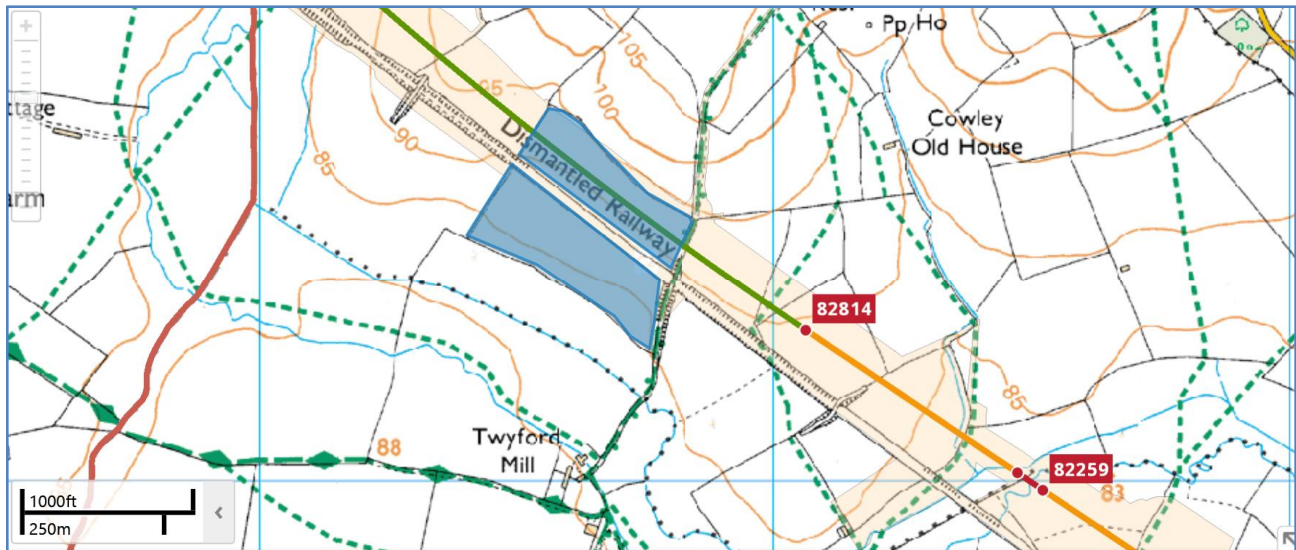
No geophysical survey or Detailed Desk Based Assessment has been undertaken at the site or in the immediate surrounding area.

Heritage Risk Model. Archaeological sub-zone 13-20, Buckinghamshire / Oxfordshire Border. Topography generally flat arable field. Geology: Extensive deposits of alluvium and gravels reflect the divided course of the Padbury Brook. The solid geology is Mudstone of the Peterborough member. Historic character is small, regular fields, probably reflecting a planned programme of enclosure. Archaeology background is prehistoric enclosures are recorded from cropmarks (CAL075) and there is considered to be a general archaeological potential based upon the topography and geology.

### Site selection

The site is required for critical path early grassland habitat creation for species translocation.

| Main Asset      | EWC_Arch site name    | CR_ID_GIS | Survey_Typ | Area HA |
|-----------------|-----------------------|-----------|------------|---------|
| Twyford Cutting | North of Twyford Mill | 1440      | Geophys    | 4.9849  |
| Twyford Cutting | North of Twyford Mill | 1440a     | Geophys    | 3.7203  |



Project Plan: 1D037-EDP-EV-REP-040-000025 Rev P01

#### Site conditions:

Arable crop use on both land parcels evident on recent aerial photographs (Google Earth 2017). There are no visible constraints to survey, and no overhead services. Presence of any underground services not currently known.

#### Geology (from Project Plan)

The solid geology is principally made up of mudstones of the Peterborough Member, no superficial deposits are recorded. The site slopes northwest to southeast, 88m – 86m aOD, and is located on a south-facing slope overlooking Padbury Brook.

#### Archaeological background

##### *Project Plan*

There are no known heritage assets located within the site, however the surrounding area does contain evidence of human occupation and activity over a variety of periods. Though unconfirmed, two possible Bronze Age barrows may be located to the north of the site, on the opposite side of the disused railway. One has been identified as a mill mound (CAL067), with a possible second barrow located to the south of the first.

##### *Heritage Risk Model*

Archaeological sub-zone 13-18, Field to the north of Twyford Mill. Slight south-west facing slope. Geology recorded as Alluvial deposits associated with the Padbury Brook. Land use is Agriculture. Historic Character is Small regular fields, cut through by mill leats and the Padbury Brook. Archaeology baseline is Twyford Mill (CAL063) lies immediately to the south and there may be potential for palaeo-environmental remains to be preserved in the alluvium. There is a general archaeological potential based upon the landscape and geology.

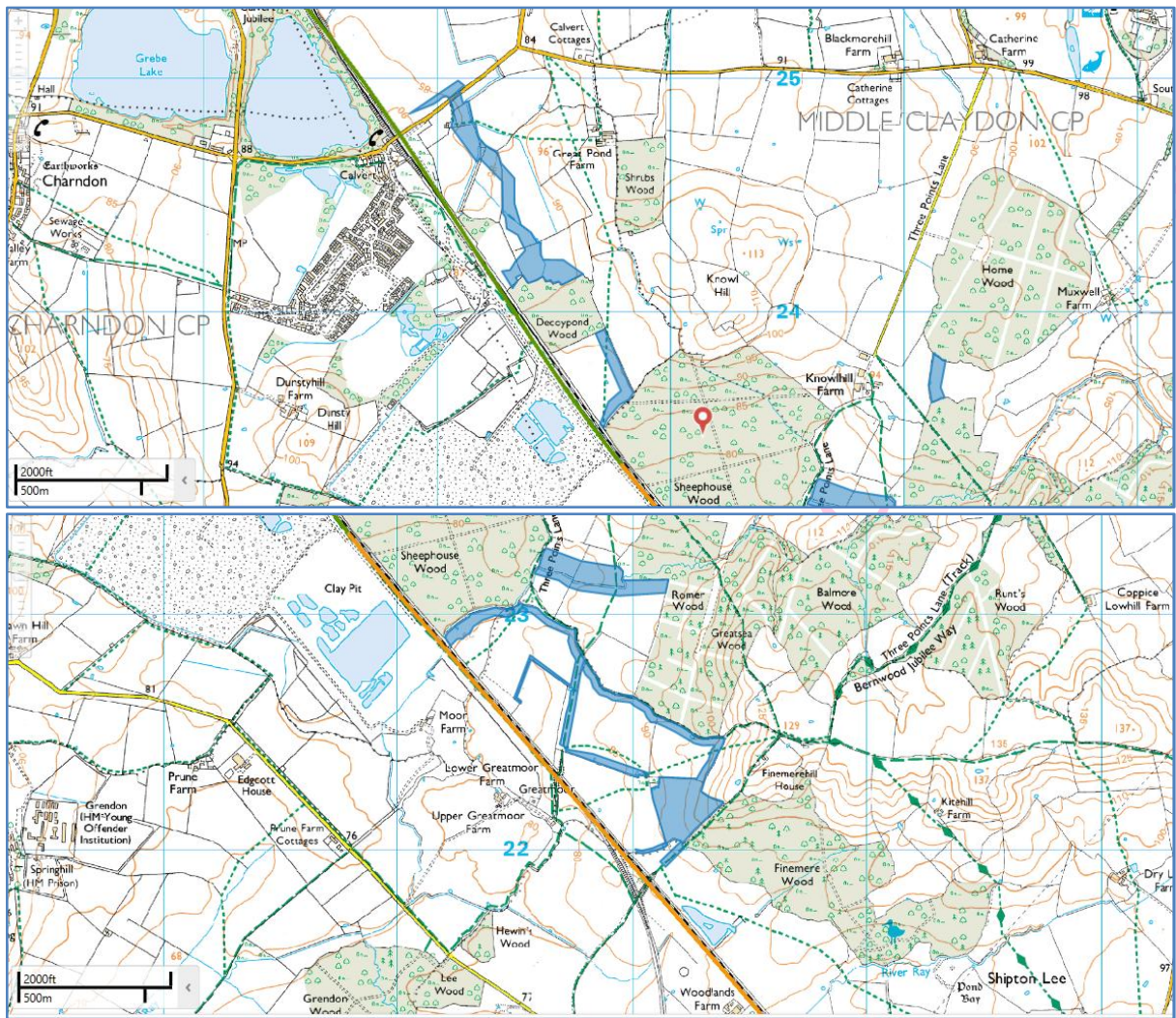
#### Site selection:

Neither parcel has been previously surveyed. Southern land parcel (1440) is selected to evaluate the potential for archaeological remains on an area of critical path early Grassland Habitat creation for species translocation.

Northern land parcel (1440a) is selected to provide wider context to the geophysical survey and assess potential for remains within the mainline earthworks area.

Code 2 - Accepted with Comments

|                              |                    |           |            |         |
|------------------------------|--------------------|-----------|------------|---------|
| Main Asset                   | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA |
| Grendon Underwood Embankment | Sheephouse Wood    | CR01533   | Geophys    | 30.3967 |



Site conditions: A mixture of arable and pasture land with some evidence for grazing animals evident on recent aerial photographs (Google Earth 2017). Various public rights of way intersect with the land parcels. Overhead cables pass the most northern land parcel. Presence of any underground services not currently known.

Geology: Bedrock geology Weymouth Member Mudstone Sedimentary Bedrock formed approximately 156 to 161 million years ago and Stewartby Member - Mudstone. Sedimentary Bedrock formed approximately 161 to 165 million years ago in the Jurassic Period. Local environment previously dominated by shallow seas.

BGS records superficial deposits of Alluvium - Clay, Silt, Sand And Gravel, (formed up to 2 million years ago in the Quaternary Period) within the catchment of the River Ray.

Archaeological background: *Heritage Risk Model*

North Area: Archaeological sub-zone 13-03 Fields around Great Pond Farm. The fields are situated on a slight west-facing slope which rises to Knowl Hill to the east of the CFA. The ASZ sits on an interface between the Stewartby and

Peterborough Mudstone Members. The ASZ is rural and agricultural, with the irregular boundaries indicative of piecemeal enclosure. This area was probably historically part of Bernwood Forest, and may have included a large pond, as indicated by Great Pond Farm. The ASZ formed part of the medieval Royal Forest of Bernwood and there may be preserved woodland features of medieval and post-medieval date. Medieval and post-medieval settlement remains are unlikely. There are antiquarian references to potential Roman finds in the area (CAL015), suggesting there may be potential for currently unrecorded features.

South Area: Archaeological sub-zone 12-14 Farmland on the edge of Bernwood Forest. Generally flat, although rising to Finemere Hill to the east. The underlying geology is Mudstone of the Stewartby Member. Small areas of alluvium are recorded along the course of a small stream, a tributary of the Ray. Agriculture, primarily arable.

This area was probably part of the Royal Forest of Bernwood, before being deforested in the later medieval period. There is some evidence of assarting. This area probably formed part of the Verney Estate, centred at Middle Claydon.

Limited archaeology evidence has been previously recorded, but there is evidence of medieval activity in the surrounding landscape

Site selection: Around 30 ha of new planting and ancient woodland soil translocation is required across the various land parcels. It is anticipated that geophysical survey will assist in evaluating the potential for any significant archaeological remains within this area.

| Main Asset                   | EWC_Arch site name      | CR_ID_GIS | Survey_Typ | Area HA |
|------------------------------|-------------------------|-----------|------------|---------|
| Grendon Underwood Embankment | Woodlands Farm Cottages | 1472      | Geophys    | 13.85   |
|                              | Woodlands Farm Cottages | 1343      | Geophys    | 2.65    |
|                              | Woodlands Farm Cottages | 1351      | Geophys    | 3.22    |
|                              | Woodlands Farm Cottages | 1351a     | geophys    | 2.07    |
|                              | Woodlands Farm Cottages | 1351b     | geophys    | 2.07    |



Project Plan: Geophysical Survey at Grendon Underwood Embankment, Document no.: 1D037-EDP-EV-REP-040-000022

Site conditions: The majority of land parcels appear to be pasture, evident on recent aerial photographs (Google Earth 2017). Parcel 1351b appears to be under arable cultivation with some scrubland on its west side. There are a

number of trees and hedges within parcel 1472. Overhead cables pass over parcel 1351 south to north. There are animals and animal feeders/troughs present on the pasture land parcels. Presence of any underground services not currently known.

Geology: The site gently undulates between 83m – 87m aOD. The solid geology is principally made up of mudstones of the Weymouth Member, BGS records alluvial deposits alongside the course of the River Ray, although no terrace gravel is recorded.

Archaeological background:

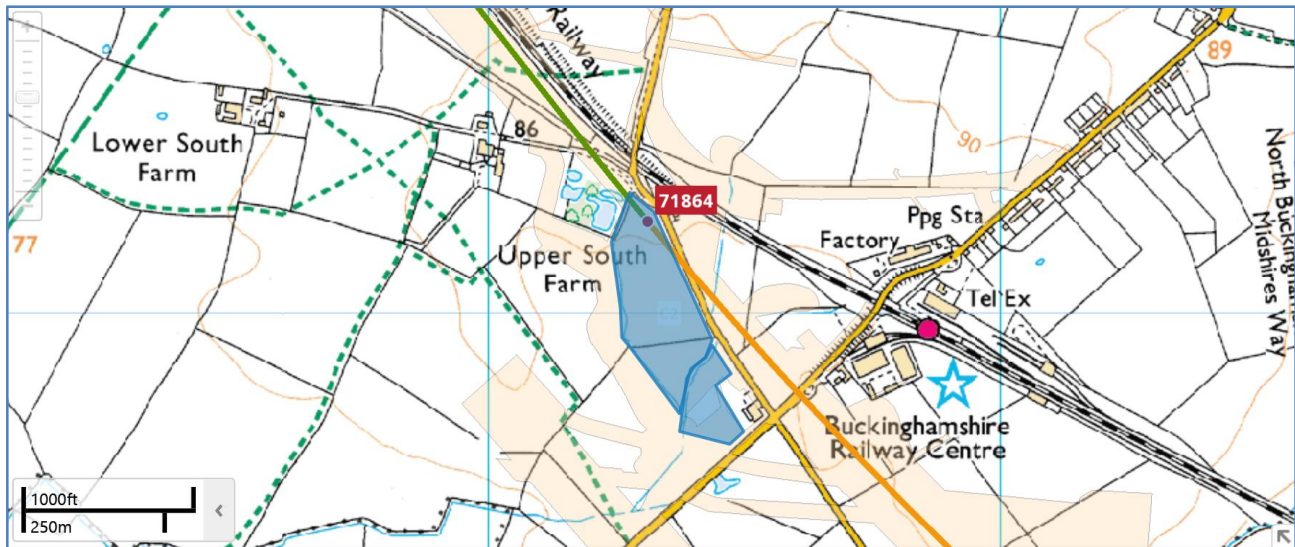
*Heritage Risk Model*

Archaeological sub-zone 12-11, River Ray and surroundings. The topography of the ASZ slopes down into the Ray, forming a shallow valley, before rising to a high point to the north, adjacent to Finemere Wood. Land use is agricultural, a mix of arable and pasture, as well as two small lakes. The landscape within the ASZ has historically been agricultural, with straight boundaries and regular enclosures indicative of parliamentary enclosure.

The River Ray represents an attractive location for early settlement, as one of the larger watercourses in a landscape of heavy clay. There is a potential medieval water mill to the north (WAD083), and several pond-bays indicate historic exploitation of the river. Several earthworks, of unknown origin, were recorded during a walkover survey.

Site selection: The locations are required for early planting and preparation of flood compensation and ecology habitat areas.

| Main Asset       | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA |
|------------------|--------------------|-----------|------------|---------|
| Quainton Cutting | Crossroads Farm    | 1352      | Geophys    | 4.4706  |
| Quainton Cutting | Crossroads Farm    | 1352b     | Geophys    | 1.3543  |



Project Plan: Geophysical Survey at CR01352 (Quainton South Embankment): 1D037-EDP-EV-REP-C000-000008

Site conditions: Land parcels appear to be a mixture of pasture and arable from recent aerial photographs (Google Earth 2017). Overhead cables pass over parcel 1352 at its north end and on the east boundary south to north. Presence of any underground services not currently known.

Geology (from Project Plan): The solid geology is principally the West Walton mudstone formation which was laid down as sedimentary deposits during the Jurassic period. The site slopes gently from north-west (c. 90m aOD) to south-east (c. 85m aOD).

#### Archaeological background

Archaeological sub-zone 12-04. Fields to the south of the Buckinghamshire Railway Centre. The topography drops relatively steeply from the highest point to the south-east, before flattening out into a broader, flat area corresponding to a small stream valley. Mudstone, a mix of the Ampthill Formation and the West Walton Formation. A band of alluvial deposits is recorded alongside the main stream, and several smaller channels and drains are also recorded. Agriculture, a mix of arable and pasture.

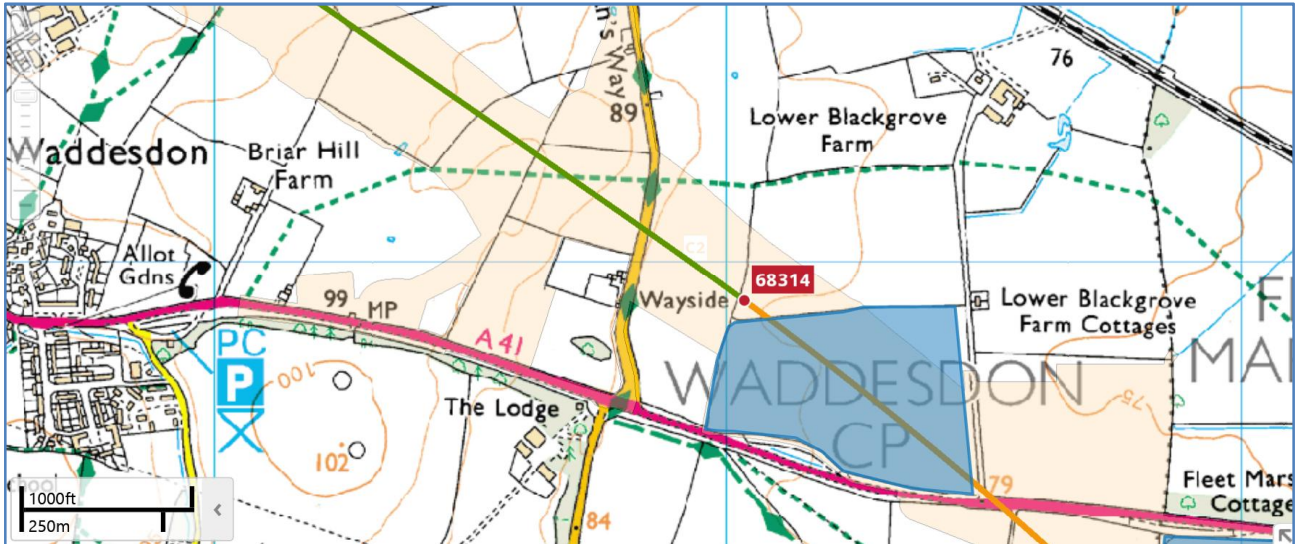
The ASZ is rural and agricultural, with the straight boundaries indicative of parliamentary enclosure. There is extensive survival of ridge and furrow earthworks within these enclosures, which formed part of the agricultural base of Quainton. Buckinghamshire County Council Historic Landscape Characterisation suggests it was formerly common land.

Two areas of archaeological excavation (WAD020 and WAD040) have recorded ditches of Romano-British field systems, as well as redeposited pottery of similar date. Medieval and post-medieval pottery, probably a result of manuring, has also been found. The watercourses in the area make it a more likely area for early settlement than the homogenous clay elsewhere in the study area.

#### Site selection

The locations are required for early grassland habitat construction. Previous geophysical survey to the south (reference CS047) delivered inconclusive results mainly due to the presence of large underground gas mains. There are no known underground surveys on the site and it is anticipated that geophysical survey will be able to detect any significant archaeology.

|                             |                    |           |            |         |
|-----------------------------|--------------------|-----------|------------|---------|
| Main Asset                  | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA |
| Bicester Road<br>Embankment | Wayside Farm East  | 1368      | Geophys    | 14.0012 |



Project Plan for Geophysical Survey at CR01368 (Waddesdon South Cutting), Buckinghamshire

Document no.: 1D037-EDP-EV-REP-C000-000007

Site conditions: Land parcel appears to be in arable cultivation from recent aerial photographs (Google Earth 2017). No obstacles or overhead cables are known. Presence of any underground services not currently known. The geophysical survey area is located in an arable field adjacent to and north of the A41, approximately 1km east of the village of Waddesdon, centred on NGR SP 76146 16750 (Figure 1).

#### Geology (from)

The site is flat and at approximately 81m above Ordnance Datum. Solid geology is Ampthill Clay Formation Mudstone. No superficial deposits are recorded.

#### Archaeological background

Archaeological sub-zone 12-01: Fields around Cranwell Farm and Lower Blackgrove Farm. Generally level, situated on even ground to the east of Lodge Hill Mudstone of the Ampthill Formation, with a small area of alluvium extending into the ASZ from the east. Agriculture, mainly arable.

Predominantly straight, rectilinear fields suggest they were formed by parliamentary enclosure. A small area of ridge and furrow earthworks in the south indicates the ASZ may have formed part of the open field system associated with medieval Waddesdon.

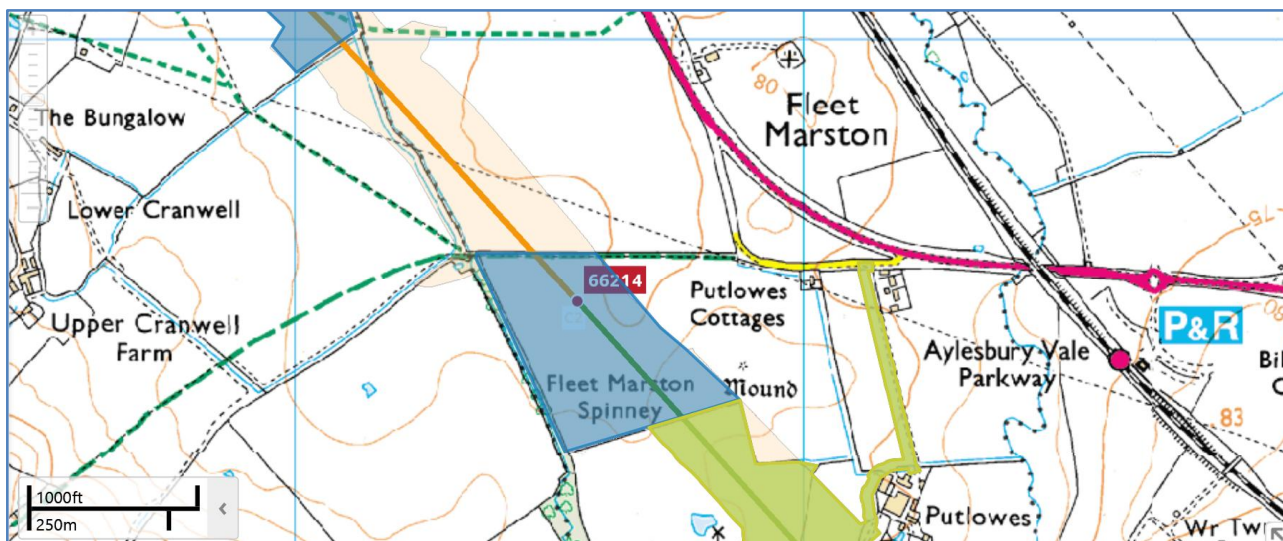
Akeman Street Roman Road (WAD001) lies to the south of the ASZ, and the small Romano-British town of Fleet Marston lies a short distance to the east. As such, there is considered to be potential for Romano-British remains in the hinterland of the settlement. However, no finds or features have previously been recorded within the ASZ.

#### Site selection

The site is required for early grassland habitat construction. Geophysical surveys nearby have been successful in identifying significant archaeological remains.

Code 2 - Accepted with Comments

|                          |                    |           |            |         |
|--------------------------|--------------------|-----------|------------|---------|
| Main Asset               | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA |
| Bicester Road Embankment | Putlowes Cottages  | 1434      | Geophys    | 10.9244 |



#### No Project Plan

Site conditions: Land parcel appears to be in arable cultivation from recent aerial photographs (Google Earth 2017). There is a tree clump in the north of the parcel and overhead cables pass north south across the south-east corner. Presence of any underground services not currently known

#### Geology (from BGS)

The bedrock geology is Kimmeridge Clay Formation – Mudstone, a sedimentary bedrock formed approximately 151 to 156 million years ago in the Jurassic Period in a local environment previously dominated by shallow seas. Locally areas of superficial till of mid Pleistocene date (up to 2 million years ago in the Quaternary Period) occur but these are not recorded for the site location.

#### Archaeological background

Archaeological sub-zone 11-30 Fleet Marston Romano-British small town. Low, broad knoll overlooking confluence of tributary with the River Thames. Southern half Kimmeridge Clay with cap of Till in centre of the knoll. North of this Amphill (Oxford) Clay capped by head deposits. Predominantly arable prairie fields with some pasture near Putlowes. Modified parliamentary enclosure with much field amalgamation.

Extensive evidence to indicate the presence of a small Romano-British town (SMA074) at the junction of Akeman Street (SMA076) with a road (SMA082 and SMA083) leading north to the cult centre at Thornborough. Finds suggest activity throughout Roman period and hints at Late Iron Age and earlier Saxon activity as well.

#### Site selection

The site is required for early ecological wetland habitat construction including deep ploughing and creation of several ponds and tree planting. Extensive previous geophysical survey carried out adjacent to the site has identified significant archaeological remains.

Code 2 - Accepted with Comments

|                      |                            |           |            |         |
|----------------------|----------------------------|-----------|------------|---------|
| Main Asset           | EWC_Arch site name         | CR_ID_GIS | Survey_Typ | Area HA |
| Thame Valley Viaduct | Whaddon Hill Farm<br>North | 1374      | Geophys    | 11.4619 |



Project Plan for Geophysical Survey at CR01374, (Whaddon Hill Cutting) 1D037-EDP-EV-REP-C000-000005

Site conditions: Land parcel site history is not entirely clear. Certainly, part of the wider area has been quarried and restored following sand and gravel extraction. Recent aerial photographs (Google Earth 2017) show an area of restoration to the north-west of the site. The appearance of the aerial photograph possibly suggests that a wider area was quarried and restored. The BGS survey records a large group of historic boreholes over a wide area, possibly suggesting the west side of the land parcel has in fact been previously quarried and restored. Historic mapping OS does not however record any previous quarrying activity between 1880 and 1993.

#### Geology:

The site lies on the edge of alluvial and terrace deposits associated with the River Thame and its tributary the Bear Brook; the solid geology is of Kimmeridge Clay Formation Mudstone (BGS 2017).

#### Archaeological background:

Archaeological sub-zone 11-24 Thame Valley quarry. Flat valley floor. Kimmeridge Clay overlain by cap of Terrace Gravel in turn overlain by alluvium. Predominantly pasture with area that was formerly used for gravel extraction now becoming reclaimed to pasture. Riverside meadows

Terrace gravels may contain Palaeolithic remains and exposure of gravels beside a river would also be typical location for prehistoric and later activity. Much of the area has been quarried. There is also potential for palaeo environmental remains.

#### Site selection:

The site is required for critical early wetland habitat construction and geophysical survey shall assist in identifying whether any significant remains exist on the site, or that the site, or parts of the site have been previously disturbed and restored..

Code 2 - Accepted with Comments

|                                   |                        |           |            |         |
|-----------------------------------|------------------------|-----------|------------|---------|
| Main Asset                        | EWC_Arch site name     | CR_ID_GIS | Survey_Typ | Area HA |
| Stoke Mandeville South Embankment | North of Nash Lee Lane | 1438      | Geophys    | 2.8278  |



No Project Plan.

Site conditions: Land parcel appears to be in use as pasture from recent aerial photographs (Google Earth 2017) and animal grazing. There are no overhead cables evident. Presence of any underground services not currently known.

Geology (from BGS):

Bedrock geology is Gault Formation And Upper Greensand Formation (undifferentiated) - Mudstone, Siltstone And Sandstone. Sedimentary Bedrock formed approximately 94 to 112 million years ago in the Cretaceous Period. Local environment previously dominated by shallow seas.

Superficial deposits of Quaternary period Sand And Gravel (up to 3 million years BP) of Uncertain Age And Origin are present discontinuously in the area but none recorded at the site.

Archaeological background:

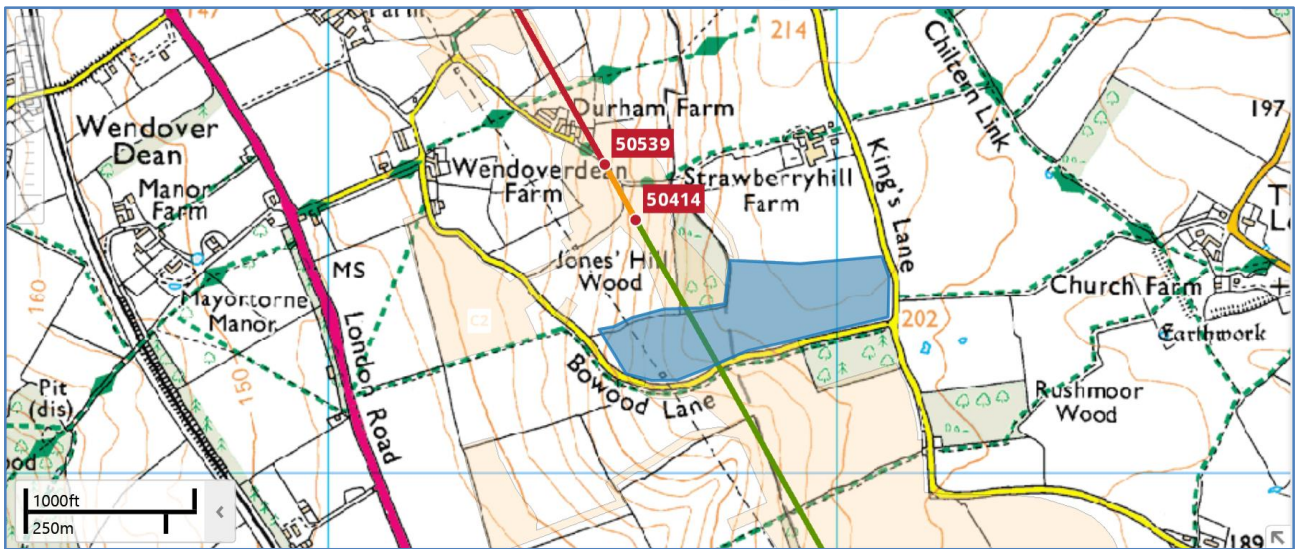
Archaeological sub-zone 11-01, Stoke House. Gently rising south facing slope above valley containing modified streams. Undifferentiated Gault and Greensand. Predominantly arable. Modified enclosure with system of moats around Stoke House.

Adjacent to a possible medieval manorial centre around demolished church of St Mary in the valley floor. South facing slope over water course is a good potential location for prehistoric and Romano-British activity and geophysics appears to confirm this (SMA004).

Site selection:

The site is required for critical early ecology wetland habitat creation. Nearby positive geophysical results at CS009 suggest that geophysical survey will assist in evaluating whether significant remains are present on the site.

|                     |                    |           |            |         |
|---------------------|--------------------|-----------|------------|---------|
| Main Asset          | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA |
| South Heath Cutting | Jones' Hill Wood   | 1348_54   | Geophys    | 7.5093  |



Project Plan for Geophysical Survey at C211\_007 (Wendover Dean South Heath Cutting) and CR01354 1D037-EDP-EV-REP-C000-000013

Site conditions: Land parcel appears to be in use as arable from recent aerial photographs (Google Earth 2017). A large pylon is in the west parcel and overhead cables pass over the field south to north. There are no other obstacles evident. Presence of any underground services not currently known. The Site gently undulates, rising from 173m above Ordnance Datum (aOD) in the west, increasing in elevation to 205m aOD in the east.

Geology (from BGS):

Bedrock geology is Lewes Nodular Chalk Formation And Seaford Chalk Formation (undifferentiated) - a sedimentary Bedrock formed approximately 84 to 94 million years ago in the Cretaceous Period in a local environment previously dominated by warm chalk seas.

The BGS records superficial deposits of Clay-with-flints Formation - Clay, Silt, Sand And Gravel, a superficial deposits formed up to 5 million years ago in the Quaternary and Neogene Periods in a local environment previously dominated by weathering processes. These deposits were formed from the rock debris left behind by weathering processes. It varies according to source rock type and climate and processes may include mechanical weathering by frost wedges to break rock apart; chemical weathering to decompose some minerals; and dissolution of carbonates.

Archaeological background:

Archaeological sub-zone 10-09, Land around Durham Farm and to the north-east, slightly undulating and sloping gently down towards the valley floor. Chalk. Agriculture, mainly arable and some pasture. Pre 18th century enclosure.

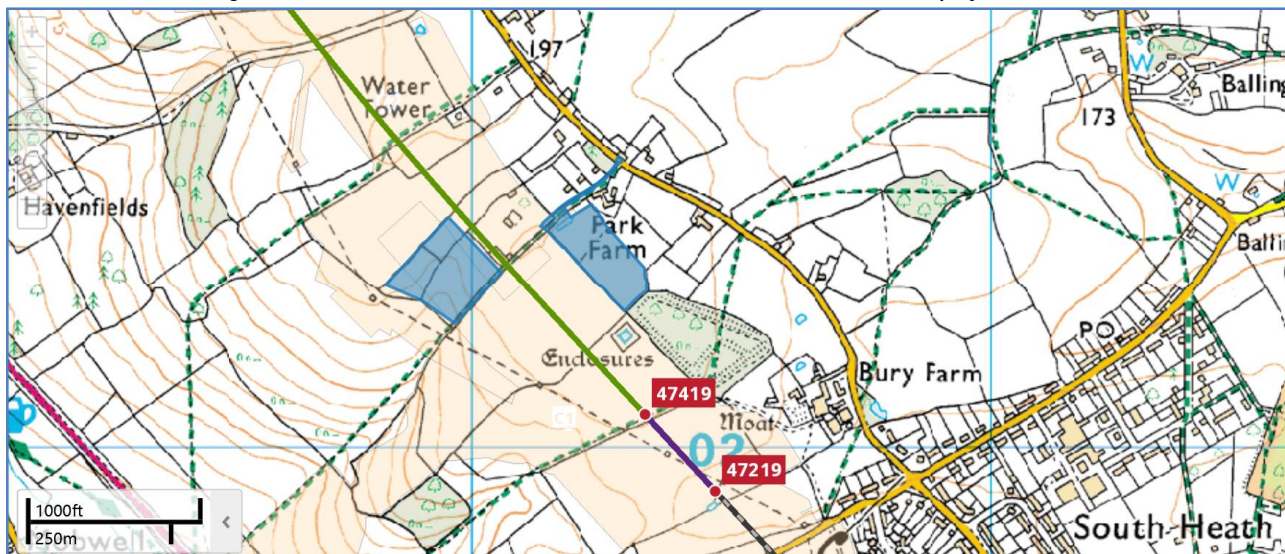
Lies on the periphery of an extensive area of metal detected fields at Wendoverdean Farm in which multi-period finds of Bronze Age, Iron Age, Roman, medieval and post-medieval date have been recovered.

Site selection:

The site is required for early mitigation tree planting . The site is just to the north of the prehistoric earthwork Grim's Ditch ( a Scheduled Monument) CS007. Positive geophysical results at CS007 and CS040 to the north of the site suggest that geophysical survey will assist in evaluating whether significant remains are present on the site.

Code 2 - Accepted with Comments

| Main Asset          | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA |
|---------------------|--------------------|-----------|------------|---------|
| South Heath Cutting | Park Hill          | 1436      | Geophys    | 2.2537  |
| South Heath Cutting | Park Farm          | CR01433   | Geophys    | 1.9564  |



Project Plan Document no.: 1D037-EDP-EV-REP-040-000003

#### Site conditions:

1436 - Overhead powerlines pass to the south and west of land parcel 1436 (Park Hill). The site comprises 3 plots of rough pasture with scrub.

CR01433 – (Park Farm) Overhead powerlines pass from south to north across the site. The site appears to be arable/pasture and is flat. Some obstructions (possibly animal feeders) appear on the Googlemap 2017 aerial mapping

#### Geology (from Project Plan):

The underlying geology of the Site is recorded as the Lewes Nodular Chalk Formation and Seaford Chalk Formation overlain by clay-with-flints formation<sup>1</sup>. Soils derived from these parent geological materials are considered suitable for magnetometry.

#### Archaeological background: *Heritage Risk Model*

Archaeological sub-zone 09-16, Potter Row. Situated on the valley shoulder on undulating ground and sloping gently down towards the valley. Clay-with-Flints strata with the exception of the western extreme in the lower valley slope; overlying chalk. Agriculture, mainly arable, some pasture and managed woodland. Some coaxial fields near Springfields Farm and west of Park Farm. Pre 18th century enclosure, 19th century enclosure and 20th century enclosure. Some parkland around Havenfields. Includes Jenkin's Wood and Havenfields Wood ancient woodlands.

Potter Row, between Frith Hill and Hammondshall Farm is identified by Buckinghamshire County Council as an archaeological notification area on the basis of a variety of finds which could indicate the existence of a former extensive area of 13th to 15th century pottery production and settlement. The possible location of a 16th to 17th century kiln site indicated by numerous finds of pottery has also been recorded in the gardens of the surrounding

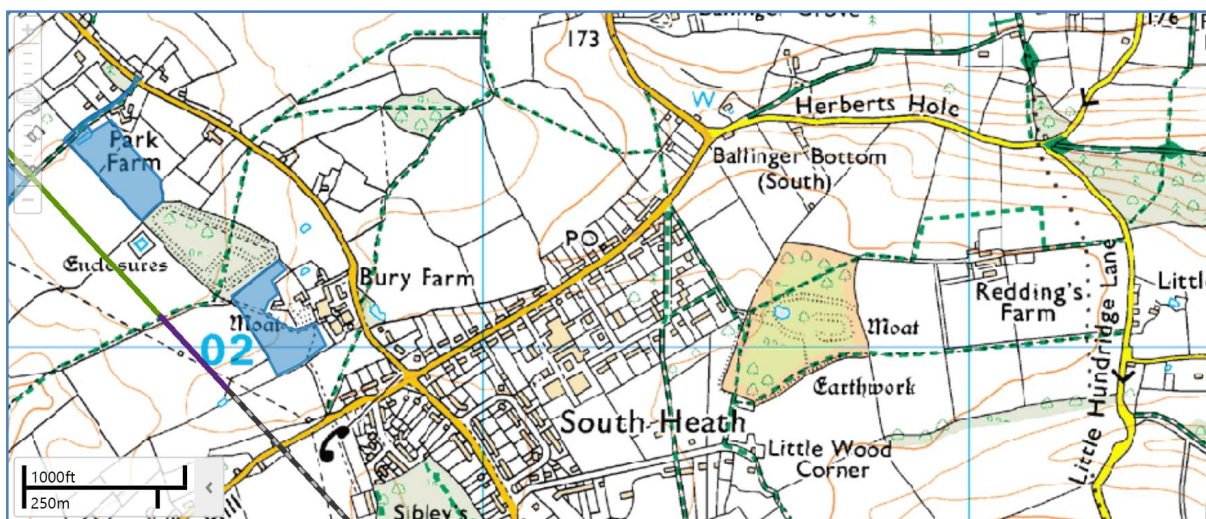
area. There is a strong potential for further in situ and unstratified ceramic and metal artefacts and associated below ground features. The Iron Age Grim's Ditch scheduled monument lies at the northern end of the study area and associated below ground remains may exist within this ASZ

Site selection:

Both land parcels are selected for survey to evaluate potential for archaeological remains on the location of critical path grassland habitat creation for translocation of species.

Code 2 - Accepted with Comments

| Main Asset          | EWC_Arch site name | CR_ID_GIS | Survey_Typ | Area HA  |
|---------------------|--------------------|-----------|------------|----------|
| South Heath Cutting | Bury Farm          | 1591      | Geophys    | 1.693 ha |



Project Plan Document no: TBC

Site conditions: This site at Bury farm is potentially required as an alternative mitigation site to Park Farm, above. This has yet to be confirmed so this is currently a placeholder.

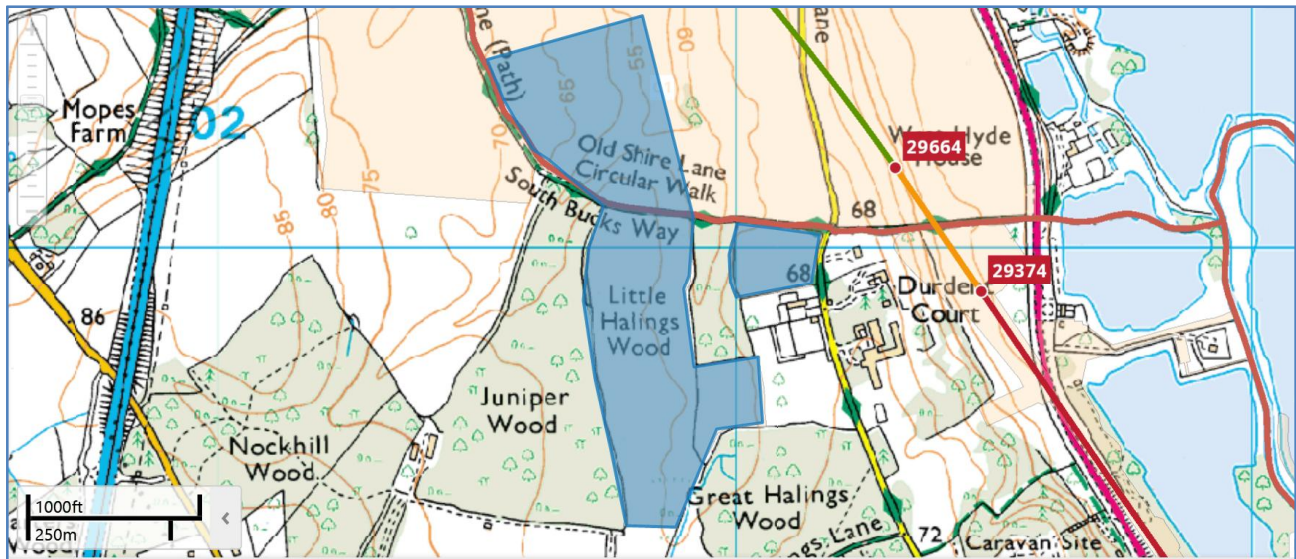
Geology (BGS):

Archaeological background: *Heritage Risk Model*

Archaeological sub-zone

Site selection:

| Main Asset             | EWC_Arch site name  | CR_ID_GIS | Survey_Typ | Area HA |
|------------------------|---------------------|-----------|------------|---------|
| Tilehouse Lane Cutting | Little Halings Wood | 1012      | Geophys    | 12.5551 |
| Tilehouse Lane Cutting | Little Halings Wood | 1012a     | Geophys    | 1.9451  |



#### No Project Plan

#### Site conditions:

Both land parcel 1012 (west) and 1012a (smaller parcel on the east) appear to be in use as arable from recent aerial photographs (Google Earth 2017). Apart from an unidentified object visible on aerial photographs on the south east corner of 1012a, there are no visible obstructions and no overhead services evident. Presence of any underground services not currently known.

#### Geology (from BGS):

The bedrock geology is recorded as Lambeth Group - Clay, Silt And Sand, a sedimentary bedrock formed approximately 56 to 66 million years ago in the Palaeogene Period in a local environment previously dominated by swamps, estuaries and deltas. These rocks were formed in marginal coastal plains with lakes and swamps periodically inundated by the sea; or estuaries and deltas, and shallow seas.

The BGS records superficial deposits of Winter Hill Gravel (Sand And Gravel) at this location. These formed up to 2 million years ago in the Quaternary Period in a local environment previously dominated by rivers. These were formed from rivers depositing mainly sand and gravel detrital material in channels to form river terrace deposits, with fine silt and clay from overbank floods forming floodplain alluvium, and some bogs depositing peat.

#### Archaeological background:

07-03 The area lies adjacent to the Colne Valley with predominantly south and east facing slopes at a confluence of two rivers. Such a location has a high potential for archaeological remains in undeveloped areas. The south-eastern part of the survey area contains cropmarks visible on aerial photography which suggest the presence of an enclosure and pits of possible prehistoric and/or Roman date (CVA080). Flintwork was recorded through previous trenching (CV080). An ancient land surface has been recorded in association with Neolithic and Bronze Age finds from near the

M25 at Mopes and Warren Farms (CVA078, approximately 600m to the south-west) Iron Age and Romano-British agricultural settlement identified at Denham Park farm and The Chenies (CVA076, 300m to the south-west).

Site selection:

The sites are required for early landscape mitigation planting. Completion of the large zone on previous geophysical survey at CS001 shall assist in evaluation the archaeological potential of the planting sites at this location.

Code 2 - Accepted with Comments

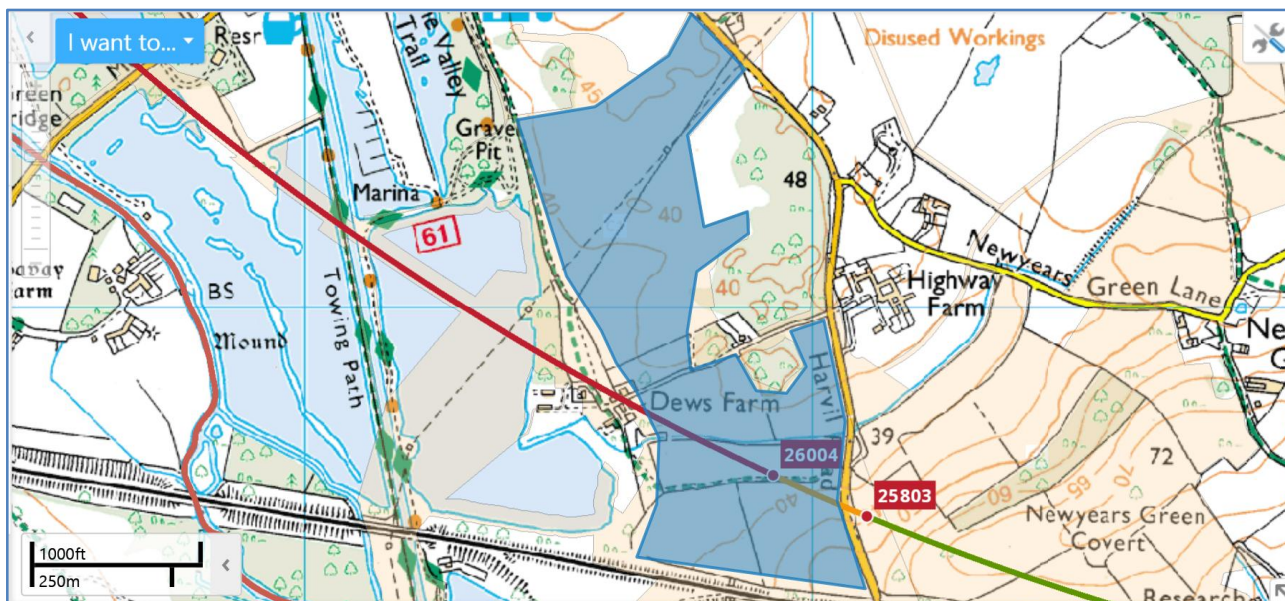
Main Asset  
Colne Valley South  
Embankment

EWC\_Arch site name  
Dews Farm

CR\_ID\_GIS  
1001

Survey\_Typ  
Geophys

Area HA  
23.4196



No project plan

Site conditions: Land parcel appears to be in use as a mixture of arable and pasture or rough pasture as evident from recent aerial photographs (Google Earth 2017). The survey parcel is divided by hedges into several smaller land plots. A large pylon is present in the north of the land parcel and overhead cables pass over the north side from north east to south west. A public footpath crosses west to east across the southern part of the land parcel. There are no other obstacles evident. Presence of any underground services not currently known.

Geology (from BGS): The bedrock geology is recorded as Lambeth Group - Clay, Silt And Sand, a sedimentary bedrock formed approximately 56 to 66 million years ago in the Palaeogene Period in a local environment previously dominated by swamps, estuaries and deltas. These rocks were formed in marginal coastal plains with lakes and swamps periodically inundated by the sea; or estuaries and deltas, and shallow seas. No superficial deposits are recorded.

Archaeological background:

Archaeological character area 07-01: The area lies adjacent to the Colne Valley with predominantly south and west facing slopes which have a good potential for archaeological remains in undeveloped areas. This potential is poorly represented by recent archaeological investigation within this study area although scattered findspots within it and evidence from archaeological investigations in the adjacent Ruislip and Ickenham study area (CFA6) support the identification of this potential. In the wider area there is archaeological evidence for prehistoric flint scatters and Bronze Age barrows. Iron Age to Romano-British settlement was identified to the north of the study area.

Site selection: The site is required for several early construction activities including the creation of wetland habitat, mitigation planting and utility works. Previous geophysical survey in the vicinity such as LM002 has had mixed results. It is anticipated that use of more sensitive non-gradiometric instruments should be tested to see if clearer results can be obtained on these geologies.

Code 2 - Accepted with Comments