



**WRITTEN SCHEME OF
INVESTIGATION for
TRIAL TRENCHING and
BOREHOLE SURVEY**

**LAND at OLDLANDS FARM
BOGNOR REGIS
WEST SUSSEX**

Planning ref: BE/73/14/PL

**Local Planning Authority:
Arun District Council**

**Site centred at:
SU942017**

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FINAL**

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1.0 INTRODUCTION

1.1 Project Background

- 1.1.1 Bericote Properties Limited have made a planning application (Ref: BE/73/14/PL) for the "Erection of 2no. detached industrial/distribution units (B1(c)/B2/B8) including access and servicing arrangements, car parking, landscaping and associated flood compensation area".
- 1.1.2 The site, located at Oldlands Farm, Shripney Road, Bognor Regis, West Sussex, PO22 9NN, is currently arable farmland.
- 1.1.3 Written Schemes of Investigation for geophysical survey and geoarchaeological monitoring of testpits have been submitted to the Archaeological Advisor to Arun District Council and approved. Both of those schemes have been carried out and reports on both have been submitted to the Archaeological Advisor to Arun District Council.
- 1.1.4 The geophysical survey was undertaken within accessible parts of the site (12.8 ha) in June 2104 by ArchaeoPhysica. The survey identified a number of weakly enhanced anomalies (possible ditches) a significant number of which correlate with features identified in previous archaeological work undertaken within areas of the current site by Cotswold Archaeology (see para 1.1.6 below). The geophysical survey blocks undertaken outside of previously evaluated areas were largely within a zone of deeper alluvium and therefore no archaeological features were anticipated – and none were found.
- 1.1.5 Geoarchaeological observation of the excavation of 43 testpits excavated by Hydrock was undertaken by Archaeology South East in June 2014 (report OASIS id: 182317). The report should be consulted for a detailed account of the deposit sequence within the site. In summary the eastern half of the main site (area proposed for warehouses) contains a deep alluvial sequence, with a profile of c. 0.3 m of topsoil directly overlying alluvium. To the west of the line, virtually coincident with the north-south aligned hedgeline within this field, the current ground levels are higher and there is between 0.4 and 0.7 m of topsoil and subsoil overlying brickearth, the highest significant archaeological horizon.
- 1.1.6 In the field to the north of the relief road the division between the dryland deposits and alluvial sequence is less distinct and the ground levels are higher. However no evidence was found for the cultural material that is prolific at the interface between

the subsoil and brickearth in the area known to have been inhabited within the main site.

- 1.1.7 There is a significant amount of information already available for the development area from the trial trenching undertaken by Cotswold Archaeology in 2008, Report 2605. Thirty-eight trenches were excavated, thirteen of which were within, or partially within the current proposed development area (Figure 2). The report should be consulted for a detailed account of the findings. The trenches that are located within the current proposed development area and a summary of the findings are presented below:

Trench	Features	Significance
9	One area of burnt/heated stone. Unexcavated	Unclear – but probably peripheral to settlement
10	Two undated ditches, one undated pit	Unclear – but probably peripheral to settlement
11	One pond with modern fill	Of no archaeological interest
12	One pond with modern fill	Of no archaeological interest
13	No features	No archaeological interest
24	One MBA ditch; one LBA posthole; one LBA/EIA ditch; one EIA ditch, one undated ditch; one undated pit; three undated postholes	Within the possible focus for Bronze Age settlement and possibly also Iron Age activity (identified by CA) – although trenches to the south-west contain the concentration of burnt flint
25	One undated sub-circular pit	Within the possible focus for Bronze Age settlement (identified by CA) – although trenches to the south-west contain the concentration of burnt flint
33	One LBA/EIA pit; one EIA pit; two undated pits and 2 undated linears	Within the possible focus for Bronze Age settlement and possibly also Iron Age activity (identified by CA) – although trenches to the south-west contain the concentration of burnt flint
34	One MBA ditch; five undated pits; two undated postholes	Outside of the identified focus of Bronze Age activity (identified by CA) – but appears to contain similar density of ?settlement related features
35	One LBA/EIA ditch	Likely to be within field system
37	Possible palaeochannel; two	Palaeochannel undated – significance

	possible furrows	would depend on date and any relationship with known archaeology on the site
38	One undated ditch	Unclear – but probably peripheral to settlement

- 1.1.8 The current development area therefore was assessed to contain a possible Bronze Age settlement and also Iron Age settlement related activity – focused on trenches 24, 25 and 33. Outside of those trenches it has potential to contain Bronze Age fieldsystems that may have continued in use into the Iron Age but limited potential for significant activity of all other periods.
- 1.1.9 The geophysical survey results suggest that there may be a small sub-square enclosure in the vicinity of Trench 23. Other than modern land divisions and services little of archaeological significance was identified in the areas surveyed that are outside of the area previously trenched.
- 1.1.10 Trial trenching within the corridor of the Bognor Regis Northern Relief Road, undertaken by Wessex Archaeology for CgMs Consulting in December 2006 (Report Ref: 64260.02) involved excavation of 15 trenches in the zone between the proposed development area and the Flood Compensation Area. Further trenches to the east had to be abandoned due to poor weather and the high water table. The trenches contained no significant archaeology, although localised areas of Bronze Age and Roman activity were identified within the road corridor to the east and south-east. This project also involved a detailed geological and palaeoenvironmental investigation of late Middle-Late Pleistocene sediments (Mark Roberts/Boxgrove Project).
- 1.1.11 The previous application for Outline Planning permission covering areas within the current planning application was supported by an 'Archaeological and Geoarchaeological Summary' prepared by Development Archaeology Services for Hanbury Properties. This established that the main development area was to receive imported material to raise levels between 0.5 m and 1.5 m above existing levels and therefore that a design solution was apparent to mitigate the impact of development. Where no such design solution was available, within the Flood Compensation Area, further evaluation trenching and investigation of Pleistocene deposits would be required.

1.1.12 West Sussex County Council did not object to the previous application for Outline Planning Permission on the site (BE/61/13), subject to implementation of an archaeological mitigation strategy prior to the commencement of development. 'Following permission, it is recommended that provision be made by means of a planning condition for a programme of archaeological investigation and recording, to take place following removal/ clearance of any existing structures or hand standing and before the commencement of construction. This is in order that any below ground heritage assets (archaeological features) may be appropriately sampled, investigated and recorded and the findings incorporated into a written report. In the fullness of time the report will become publicly accessible through the West Sussex Historic Environment Records and the archive deposited in a suitable local museum or repository.'

1.1.13 Permission was granted for a hybrid application (Full planning application for Access and road and Flood compensation area. Outline application for 33116 sq m of mixed commercial and industrial uses, comprising A1, A3, A5, B1, B2 and B8, with associated works and landscaping). Condition 13 stated:

13. An archaeological investigation of the site shall be carried out at the expense of the developer in accordance with a specification (written scheme of investigation) to be submitted to and agreed by the Local Planning Authority in writing before the commencement of building works.

Reason: To ensure appropriate investigation and recording of archaeological heritage assets on the site prior to commencement of new building works.

1.1.14 This Written Scheme of Investigation (WSI) details proposals for trial trenching and borehole survey and is subject to the approval of the Archaeological Advisor to Arun District Council.

1.2 ***Site Location, topography and geology***

1.2.1 The site is located at the northern extent of Bognor Regis and is currently under arable cultivation (Figure 1).

1.2.2 The underlying geology comprises the heavily weathered Cretaceous Chalk of the Culver Formation, overlain by cryoturbated Middle-Late Pleistocene Calcareous Basin Deposits. The drift sediments comprise loessic brickearth and raised marine deposits. The site lies on the interfluvium between the Aldingbourne and Lydney Rife (Figure 3).

- 1.2.3 The levels within the proposed development area fall from c. 3.2 m AOD to the west to 1.2 m AOD close to the north-south hedgeline in the centre of the site and fall again to 1.04 m at the eastern extent of this area. Within the Flood Compensation Area levels fall slightly in the opposite direction, from c. 3.2m AOD to the west to 2.2 m AOD to the east.

2.0 AIMS & OBJECTIVES

2.1 The aims of the fieldwork within the main site are as follows:

- To augment the baseline understanding (built on the CA evaluation; geophysical survey and geoarchaeological monitoring).
- provide information on the extent, date, character, condition, significance and quality of archaeological remains within the development site
- To provide information to inform the design solution
- To carry out a borehole survey to create a model of deposits across the floodplain and to recover up to 3 boreholes for palaeoenvironmental assessment

2.2 The aims of the fieldwork within the Flood Compensation Area are as follows:

- To provide information on the extent, date, character, condition, significance and quality of archaeological remains within the development site
- Assuming that this site does not have the resource found within the CA evaluation (as seems likely based on available information), to determine the local prevailing conditions that influence settlement sites in Prehistory
- provide information on the extent, date, character, condition, significance and quality of archaeological remains within the development site
- To assess the artefactual and environmental potential of any archaeological deposits encountered
- To assess the impact of previous land use on the site
- To inform formulation of a further measures, if required, to mitigate impacts of the proposed development on surviving archaeological remains
- To produce a site archive for deposition with an appropriate museum and to provide information for accession to the West Sussex HER.

2.3 This specification has been designed in accordance with current best archaeological practice and the appropriate national standards and guidelines including:

- *Code of Conduct* (Institute of Field Archaeologists, 2000);
- *Standard and Guidance for Archaeological Field Evaluations* (Institute for Archaeologists IfA, 2008);
- *National Planning Policy Framework* (Para 128, DCLG 2012)

3.0 METHODOLOGY

3.1 Archaeological Trial Trenches

- 3.1.1 It is proposed to excavate 11 archaeological trial trenches (each 50 m by 2 m) in the locations indicated on Figure 2. The precise locations of the trenches may be altered to take into account local ground conditions.
- 3.1.2 A ramp will be left at each end of every trench to allow access and egress of anything that might enter the trench.
- 3.1.3 Each trench will be located using dGPS. Trench locations will be scanned with a Cable Avoidance Tool (CAT) prior to excavation.
- 3.1.4 Topsoil and overburden will be removed by mechanical excavator using a toothless ditching bucket (c.2m wide), under continuous archaeological supervision. The spoil generated during the trial trenching will be mounded away from the edges of each trench. Mechanical excavation will cease at either undisturbed natural deposits or the top of archaeological deposits. The nature of these deposits will be assessed by hand excavation. Upcast and spoil from mechanical excavation will be scanned by eye and by metal detector to aid the recovery of topsoil artefacts. A log will be kept of use of the metal-detector and of any findings.
- 3.1.5 Each trench will be cleaned by hand as necessary to assist the identification and interpretation of exposed archaeological features and the nature of identified features assessed by sample excavation sufficient to determine date, nature, extent and condition and their environmental and scientific potential. All exposed features will be investigated (unless otherwise agreed with the Archaeological Advisor to Arun District Council). Discrete features (e.g. infilled pits) will be half- or quarter-sectioned; as a minimum (where possible) a 1m wide section of each linear feature will be excavated by hand.
- 3.1.6 Should the excavation of the trenches reach 1.2m in depth (or limit of safe working depth) without natural geology being encountered, a machine dug sondage will be excavated in order to establish the depth of natural geology.
- 3.1.7 All excavation by machine and hand will be undertaken with a view to avoid damaging archaeological deposits or features which appear worth of preservation in situ or more detailed investigation than for the purposes of evaluation. Where structures, features or finds appear to merit preservation in situ, they must be

adequately protected from deterioration. Should any unexpected discoveries of significant or complex remains be revealed the Archaeological Advisor to Arun District Council will be notified at the earliest opportunity.

- 3.1.8 The trenches will be recorded at a suitable appropriate scale (1:100, 1:50 or 1:20) by measured drawing and photography and will be located to Ordnance Survey National Grid. The deposits encountered described fully on individual context recording sheets. The sections of excavated archaeological features will also be recorded by measured drawing at an appropriate scale (normally 1:10). Spot heights and those of individual features will be recorded relative to Ordnance Datum.
- 3.1.9 A photographic record, utilising black and white negative film, supplemented by high resolution digital data capture, will be maintained during the course of the fieldwork and will include:
- the site prior to commencement of fieldwork;
 - the site during work, showing specific stages of fieldwork;
 - the layout of archaeological features within each trench;
 - individual features and, where appropriate, their sections;
 - groups of features where their relationship is important.
- 3.1.10 All artefacts will be treated in accordance with UKIC guidelines, *First Aid for Finds* (1998). All finds will be bagged and labelled according to the individual deposit from which they were recovered, ready for later cleaning and analysis.
- 3.1.11 If finds are made that might constitute 'Treasure' under the definition of the Treasure Act (1996), these will if possible be archaeologically excavated and removed to a safe place. Such finds will also be reported immediately to the local Coroner (within 14 days, in accordance with the Act). Should it not be possible to remove the finds that day suitable security will be arranged.
- 3.1.12 The environmental sampling strategy will include the routine sampling of deposits for the retrieval and assessment of the preservation conditions and potential for analysis of all biological remains, and will be developed in consultation with an environmental specialist and the Archaeological Advisor to Arun District Council. The resulting site-specific environmental sampling strategy will be documented and reviewed as the project progresses. The environmental specialist will conduct or commission, as appropriate, programmes of scientific investigation in conjunction with the fieldwork, the results of which will be presented in the final publication or report. They will also ensure that, where time allows, the strategy evolves on site by seeking to ensure

that bulk samples taken in the initial stages of the project are processed quickly and the results fed back to inform the excavation strategy. All environmental work will be undertaken in accordance with current English Heritage guidelines (see *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation*, Centre for Archaeology Guidelines 2011). Sample sizes will normally be 40-60 litres unless the deposit is smaller in volume. Samples will be directed to a representative range of context type from each phase, and examine:

- Survival of material
- Key archaeological contexts
- Potential

3.1.13 A suitable specialist will, if necessary, make a site visit to advise on deposits suitable for environmental sampling and/or geoarchaeological assessment.

3.1.14 Charred plant samples will be wet sieved with flotation using a 0.5mm mesh. All residues will be checked.

3.1.15 Should waterlogged deposits be encountered they will be left *in situ* until such time as further mitigation works are required. If this is not possible then further consultation with a suitable specialist will determine methods for recovery.

3.1.16 Samples will be taken for scientific dating (principally radiocarbon dating), where dating by artefacts is insecure and where dating is necessary for development of the subsequent mitigation strategy. Where *in situ* timbers are found to survive in good condition, samples will be taken for dendrochronological determination following procedures presented in the English Heritage document *Dendrochronology: guidelines on producing and interpreting dendrochronological dates*.

3.1.17 Where there is evidence for industrial activity, macroscopic technological residues (or a sample of them) should be collected by hand. Separate samples (c. 10ml) should be collected for micro-slugs (hammer-scale and spherical droplets). Excavation and sampling of such deposits will be in accordance with the Centre for Archaeology Guideline on *Archaeometallurgy* (English Heritage 2001).

3.1.18 Any human remains encountered will be cleaned with minimal disturbance, recorded and left *in situ* and only removed if necessary. The contractor will comply with all statutory consents and licences under the Disused Burial Grounds (Amendment) Act, 1981 or other Burial Acts regarding the exhumation and interment of human

remains. The archaeological contractor will comply with all reasonable requests of interested parties as to the method of removal, re-interment or disposal of the remains or associated items. Every effort will be made, at all times, not to cause offence to any interested parties. The Archaeological Advisor to Arun District Council and the local coroner will be informed immediately if human remains are discovered.

3.1.19 The findings of the trial trenching will be reviewed with the Archaeological Advisor to Arun District Council during a meeting on site.

3.1.20 Upon completion of the trial trenching, excavated trenches will be backfilled with arisings and loosely compacted. Trenches will not be backfilled without prior agreement with the Archaeological Advisor to Arun District Council.

3.2 ***Post-excavation***

3.2.1 Post excavation work will comprise the following:

- checking of drawn and written records during and on completion of fieldwork;
- production of a stratigraphic matrix of the archaeological deposits and features present on the site, if appropriate;
- cataloguing of photographic material and labeling of slides that will be mounted on appropriate hangers;
- cleaning, marking, bagging and labelling of finds according to the individual deposits from which they were recovered. Any finds requiring specialist treatment and conservation will be sent for appropriate treatment. Finds will be identified and dated by appropriate specialists;

3.2.2 Within three days of completion of the fieldwork a very short summary report of the findings c. 300 words will be provided to the Archaeological Advisor to Arun District Council by e-mail.

3.2.3 Unless otherwise agreed with the Archaeological Advisor to Arun District Council, a report detailing the findings of the archaeological trial works will be prepared within four weeks of the completion of site works (dependant on receiving specialist reports) and will consist of:

- a title page detailing site address, site code and accession number, NGR, author/originating body, client's name and address;
- full contents listing;
- a non-technical summary of the findings of the evaluation;
- a description of the topography and geology of the evaluation area;
- a description of the methodologies used during the evaluation;

- a description of the findings of the evaluation;
- site and trench location plans and plans of each of the trenches/areas showing the archaeological features exposed;
- sections of the excavated archaeological features;
- interpretation of the archaeological features exposed and their context within the surrounding landscape;
- specialist reports on the artefactual / ecofactual remains from the site;
- appropriate photographs of specific archaeological features;
- a predictive model of surviving archaeological remains, where affected by development proposals and their relative importance
- a full context list
- the OASIS reference and summary form

3.2.4 In carrying out post-excavation work and analysis of ceramics from the Site, the Contractor will liaise with the Research Officer of the Sussex Archaeological Society (currently Mr Luke Barber, Research Officer, Sussex Archaeological Society, Barbican House, 169 High Street, Lewes, East Sussex BN7 1YE; tel. 01273 405736/ 01273 486260) with a view to ensuring a concordance between fabric type descriptions of ceramics from this site and those employed on other recently excavated sites in the area and those commonly employed elsewhere in Sussex. The reason for such liaison is to ensure against a proliferation of different systems of ceramic fabric type descriptions and nomenclature in the area of the relevant site. NB. Example sherds of each identified ceramic fabric type, with context information, to be sent by post to the Research Officer (address above) for comment and return.

3.2.5 The format and contents of the report will conform to West Sussex County Council requirements and to published regional Standards.

3.2.6 A draft copy of the report will be supplied to the Archaeological Advisor to Arun District Council for comment. Following approval of the draft report, one copy of the approved report will be provided to the LPA; one hard copy and one digital copy will be supplied to the HER.

3.2.7 A copy of the approved report will be uploaded to the OASIS database.

3.2.8 The project archive will be prepared according to the recommendations in *Guidelines for the Preparation of Excavation Archives for long-term storage* (UKIC 1990), and *Standards in the Museum Care of Archaeological Collections* (Museums and Galleries Commission 1992).

- 3.2.9 The project archive will be deposited with an appropriate museum in accordance with the terms and conditions which are to be agreed with the Service in advance of deposition.
- 3.2.10 Notes or articles describing the results of the archaeological fieldwork will be submitted for publication to an appropriate journal, dependant on the nature of the results. A summary of the findings of the project will be sent to the local journal.
- 3.2.11 Details of the project and a digital copy of the final report will be submitted to the Archaeology Data Service (ADS) through OASIS (**O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S**).

3.3 Method Statement for Borehole Survey

- 3.3.1 The deposits located along the current course of Lidsey Rife have been broadly characterised during the geotechnical test pit monitoring. This demonstrated that the alluvial deposits may exceed 2.70m bgl. The lack of cohesion in the lower sediments lead to the trial holes collapsing beyond this depth and therefore the full extent of deposits is unknown.
- 3.3.2 It is therefore proposed that three transects of boreholes are drilled perpendicular to the rife (Figure 3). The transects will be approximately 100m long and boreholes will be placed at 20m intervals with provision to change this on site based on the sediment encountered should it be required.
- 3.3.3 The aim of this survey is to create a model of deposits across the floodplain and to recover up to three boreholes for palaeoenvironmental assessment of the Holocene deposits than infill the valley. This assessment will focus on the microfossil assemblage (Ostracods, forams, pollen, diatoms) and should suitable material be recovered, radiocarbon dating.
- 3.3.4 The material recovered from the underlying cryoturbated chalk deposits during the watching brief will also be included in this assessment to try and better understand the possible Pleistocene sequence at the site.

Borehole survey

- 3 days terrier rig with operator and geoarchaeologist (15 boreholes, recover 3)

- Palaeoenvironmental assessment on 3m of sediment for pollen, ostracods and forams, diatoms and possible radiocarbon dating on top and bottom of accumulation
- Up to three samples from the chalk deposits recovered during the watching brief for microfossils
- Assessment report summarising results of borehole lithology with deposit model (either as sections or as 3D surface), integrated palaeoenvironmental assessment with recommendations for further work
- the ostracod/forams will be to full analysis

4.0 TIMETABLE & PERSONNEL

- 4.1 The archaeological works will be undertaken on behalf of the developer by a professional archaeological team from Archaeology South East. CgMs Consulting will oversee implementation of the project on behalf of the developer, Bericote Properties Ltd. Both CgMs Consulting and Archaeology South East are Registered Organisations with the Institute for Archaeologists.
- 4.2 Simon Mortimer of CgMs Consulting will be in overall charge of the archaeological project. Work on site will be led by one of Archaeology South East's team of Project Supervisors, assisted by a team of assistants drawn from their permanent and temporary staff. Actual staff resources will be managed to ensure successful implementation of the programme of works. CVs of key personnel and specialists will be provided to the Archaeological Advisor to Arun District Council on request.
- 4.3 Excavation and recording of trial trenches is anticipated to involve a maximum of 2 weeks work on site. It is intended that trial trenching will take place in July 2014.

5.0 MONITORING

- 5.1 The aims of monitoring are to ensure that the archaeological works are undertaken within the limits set by this specification, and to the satisfaction of the Archaeological Advisor to Arun District Council on behalf of the Local Planning Authority.
- 5.2 Simon Mortimer MIfA, Director for CgMs will monitor implementation of the programme of works on behalf of the developer.
- 5.3 The Archaeological Advisor to Arun District Council will be given notice of when work is due to commence and will be free to visit the site by prior arrangement with CgMs. The Archaeological Advisor to Arun District Council will monitor implementation of the programme of works on behalf of the Local Planning Authority and evaluate the work being undertaken on site against the methodology detailed in this specification.
- 5.4 The Archaeological Advisor to Arun District Council will also be responsible for considering any changes to the specification of works; any such alterations will be agreed in writing with the relevant parties prior to commencement of on site works, or at the earliest available opportunity.

6.0 INSURANCE

- 6.1 The archaeological contractor will hold Public Liability Insurance to the minimum value of £5m and Professional Indemnity Insurance to the minimum of £5m and Profession.

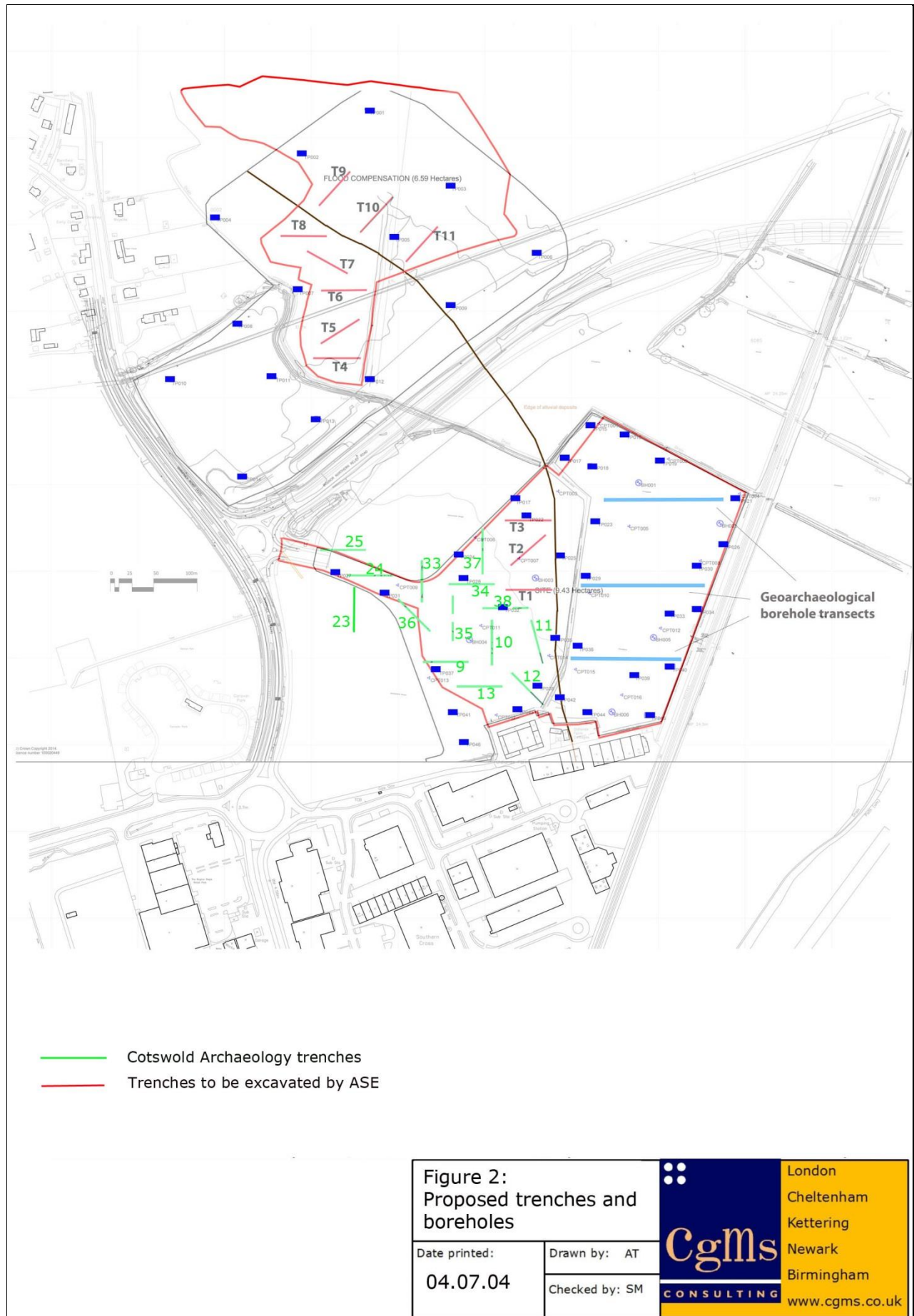
7.0 HEALTH and SAFETY

- 7.1 All works will be in compliance with the Health and Safety at Work Act (1974) and all applicable regulations and Codes of Practice and the Construction Design Management Regulations 2007. All archaeological staff will undertake their operations in accordance with safe working practices.
- 7.2 A site specific risk assessment and safety plan will be prepared before the start of the project and will be updated through the project as required.
- 7.4 If significant new hazards are identified a specific risk assessment will be undertaken and recorded. Control measures will be implemented as required in response to specific hazards.
- 7.5 Safe working will take priority over the desire to record archaeological features or remains, and where it is considered that recording is dangerous, any such features or remains will be recorded by photography, at a safe distance.

FIGURES

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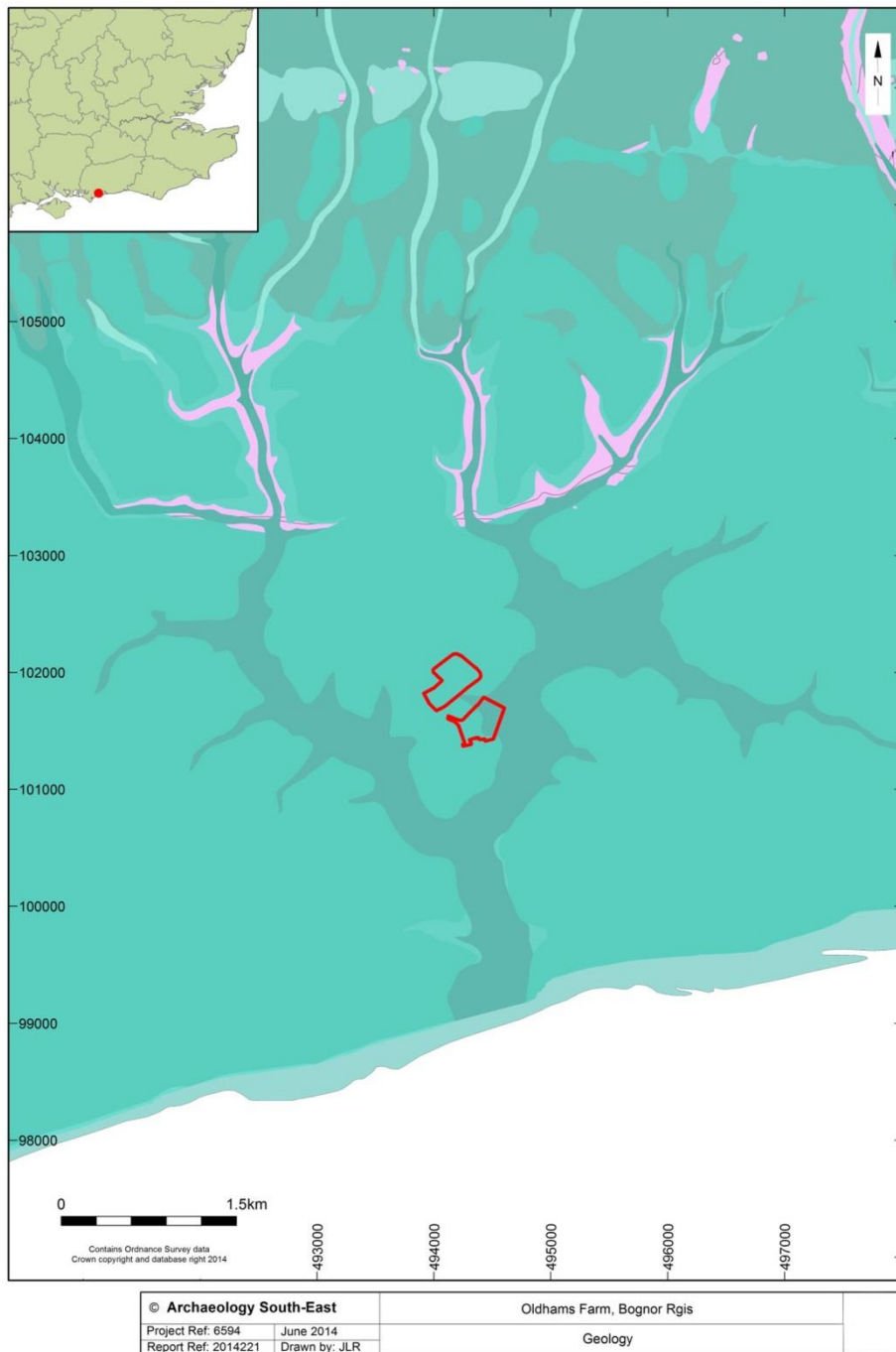


Figure 3: Site location
relative to rife
Prepared by ASE

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