Wessex Archaeology

Britned Interconnector

Archaeological Assessment

Ground Investigations
Archaeological Watching Brief

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BRITNED INTERCONNECTOR

GROUND INVESTIGATION
ARCHAEOLOGICAL WATCHING BRIEF

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Summary

Wessex Archaeology was commissioned by The Environment Partnership, on behalf of BritNed Developments Limited to carry out an archaeological watching brief on ground works associated with geotechnical investigations of the BritNed Interconnector UK landfall site on the Isle of Grain, Kent.

The watching brief was undertaken in November 2006. No pre-Modern archaeological features or finds were observed. However, peat or peat-like deposits with archaeological potential were observed in both shallow test pits and bore holes and recommendations have been made for the further investigation of a single U4/100 sample from c.28 metres below ground level and for the controlled sampling of shallow deposits during any future ground works.

BRITNED INTERCONNECTOR

GROUND INVESTIGATION
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Wessex Archaeology is also grateful to:

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- Scott McHugh of Fugro
- Noel and Roy of J. Bryne Plant Hire and Civil Engineering Ltd
- Alan Bull of RPS

The project was managed for Wessex Archaeology by John Gribble. The fieldwork was carried out by Graham Scott, who also compiled the report. John Gribble edited the report and Steve Webster provided quality assurance. The illustrations were prepared by Karen Nichols.

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1. BACKGROUND

1.1. INTRODUCTION

1.1.1. Wessex Archaeology (WA) was commissioned by The Environment Partnership (TEP), on behalf of BritNed Developments Limited (hereafter 'the Client'), to undertake an archaeological watching brief to monitor geotechnical investigations in advance of the construction of the proposed BritNed Interconnector on the Isle of Grain, Kent.

1.1.2. The proposed BritNed Interconnector scheme (hereafter 'the Scheme') will comprise a high voltage submarine electricity cable link designed to transmit electrical power in both directions across the North Sea between the transmission grids of TenneT in the Netherlands and National Grid Transco (NGT) in the United Kingdom. The cable landfall will be on the Isle of Grain, Kent, and will require new infrastructure consisting of a substation and associated High Voltage DC (HVDC) and AC (HVAC) electricity land cables, a converter station and an access road. The land cables will be connected to the marine cables in a 'transition jointing pit' buried in the ground above high water mark. The proposed footprint of the Scheme on the Isle of Grain (hereafter 'the Site') is shown in **Figure 1**.

1.1.3. Prior to the commencement of the watching brief an Archaeological Assessment was conducted by Wessex Archaeology. This comprised a desk-based assessment combined with a limited walkover survey. The archaeological potential of the Site and the likely impact of the Scheme upon it were assessed and appropriate mitigation was identified. An archaeological watching brief of ground works associated with the scheme was recommended (WA 2004).

1.1.4. A program of geotechnical investigations was subsequently undertaken on the Site by Parsons Brinckerhoff (PB) on behalf of the Client from 6 November to 1 December 2006. These investigations comprised test pits, cable percussion boreholes and cone penetrometer tests. WA undertook an archaeological watching brief during these investigations from 7 November to 1 December.

1.1.5. A Written Scheme of Investigation for the watching brief was prepared by WA and approved by Kent County Council in advance (WA 2006b).

1.1.6. This document presents the results of the archaeological watching brief.

1.2. SITE LOCATION, DESCRIPTION AND GEOLOGY

1.2.1. The Site is situated at the eastern extremity of the Isle of Grain, south of the village of Grain (**Figure 1**). Much of the Site was previously part of a refinery complex, which was demolished and levelled in the 1980s.

1.2.2. The Site comprises low lying coastal ground that is currently protected from tidal inundation by a substantial sea wall. The ground rises very slightly to the north towards the village of Grain.

1.2.3. The base geology of the Isle of Grain comprises London Clay formation overlain by alluvium deposits of silt and clay with lenses and beds of peat and seams of sand and gravel. Borehole data examined by Metoc prior to the commencement of the geotechnical investigations suggested that the depth of alluvium on the Site could vary widely, from as little as 0.5 metres below ground level to 30 metres below ground level (mgbl).

1.3. GEOTECHNICAL METHODOLOGY

1.3.1. For the purposes of the geotechnical investigations, the Site was divided into the following areas (**Figure 1**):

- Access Road (Former Refinery Area)
- House Fleet
- Access Road (Converter Station Approach)
- Converter Station Footprint
- Vole Mitigation Measures
- AC & DC Cable Route (to/from Grain Power Station)
- AC & DC Cable Route (between HDD Entry Point and Converter Station Footprint)
- Cable Route Close To HDD Entry Point

1.3.2. A total of 99 test pits (TP) were excavated by Parsons Brinckerhoff (PB) (**Figure 2**). Test pit size varied depending upon whether obstructions were encountered, but averaged 2.5 metres long by 0.7 metres wide (the width of the machine bucket). Target depth was 3.0 metres, with actual depth of fully excavated pits varying from 2.9-3.6 metres. To reduce the risk of damaging live services the first 1.2 metres of depth were excavated by a combination of hand digging and machine (JCB 3CX, normally with a toothless bucket), with the remaining depth being machine dug. Flooding, side wall instability and the occasional presence of hazardous materials such as asbestos lagging meant that some pits were not excavated to full depth. Soil horizons encountered were logged and samples were taken to test for the presence of contaminants.

1.3.3. A total of 34 cable percussion boreholes (BH) were drilled by the drilling contractor Fugro Engineering Services to a maximum depth of 30mbgl (**Figure 2**). As with the test pitting, the first approximately 1.2 metres were hand dug. Both disturbed and U4/100 samples were taken of logged horizons.

1.3.4. A total of 19 cone penetrometer tests (CPT) were also carried out by Fugro (**Figure 2**). The first 1.2 metres was again hand dug to reduce the risk of encountering services.

1.3.5. The positions shown in **Figure 2** have been supplied by PB. Height above ordnance datum is estimated by PB to be of low accuracy and resurvey data for all locations is awaited as of the date of this report.

1.4. ARCHAEOLOGICAL METHODOLOGY

1.4.1. All work undertaken was carried out in accordance with the standards set out in the agreed WSI (WA 2006) in conjunction with the guidance and standards outlined in the Institute of Field Archaeologists' *Standards and Guidance for Archaeological Watching Briefs* (IFA, 2001).

1.4.2. An archaeological watching brief was undertaken throughout the period of the geotechnical investigations with the exception of 6 November, when ground breaking did not occur.

1.4.3. The excavation of all test pits was observed. The ground was inspected for archaeological features or deposits during excavation. Digital photographs were taken of the excavated pits, excavated material and the general context of the Site. Excavated material from the test pits was visually inspected for finds before backfilling. A metal detector was used selectively.

1.4.4. Small samples from peat or other organic horizons were selectively taken from the excavated material.

1.4.5. It was not considered necessary to directly observe the drilling of the core percussion boreholes. Instead WA inspected the drillers' logs and liased with the Fugro engineer on site to ensure that material of potential archaeological significance in the drill samples was reported to WA.

1.4.6. Cone penetrometer testing was not observed.

1.4.7. Recording was carried out using the hardcopy WA *pro forma* recording system, supported by a digital photographic archive.

2. ARCHAEOLOGICAL BACKGROUND

2.1. GENERAL

2.1.1. As part of the Archaeological Assessment, a baseline review of the known and potential archaeology was carried out for each prehistoric and historical period from the Palaeolithic to modern times, in a Study Area that included a 2km buffer zone around the maximum extent of the Site. The baseline review identified a total of 461 terrestrial sites and 350 maritime related records within the Study Area, including the coastal defences of the Isle of Grain Scheduled Monument (WA 2004). Sites and records identified were assigned unique WA four figure identifiers with the prefix WA, for example **WA 1152** (Grain Fort).

2.1.2. Following the baseline review a walkover survey of the Site was undertaken, along with a more general survey to locate known archaeological sites and to identify new sites in the vicinity. This walkover survey located 24 known sites and identified 27 new sites (WA 2004).

2.2. POTENTIAL

2.2.1. On the basis of information drawn from the Archaeological Assessment, the walkover survey and the constructional details of the scheme available to WA, the archaeological potential of the areas to be impacted by the scheme, and the likely impacts of the scheme components upon archaeological remains were summarised as follows (WA 2004).

General

2.2.2. There is high potential within the development area for the discovery of environmental data. This includes evidence relating to local fluctuations in sea-level and potential for prehistoric land surfaces found in the peat horizons that occur within the deep deposits of alluvium which cover much of the Isle of Grain.

2.2.3. There is also high potential for preserved remains in the soft deposits of the inter-tidal mudflats.

2.2.4. Outside the NGT subsidiaries, Grain LNG and Second Site Properties landholding, where there has been less ground disturbance, and where geophysical survey (Pelorus 2004) has indicated much shallower depths of alluvium, excavations are more likely to impact and modern deposits.

Access Road

2.2.5. **WA 1389**, a modern military installation is the only known site recorded upon the line of the access road (**Figure 1**). Ground works for the access road are likely to have a marked adverse effect on these remains, which lie directly on the proposed line of development.

2.2.6. The construction of the access road will have a negligible effect on archaeological material of Palaeolithic, Mesolithic, Neolithic or Bronze Age date as potential buried land surfaces or primary deposits of prehistoric date are generally likely to be found deep within the alluvium and below the level of the proposed impact.

2.2.7. For similar reasons the construction of the access road will have a limited effect upon archaeological material of Iron Age or Roman date, and early medieval, medieval or date.

Converter Station and Rerouted Drainage Channel

2.2.8. **WA 1045**, a series of regular features identified as possible building remains is the only known site on the site of the converter station (**Figure 1**). These possible buildings are most likely associated with modern industrial or military activity on the site. Ground works for the converter station are likely to have a marked adverse effect on the remains.

2.2.9. The construction of the converter station will have a negligible effect on archaeological material of Palaeolithic, Mesolithic, Neolithic or Bronze Age date as potential buried land surfaces or primary deposits of prehistoric date are generally likely to be found deep within the alluvium and below the level of the proposed impact.

2.2.10. Depending on their depth, it is possible, however, that excavations for the converter station foundations may impact archaeological material of Iron Age or Roman date, and early medieval, medieval or date.

2.2.11. The re-routing of the drainage channel will have a limited effect upon archaeological material of Iron Age or Roman date, and early medieval, medieval or date, if such deposits are proven to exist.

Land Cable Routes

2.2.12. The HVAC and HVDC cable routes will have a negligible effect on archaeological material of Palaeolithic, Mesolithic, Neolithic or Bronze Age date as potential buried land surfaces or primary deposits of prehistoric date are generally likely to be found deep within the alluvium and below the level of the proposed impact.

2.2.13. However, towards the north of the proposed development area, where investigations have indicated shallower depths of alluvium, the possible impact of the scheme upon prehistoric archaeology increases and there is a possibility that excavations for the HVDC cables will impact sites and finds within these parts of the proposed development area. The effect of development on such deposits and any archaeological remains or evidence within them would be large and adverse, should they be proven to exist.

2.2.14. The ground works relating to the HVAC and HVDC cables will be no more than 1 metre deep, and will therefore have a limited effect upon archaeological material of Iron Age or Roman date, and early medieval, medieval or date. It is possible, however, that in areas where the depth of alluvium is comparatively shallow, and where there has been less ground disturbance, excavations for the cable routes may impact early medieval, medieval or remains, particularly relating to maritime structures.

2.2.15. The present HVDC land cable route will directly impact the Scheduled Monument. The northern arm of the land cable crosses the line of the covered way (**WA 1404**)/military road (**WA 1282**) which formerly linked Grain Fort (**WA 1152**) to Dummy Battery (**WA 1285**), all parts of the designated area for the Grain coastal defences Scheduled Monument (**Figure 1**). The proposed route of the HVDC cables overlain on the OS map of Grain indicates that excavation will also cross earthworks associated with Wing Battery (**WA 1153**).

2.2.16. Ground works for the HVAC and HVDC cables are also likely to impact modern industrial deposits.

Transition Pit, and Bore Entrance Area

2.2.17. Located as they are in the north of the proposed development area where investigations have indicated shallower depths of alluvium, the likelihood that the transition pit and bore entrance area will impact archaeological sites and material increases.

2.2.18. The deeper excavations for the transition pit and bore entrance area may impact prehistoric, Iron Age or Roman remains, and remains of early medieval, medieval or date.

2.2.19. Excavations in the inter-tidal area and for the transition pit and bore entrance area will have a large adverse effect on any or medieval remains that may lie buried within the alluvium.

3. RESULTS

3.1. ACCESS ROAD (FORMER REFINERY AREA)

3.1.1. A total of 21 test pits were excavated (**Figure 2**). All but one exposed modern made ground, often with significant quantities of demolition debris. Depth of made ground varied between 0.6mbgl and the full depth of the pit. Numerous tank bases are visible in this part of the Site and the made ground probably results from the construction, use and demolition of the refinery facilities. No evidence of **WA 1389** (modern military installation) was observed and it is possible that structures associated with it were removed to make way for refinery facilities. No evidence of pre-Modern features or finds was observed.

3.1.2. Below the made ground, apparently undisturbed horizons of predominantly clays and silts were observed, with some sand and gravel. Shelly material was frequently noted in these horizons. Shelly material was also noted in made ground horizons, suggesting some reworking of natural horizons. Abundant peat-like organic material was noted from 1.1-1.6mbgl in TP 212 and in made ground from 0.9-1.2mbgl in TP 213. Small disturbed samples of this organic material were recovered.

3.1.3. A total of eight cable percussion boreholes were drilled (**Figure 2**). Final depth varied between 7.0 and 10.0mbgl. The borehole results broadly confirmed the results of the test pitting, although organic material was found at 1.5 and 6.9mbgl in BH 107 and not in BH 105 as might have been expected from the test pit results. Below the depth of the test pits, horizons of sands, gravels, clays and silts were observed. No evidence of pre-Modern features or finds was observed or recovered in core samples.

3.1.4. WA understands that four cone penetrometer tests were undertaken (**Figure 2**). No archaeologically significant data appears to have been acquired.

3.2. HOUSE FLEET

3.2.1. A total of nine test pits were excavated (**Figure 2**). Six of these exposed made ground to a depth varying between 1.1 and 2.8mbgl. Two contained definite Modern demolition debris, probably from buildings or structures associated with the former refinery. Shelly material was found in the made ground of two test pits, suggesting some reworking of natural horizons. No evidence of pre-Modern features or finds was observed.

3.2.2. Below the made ground, undisturbed horizons of predominantly clays and silts, with sand and gravel were observed. Shelly material was found in the natural horizons of only two test pits. Abundant organic material was noted in TP 227 from 1.7-2.8mbgl and below 1.75mbgl in TP 228. In addition, a small disturbed sample of peat-like material was recovered from between 1.6 and 1.7mbgl in TP 233.

3.2.3. A total of four cable percussion boreholes were drilled (**Figure 2**). Final depth varied between 20.0 and 25.0mbgl. The borehole results broadly confirmed the results of

the test pitting, although no organic horizons were observed. Below the depth of the test pits, horizons of predominantly clays and silts, with sand and gravel were observed. No evidence of pre-Modern features or finds was observed or recovered in core samples.

3.2.4. WA understands that two cone penetrometer tests were undertaken (**Figure 2**). No archaeologically significant data appears to have been acquired. During the hand excavation phase of CPT 420 (**Figure 2**), worked timber and apparently associated wire cable was located at three aborted locations within an approximate 1-2 metre radius at 0.88mbgl. Although the pits were mistakenly backfilled before WA could arrange attendance, it appears from photographs taken by PB that the timbers were of probably Modern in origin. The timbers were not relocated when the location was subsequently re-excavated. This was probably because the exact location of the pits could not be precisely determined due to subsequent vehicular traffic.

3.3. ACCESS ROAD (CONVERTER STATION APPROACH)

3.3.1. A total of 16 test pits were excavated (**Figure 2**). Thirteen of these exposed definite made ground to a depth varying between 0.4 and the full depth of the TP (3.0mbgl). Two other test pits contained possible made ground. Modern demolition debris was encountered within the made ground, again probably from buildings or structures associated with the former refinery or perhaps with power lines associated with Grain Power Station. In addition evidence of service ducting and possible land drains were encountered. No evidence of pre-Modern features or finds was observed.

3.3.2. Below the made ground, undisturbed horizons predominantly of clays and silts with sand and gravel were observed. Frequent organic material and odour was noted in several test pits in varying horizons, some above Modern made ground. The latter could be the result of root penetration and/or the reworking of natural horizons, probably associated with Modern ground works. Shelly material was noted in nine test pits and occurred in a variety of horizons, including made ground.

3.3.3. Peat-like material, again in places above Modern made ground, was observed in TP 237, 239, 240, 242, 243, 245, 246 and 248 at varying depths from 0.8-2.1mbgl. These were generally small lenses or discontinuous horizons and may be the result of reworking. Small disturbed samples were taken from TP 237 (1.1-1.75mbgl) and TP 239 (1.2-1.3mbgl). Small disturbed samples were also taken from what appeared to be more continuous horizons in TP 242 (narrow horizon occurring between 0.85 and 1.7mbgl), TP 243 (2.05-2.1mbgl), TP 245 (1.5-1.6mbgl) and TP 246 (1.6-1.7mbgl).

3.3.4. A total of seven cable percussion boreholes were drilled (**Figure 2**). Final depth varied between 11.0 and 16.0mbgl. The borehole results broadly confirmed the results of the test pitting, although no peat-like material and little organic organic material was observed. Below the depth of the test pits, horizons of predominantly clays and silts were observed, together with sand and gravel. No evidence of pre-Modern features or finds was observed or recovered in core samples.

3.3.5. WA understands that three cone penetrometer tests were undertaken (**Figure 2**). No archaeologically significant data appears to have been acquired.

3.4. CONVERTER STATION FOOTPRINT

3.4.1. A total of ten test pits were excavated (**Figure 2**). All exposed definite made ground to a depth varying from 0.55-2.8mbgl. Modern demolition debris was encountered within the made ground, possibly from buildings or structures associated with the former refinery. No evidence of pre-Modern features or finds was observed. No evidence of *in situ* building remains was observed in respect of **WA 1045** (series of rectangular features).

3.4.2. Below the made ground, undisturbed horizons of clays and silts were observed, with sand and gravel. Organic material was found in only two test pits and no peat was seen. Occasional shelly material was noted in the natural horizons of three test pits.

3.4.3. A total of five cable percussion boreholes were drilled to a maximum depth of 30.0mbgl (**Figure 2**). The borehole results broadly confirmed the results of the test pitting. Below the depth of the test pits, horizons of clays and silts were observed, with sand and gravel. Occasional references are made in the drill logs to shelly material. No evidence of pre-Modern features or finds was observed or recovered in core samples.

3.4.4. In BH 120, a thin horizon of peat was found at approximately 28mbgl below and above horizons of alluvial clay, which were in turn above a gravel horizon at 29.5mbgl. Disturbed peat from the core was sampled. A presumably compacted but otherwise undisturbed sample of this peat horizon is believed to exist in the relevant U4/100 sample taken by Fugro.

3.4.5. WA understands that three cone penetrometer tests were undertaken (**Figure 2**). No archaeologically significant data appears to have been acquired.

3.5. VOLE MITIGATION MEASURES

3.5.1. A total of 18 test pits were excavated (**Figure 2**). Definite made ground was encountered in seventeen to a depth varying from 0.9-1.7mbgl, with one to 2.7mbgl. Modern demolition debris was encountered within the made ground, possibly from buildings or structures associated with the former refinery or perhaps with the construction of nearby powerlines. No evidence of pre-Modern features or finds was observed.

3.5.2. Below made ground, undisturbed horizons of clays and silts were observed, with sands and gravels. Organic material was found in 11 test pits, with some evidence of very small isolated peat lenses. A single small disturbed sample of organic material was taken from TP 256 between 0.9-1.7mbgl. Shelly material was noted in the natural horizons of most of the test pits and was also observed in the made ground of several.

3.5.3. There were no boreholes or CPTs in this area of the site. Therefore ground investigations did not reach a depth greater than 3.3mbgl.

3.6. AC & DC CABLE ROUTE (GRAIN POWER STATION)

3.6.1. A total of six test pits were excavated (**Figure 2**), four within the Grain Power station and two to the east of the seawall running along the power station boundary (**Figure**

2). Made ground was encountered in five of them to a depth varying from 0.9-1.9mbgl (the latter TP being abandoned at that depth). Modern demolition debris was encountered within the made ground, possibly from buildings or structures associated with the power station or perhaps with the construction of the sea wall. No evidence of pre-Modern features or finds was observed.

3.6.2. Otherwise undisturbed horizons of clays and silts were observed, with sands and gravels. Small isolated peat-like lenses were observed in TP 281 and TP 283 between 1.0-1.4mbgl and 1.4-1.6mbgl respectively. A small disturbed sample was taken from TP 281. Shelly material was noted in the natural horizons of TP 278 and TP 281.

3.6.3. A total of three cable percussion boreholes were drilled to a maximum depth of 10.0mbgl (**Figure 2**). The borehole results broadly confirmed the results of the test pitting. Below the depth of the test pits, horizons of clays and silts were observed with sand and gravel. In BH 126 a black peaty band was observed at 1.2mbgl. No evidence of pre-Modern features or finds was observed or recovered in core samples.

3.6.4. WA understands that two cone penetrometer tests were undertaken (**Figure 2**). No archaeologically significant data appears to have been acquired.

3.7. AC & DC Cable Route

3.7.1. A total of 19 test pits were excavated (**Figure 2**), including 11 along Port Victoria Road and one within an informal car park at its northern end (**Figure 2**). Definite made ground was encountered in all but two of them to a depth varying from 0.2mbgl to the full depth of the test pit. Modern demolition debris was encountered within the made ground close to the Converter Station Footprint area, whereas the made ground along Port Victoria Road consisted of the tarmac road surface and the layers of hard standing associated with it. The latter produced various ceramic sherds typical of the late 19th and early 20th centuries. No evidence of pre-Modern features or finds was observed.

3.7.2. Below made ground, undisturbed natural horizons were otherwise observed. As with other Site areas, sands and gravels occurred but clays and silts were very much predominant. Shelly material was frequently encountered and small peaty lenses were observed in TP 295 at 0.65-0.8mbgl.

3.7.3. A total of six cable percussion boreholes were drilled to a maximum depth of 10.0mbgl (**Figure 2**). The borehole results broadly confirmed the results of the test pitting. Below the depth of the test pits, horizons of predominantly clays and silts were observed, with sand and gravel. In BH 131 peaty clay was observed below 6.7mbgl. No evidence of pre-Modern features or finds was observed or recovered in core samples.

3.7.4. WA understands that five cone penetrometer tests were undertaken (**Figure 2**). No archaeologically significant data appears to have been acquired.

3.8. Cable Route Close To HDD Entry Point

3.8.1. No test pitting or cone penetrometer testing was carried out in this area. Only one cable percussion borehole was drilled, to a maximum depth of 14.45mbgl, on the western (landward) side of the sea wall (**Figure 2**). Horizons of sandy clay were

observed. No evidence of pre-Modern features or finds was observed or recovered in the core samples.

4. CONCLUSIONS

4.1.1. No significant archaeological features or finds were identified during the watching brief. It is possible that pre-Modern evidence of human use or occupation of the Site (with the exception of the scheduled monument) has been removed by ground works associated with the former refinery or other 20th century activities. Alternatively activity sufficient to leave an archaeological footprint may not have occurred.

4.1.2. It should however be borne in mind that the location of the test pits was not dictated by archaeological considerations and their surface area relative to that of the Site as a whole is small. It is therefore still possible, although unlikely, that archaeologically significant features exist within the Site but have not been detected.

4.1.3. The site retains the potential to produce archaeologically significant environmental evidence from the peat or other organic deposits encountered during test pitting and drilling.

5. RECOMMENDATIONS

5.1.1. The peat encountered at c.28mbgl in Borehole 120 is likely to represent an ancient land surface of Mesolithic or earlier date. It is therefore recommended that the relevant U4/100 sample should be subject to staged geoarchaeological analysis (see **Appendix I**).

5.1.2. The peat-like horizons encountered in the test pits may represent relatively recent but nevertheless potentially significant pre-Modern archaeological land surfaces. It is therefore recommended that further undisturbed samples should be recovered from a limited number of locations and subjected to similar geoarchaeological analysis. The most cost effective means to achieve this would be to recover the samples during further ground works associated with the project.

5.1.3. Further watching brief is recommended only for further ground works in the Cable Route Close to HDD Entry Point area, as the cable route crosses the scheduled monument in this area, as set out in the DCMS Scheduled Monument consent.

6. ARCHIVE

6.1. MUSEUM

6.1.1. The project archive will need to be deposited with a registered museum that accepts archaeological archives and whose collecting area includes the location of the Site.

6.2. ARCHIVE STORAGE

6.2.1. The project archive is currently held at the offices of Wessex Archaeology at Old Sarum, Salisbury, Wiltshire under the project code 64490. It consists of:

- One ring binder containing paperwork and drawings
- A collection of digital photographs

6.2.2. The project archive will be prepared to comply with guidelines set out in Environmental Standards for the permanent storage of excavated material from archaeological sites (UKIC 1984, Conservation Guidelines 3), and Guidelines for the preparation of excavation archives for long-term storage (Walker 1990).

6.3. COPYRIGHT

6.3.1. The full copyright of the written/illustrative archive relating to the site will be retained by Wessex Archaeology Ltd under the Copyright, Designs and Patents Act 1988 with all rights reserved. The Museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use shall be non-profit making, and conforms to the Copyright and Related Rights Regulations 2003.

6.4. SECURITY COPY

6.4.1. In line with current best practice, on completion of the project a security copy of the paper records will be prepared, in the form of microfilm. The master jackets and one diazo copy of the microfilm will be submitted to the National Monuments Record Centre (Swindon); a second diazo copy will be deposited with the paper records at the Museum, and a third diazo copy will be retained by Wessex Archaeology.

7. REFERENCES

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APPENDIX I: GEOARCHAEOLOGICAL ASSSESSMENT OF ENVIRONMENTAL SAMPLES

The archaeological assessment of geotechnical data from environmental samples, including U4/100 cores, can produce the following archaeological results:

- the absolute dating of any land surfaces represented by stasis horizons such as peat or other organic material through radio carbon dating;
- the relative dating of deposits through pollen analysis;
- reconstruction and environmental and archaeological significance of the flora of ancient land surfaces and coastal and marine environments through analysis of pollen, diatoms, foraminifera, plant microfossils, molluscs and ostracods;
- partial reconstruction of the hydrological regime of the area (including sea level changes) through analysis of diatoms, foraminifera and ostracods.

Analysis of disturbed cores is not recommended as there is a greatly increased risk of contaminating environmental and/or dating samples. It is therefore always preferable to use undisturbed core samples.

It is recommended that this geoarchaeological assessment should be undertaken in five stages. This is a cost-effective approach which generates the maximum archaeological data. The stages are:

Stage 1: Planning

This is the initial archaeological assessment of core logs generated by geotechnical contractors. This assessment will establish the likely presence of horizons of archaeological interest and broadly characterise them, as a basis for deciding what Stage 2 archaeological recording is required. The Stage 1 report will state the scale of Stage 2 work proposed.

Stage 2: Recording and Sampling

This is the archaeological recording and sampling for dating and palaeo-environmental purposes (C14, pollen, diatoms and foraminifera) of new or selected retained cores. This will entail the splitting of the cores, with half of each core being cleaned, recorded and sampled. Samples will be taken from one core-half, with the other core-half being retained intact should sub-sampling be required. A Stage 2 report will state the results of the archaeological recording and will indicate whether any Stage 3 work is warranted.

Stage 3: Sub-Sampling and Assessment

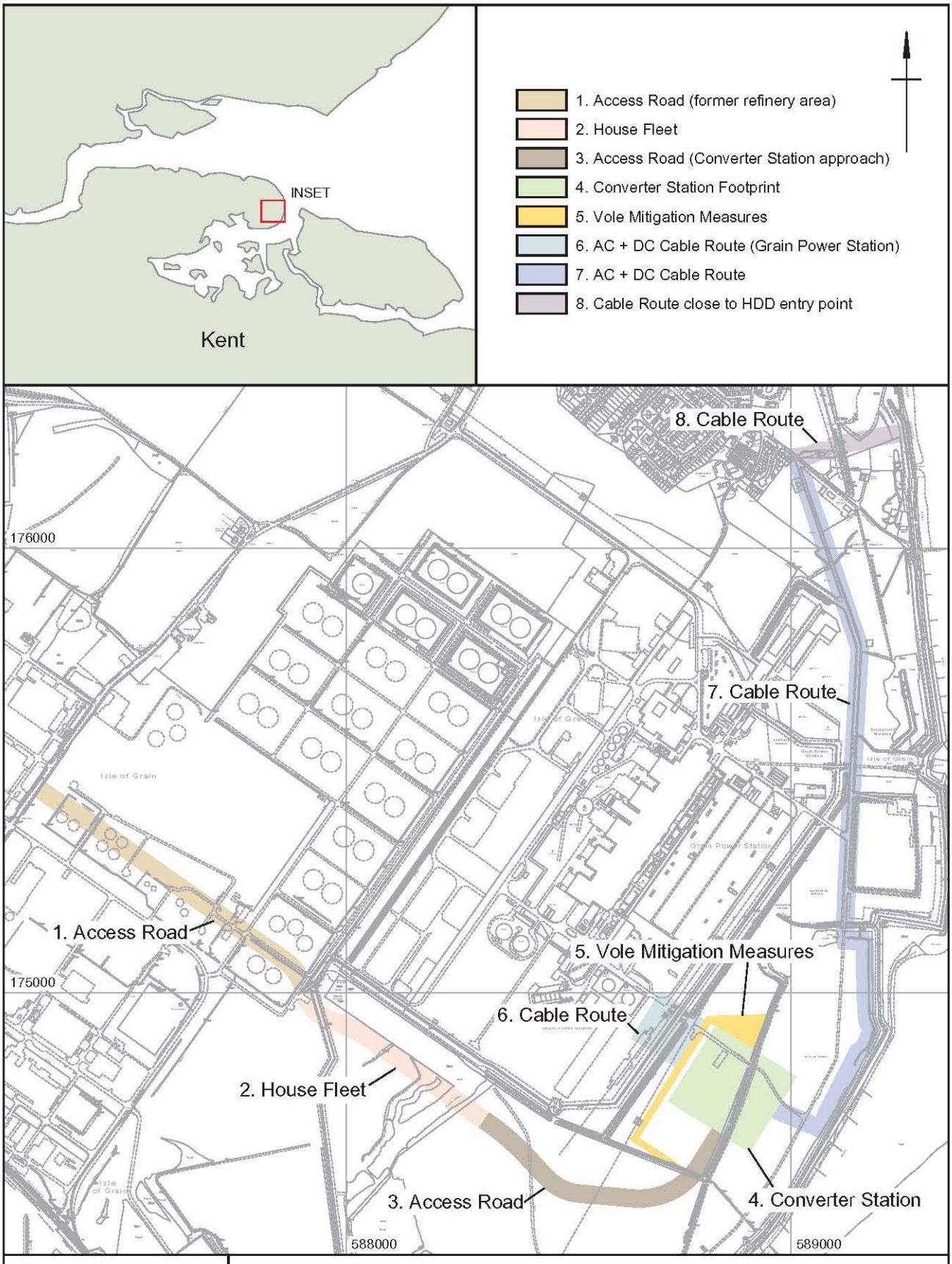
This is the sub-sampling and palaeo-environmental assessment (pollen, diatoms and foraminifera). Assessment will comprise laboratory analysis of the samples taken in Stage 2 to a level sufficient to enable the value of the palaeo-environmental material surviving within the cores to be identified. Sub-samples will also be taken and retained at this stage in case radiocarbon dating is required during Stage 4. A Stage 3 report will set out the results of each laboratory assessment together with an outline of the archaeological implications of the combined results, and will indicate whether any Stage 4 work is warranted.

Stage 4: Analysis and Dating

This is the full analysis of pollen, diatoms and/or foraminifera assessed during Stage 3. Typically, Stage 4 will be supported by radiocarbon dating of suitable sub-samples. Stage 4 will result in an account of the successive environments within the coring area, a model of environmental change over time, and an outline of the archaeological implications of the analysis.

Stage 5: Final Report

If undertaken, Stage 4 should be reported as part of a final, Stage 5 report covering all aspects of the palaeotopography and prehistory of the area affected by the development. This may also include relevant data generated by the desk-based assessment, foreshore coring and terrestrial watching brief.



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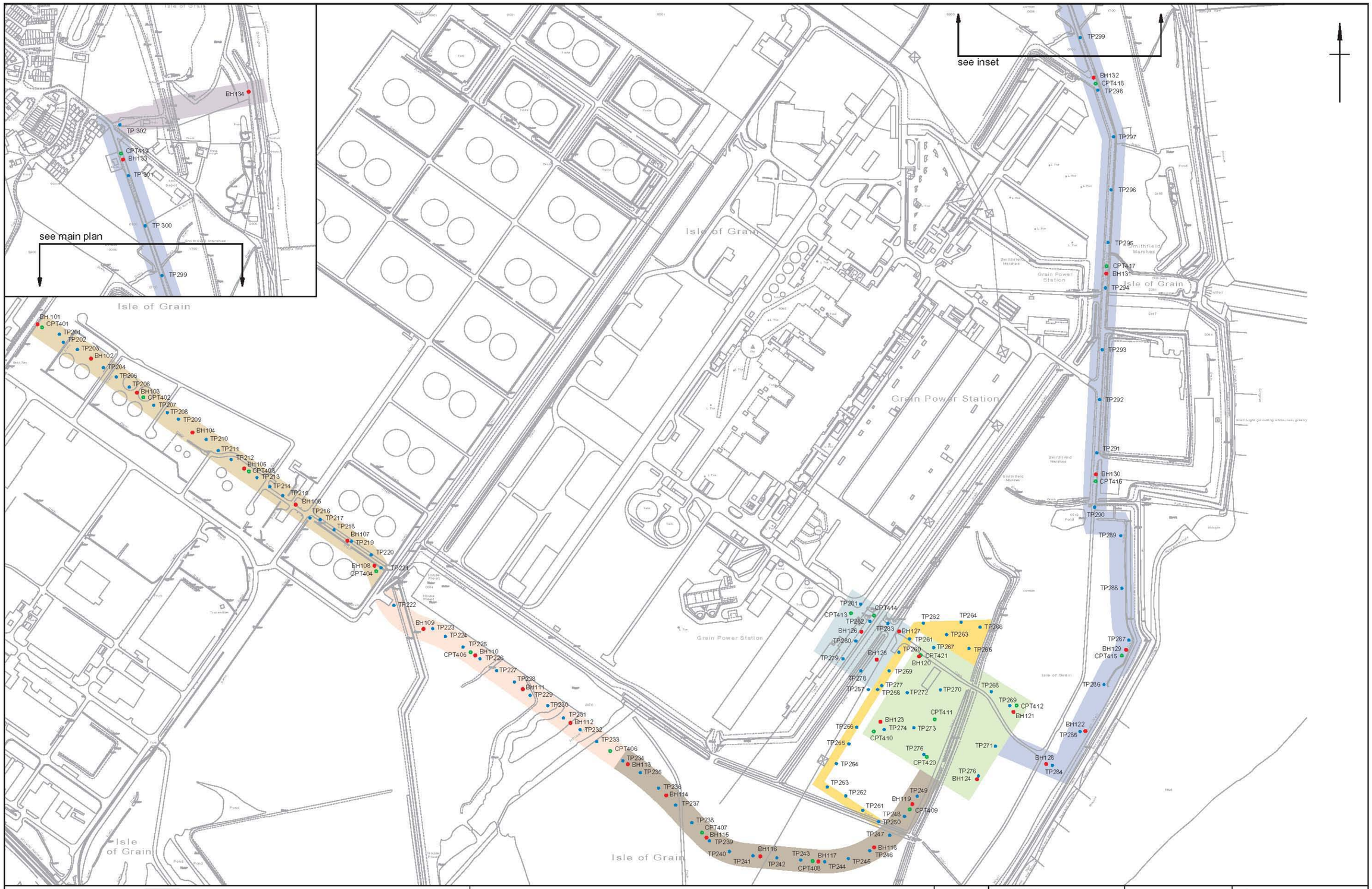
Wessex Archaeology

Site location

Figure 1



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Test Pits, Boreholes and Cone Penetrometer Test locations

Figure 2

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