Gallopers Offshore Wind Farm Sizewell Gap, Leiston Suffolk Onshore Cable Route (Phase 2)

Archaeological Strip, Map and Sample Excavation and Watching Brief Report

Accession Number: LCS 161
Ref: 104812.05
December 2017

wessexarchaeology

69 College Road,
Maidstone,
Kent
ME15 6SX

www.wessexarch.co.uk

Wessex Archaeology Ltd is a Registered Charity no. 287786 (England & Wales) and SC042630 (Scotland)

Document Information

Document title	Gallopers Offshore Wind Farm, Sizewell Gap, Leiston, Suffolk: Onshore Cable Route (Phase 2)
Document subtitle	Strip, Map and Sample Excavation and Watching Brief Report
Document reference	104812.05
Client name	Galloper Offshore Windfarm Limited
Address	Auckland House, Lydiard Fields, Great Western Way, Swindon, Wiltshire, SN5 8ZT
Site location	Sizewell Gap, Leiston
County	Suffolk
National grid reference (NGR)	646624 262742
Planning authority	Suffolk County Council
WA project code	104812
Accession Number	LCS161
Date(s) of fieldwork	05.04.2016 – 16.09.2016
Fieldwork directed by	J Lathan & J Warrender
Project management by	Mark Williams
Document compiled by	J Lathan
Contributions from	T Piggott
Graphics by	Andrew Souter

Quality Assurance

Issue	& issue date	Status	Author	Approved by
1	06.11.2017	Draft submitted to client	JML	
2	Dec 2017	Internal draft after edits	MD	

Contents

List of Figures

List of Plates

Summary

Wessex Archaeology was commissioned by Galloper Offshore Windfarm Limited (The Client) to undertake an archaeological strip, map & sample excavation and watching brief along the proposed onshore cable route for the Gallopers Offshore Wind Farm located at Sizewell Gap, Leiston, Suffolk centred on Nation Grid Reference 646624 262742 (**Figure 1**).

The work was carried out prior to and during the installation of the onshore cable for Gallopers Wind Farm Substation. The cable route made landfall at Sizewell beach before passing through two arable fields on an east to west alignment, before turning north towards the location of the new substation.

The cable route encompassed horizontal directional drilling (HDD) from the beach to the transition joint bay in the eastern field with localised cable trenching, with a further HDD to the western field. A 23m easement along the length of the western field for the cable duct was excavated, with a further HDD pit at the western end of the field excavated to carry the cable under Sizewell Gap and north towards the new substation through the northern field and subsequently though a man-made berm surrounding the new substation. The berm is on the location of the previous excavation area and the cable route only impacted on the made ground that the berm was constructed from.

The cable route had previously been subject to a Desk Based Assessment (Wessex Archaeology 2009) and geotechnical test pitting (Wessex Archaeology 2013), while the substation had also been subject to a Heritage Statement (Wessex Archaeology 2011b), two phases of archaeological evaluation (Wessex Archaeology 2011a & 2014), and an archaeological excavation and watching brief carried out in 2014 (Wessex Archaeology 2015).

The current phase of works was carried out in several intermittent stages from 5th April to 16th September 2016.

A common stratigraphic sequence was identified across the site which consisted of topsoil overlying the natural geology. Isolated areas of made ground were identified in the northern field as a result of the construction of an artificial berm.

No archaeological features were identified during this scheme of work. A single post-medieval coin and two prehistoric worked flints were recovered during the archaeological investigation, all of which are residual in origin.

Acknowledgements

The archaeological works was commissioned by Galloper Offshore Wind Farm Limited and the assistance of Tamsyn Rose is gratefully appreciated in this respect. Thanks are also extended to the Suffolk County Council Senior Archaeological Officers who monitored the archaeological investigations.

The project was managed on behalf of Wessex Archaeology by Mark Williams. The fieldwork was undertaken by Jake Warrender, Mark Denyer, Joanne Lathan, Martha Teneer, Mike Howarth and Nick Woodward. This report was written and compiled by Thomas Piggott with contributions by Rachel Seager Smith (finds). The illustrations were completed by Andrew Souter.

Gallopers Offshore Wind Farm
Sizewell Gap
Leiston, Suffolk
Onshore Cable Route (Phase 2)

Strip, Map and Sample Excavation and Watching Brief Report

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was appointed by Galloper Offshore Wind Farm Limited to undertake a program of archaeological investigation comprising a strip, map and sample excavation and watching brief along the proposed onshore cable route for Gallopers Offshore Wind Farm on land at Sizewell Gap, Leiston, Suffolk (**Figure 1**) centred on National Grid Reference 646624 262742.

1.1.2 Galloper Offshore Wind Farm is an extension of the existing and fully operational Greater Gabbard Wind Farm located off the coast of Suffolk. The onshore substation for the Galloper Offshore Wind Farm is to be constructed on land at Sizewell Gap adjacent to an existing substation used for the Greater Gabbard Wind Farm. The onshore cable route will make landfall c. 55m south of the hamlet of Sizewell, from where it will travel west across two arable fields before turning northwest across Sizewell Gap road to the new 132 kV substation.

1.1.3 The cable route has previously been subject to a Desk Based Assessment (Wessex Archaeology 2009) and geotechnical test pitting (Wessex Archaeology 2013), while the substation has also been subject to a Heritage Statement (Wessex Archaeology 2011b), two phases of archaeological evaluation (Wessex Archaeology 2011a & 2014) and an archaeological excavation and watching brief in 2014 (Wessex Archaeology 2015).

1.1.4 Written Schemes of Investigation (WSI) were prepared for the evaluations, strip map and sample excavations and archaeological watching brief and approved by Suffolk County Council's Archaeological Officer.

1.1.5 This report documents the results of the strip, map and sample excavation and watching brief along the onshore cable route.

1.1.6 The work was carried out in several intermittent stages from 5th April to 16th September 2016.

1.2 Scope of the report

1.2.1 The purpose of this report is to provide the results of the strip, map and sample and watching brief, to assess the potential of the results to address the research aims outlined in the WSI. Where appropriate, to recommend a programme of further analysis work, and outline the resources needed, to achieve the aims (including the revised research aims arising from this assessment), leading to dissemination of the archaeological results via publication and the curation of the archive.

1.3 Location, topography and geology

1.3.1 The site covered during this scheme of works is along the course of the onshore cable route which extends from the area of cable landfall on Sizewell beach in the east, to where it joins the new 132 kV substation site (works 6 in the DCO) in the west. The proposed cable route lies within a *c.* 23m wide working easement on a roughly east to west alignment across two arable fields that are divided by a narrow lane situated on a north-south axis. Both the western and eastern fields have previously been used for potato farming.

1.3.2 The precise dimensions and location of the onshore cable route works within the DCO boundary were subject to alterations during the archaeological investigation due to ongoing design amendments and on-site logistical requirements.

1.3.3 The majority of cable route lies at approximately 5m-9m above Ordnance Datum (aOD) with the site gently sloping down from a ridge of high ground to the west of the beach before rising from the crossing of Sizewell Gap up to the new substation at c. 14m aOD.

1.3.4 The eastern field is predominately flat at an ordnance datum of 5-9m with a moderate downwards slope towards the western extent of the field. The western field is also predominately flat with an almost imperceptible rise towards the west, and is slightly above the ordnance datum of the beach landfall site of 6m aOD for the majority of the field, with an ordnance datum of 7m aOD at the west end of the field. From the west field, the proposed cable run turns north towards the new substation, where the ground rises up to 14m aOD. Around the perimeter of the new substation is manmade berm of an approximate height of 9m.

1.3.5 Three different types of natural geology are recorded at the site. The area of the site centred around Sizewell beach is mapped as Crag Group – Sand with superficial deposits of the Marine Beach Deposits – Sand and Gravel. The northern section of the eastern field is made up of Crag Group-Sand while the southern portion contains in addition to Crag Group – Sand superficial deposits of Lowestoft Formation - Sand and Gravel. The remainder of the cable route is mapped as Crag Group-Sand (British Geological Survey, British Geological Map Viewer)

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1.1 A previous Desk-Based Assessment (Wessex Archaeology 2009) was prepared which described the archaeological and historical background to the new 132 kV substation site, the results of which are summarised below.

2.1.2 The recorded historic environment resource within a 1.5 km Study Area around the new 132 kV substation site was considered in order to provide a context for the discussion and interpretation of the known and potential resource within the Site.

2.1.3 Where appropriate, the Suffolk HER number and the Wessex Archaeology DBA reference numbers are indicated in the text, with the full DBA attached as Appendix 3.

2.2 Designated Sites

2.2.1 The site does not contain any remains with statutory or local heritage designations. There are also no sites with statutory or local heritage designations (e.g. registered battlefields, parks and gardens, Scheduled Monuments or Listed Buildings) within the Study Area.

2.2.2 The nearest Scheduled Monuments are a Bronze Age bowl barrow on Aldringham Common, 1.5km to the southwest of the site boundary; two Bronze Age bowl barrows in Square Plantation 2.37km to the southwest of the site boundary; a further two bowl barrows on Aldringham Green 2.46km to the southwest of the site boundary; and the secondary site of Leiston Abbey *c.* 2.4km to the northwest of the site boundary. The secondary site of Leiston Abbey is also a Grade I Listed Building. None of these sites will be impacted by the proposed cable works.

2.2.3 There are a number of Listed Buildings in Leiston, 1.8km to the west of the site, beyond the Study Area, but none of these will be impacted by the proposed cable works.

2.2.4 The nearest Conservation Area comprises the historic core of Leiston, but this lies beyond the Study Area, 1.9km to the west of the site boundary, and will not be impacted by the cable works.

2.3 Archaeological Background

2.3.1 The evidence of prehistoric activity within the Study Area is suggested by a number of worked flints and pottery sherds, found predominantly as artefact scatters in the vicinity of the site, with numerous potential ring ditches also visible on aerial photographs, although as yet none have been investigated (LCS054/WA04, LCS055/WA09, LCS057/WA10, LCS058/WA05, LCS068/WA068).

2.3.2 There are no recorded Palaeolithic or Mesolithic finds within the Study Area, although this does not preclude their future discovery. Neolithic and/or Bronze Age activity near the site is suggested by the presence of several pot-boiler flints and other worked flints found during previous work in the area. To the north of the site there are a number of cropmarks visible on aerial photographs. These have been identified as ring ditches some of which are causewayed as well as a concentric semi-circular ring ditch. All of these are potentially of Bronze Age date but have not been excavated (LCS064/WA029, LCS067/WA13, LCS070/WA21).

2.3.3 There are currently no known sites or find spots recorded within the Suffolk HER dating to the Iron Age, either within the site or Study Area. However, a field walking project by Suffolk County Council Archaeological Service (SCCAS) in 1994 to the east of Crown Farm, recorded a small amount of Iron Age pottery (SCCAS 1995).

2.3.4 Roman remains are known to the north of the site and across the Study Area (LCS049/WA22, LCS051/WA23, LCS070/WA21). Where present, evidence comprises artefact scatters of pottery and tile fragments found during evaluations in 1994, with other finds of pottery and coins concentrated within the Leiston village area, to the west of the site and Study Area. However, excavations to the east of Sandy Lane recorded a system of field and enclosure ditches which preceded the medieval occupation recorded to the east of the site and have been provisionally dated as Romano-British, although post-excavation work is ongoing (Atfield, *et al* 2009).

2.3.5 Although no material dating to the Saxon period is recorded within the Study Area, it is likely that the medieval settlements of Leiston and Sizewell had their foundations during the Saxon period, and certainly Leiston is mentioned in the Domesday Book. During the medieval period, the area of the site would have been part of the property of Leiston Abbey until the dissolution of the monasteries in *c.*1538. Scatters and spreads of medieval pottery have been found in the immediate vicinity of the site (LCS054/WA26, LCS058/WA27, LCS060/WA28, LCS064/WA29, LCS066/WA31, LCS073/WA25).

2.3.6 An early medieval boat was recovered during a second phase of archaeological excavations in advance of the onshore works for the Greater Gabbard Windfarm adjacent to the Site to the east. The boat, which was probably a small inshore fishing vessel, had been broken up during the 14th century, and parts of its hull re-used as a timber well lining. The boat was constructed using the same techniques as the great Sutton Hoo ships, although on a much more modest scale (Suffolk Archaeological Service). The same excavations also recorded a wide range of pottery from the 12th to 14th centuries, including high-status wares, as well as personal items such as brooches and buckles. Fishing hooks, weights and fish bones were also found (Atfield, *et al* 2009). Furthermore, excavations in Rosary Field adjacent to Sandy Lane revealed timber buildings, animal corrals and three large external ovens or possible corn-driers, which suggested a high potential for the discovery of medieval remains within the site.

2.3.7 There is little evidence of post-medieval activity at the Site other than its transition from Common Land to enclosed fields and Broom Covert during the mid-19th century, suggesting land-use at the Site has changed little since the medieval period. A post medieval mast possibly repurposed as a lookout point lies within the development area (LCS132/WA32). A WWII pillbox and other 20th century military remains are located within the vicinity of the site (ARG017/WA48, ARG023/WA66, ARG024/WA60, ARG025/WA55, ARG026/WA67, ARG027/WA68, ARG028/WA61, ARG029/WA73, ARG030/WA69, ARG031/WA47, LCS104/WA54, LCS105/WA59, LCS106/WA46, LCS108/WA62, LCS109/WA58, LCS110/WA63, LCS111/WA56, LCS112/WA57, LCS113/WA70, LCS115/WA64, LCS116/WA65, LCS119/WA53, LCS122/WA71, LCS125/WA49, LCS126/WA72, LCS127/WA51, LCS128/WA52, LCS129/WA50).

2.3.8 During more recent times, the area immediately to the east of the new 132 kV substation site was planted with a formal arrangement of deciduous woodland, first depicted on the OS 4th edition map of 1947, in the area now containing the substation for the Greater Gabbard Wind Farm. The site remains undeveloped as agricultural land.

2.4 Previous Archaeological Evaluation

2.4.1 An archaeological field evaluation was undertaken by Wessex Archaeology in July 2011, which evaluated an available area of *c*.3.1 ha for the new 132 kV substation site (works 6 in the DCO). The evaluation area was constrained by the suspected potential presence of unexploded ordnance (UXO) on Site, as well as restrictions regarding working beneath the overhead power lines (OHL) connected to the neighbouring Sizewell B Nuclear Power Station.

2.4.2 A total of 35 machine excavated trial trenches, each measuring 25m x 1.8m, were excavated. The evaluation proved the existence of features consistent with small scale Late Prehistoric and Romano-British activity probably relating to farming practices. The pottery recovered from the site was of Romano-British date, with the exception of a sherd of Anglo-Saxon pottery. Some struck flint of prehistoric date was also recovered, as were some burnt flints consistent with prehistoric activity.

2.4.3 The evaluation showed that the new 132 kV substation site occupies a raised area distinct from the surrounding low-lying ground, suggesting that it may have remained relatively dry during periods of wet weather or tidal inundation, and therefore would have been suitable for occupation. Ditches observed on site dating from the prehistoric and Romano-British periods showed episodes of re-cutting, suggesting they were re-established on a regular, perhaps seasonal basis.

2.5 Heritage Statement (WA 2011b)

2.5.1 Following the completion of the archaeological evaluation a Heritage Statement was prepared which concluded that despite 'the high potential for archaeological finds and features to be present, the findings from a desk-based assessment and intrusive surveys indicate that the archaeological resource is of low sensitivity' (Wessex Archaeology 2011b:20).

2.6 Watching Brief (WA 2013)

2.6.1 An archaeological watching brief was undertaken by Wessex Archaeology in 2013 on the excavation of a total of 36 geotechnical test pits across the proposed new 132 kV substation site and onshore cable route (Wessex Archaeology 2013). Ten of the excavated test pits measured c. 4m x 3m in plan and *c*. 2.5m deep, this was to enable safe access into the test pits to allow testing to be carried out. The remaining 26 test pits measured *c*. 2m x 0.6m with depths ranging from 2.5m – 4.5m. No finds or features of archaeological significance were noted during the watching brief. Only made ground, natural soils and geology were observed.

2.7 Additional Archaeological Evaluation (WA 2014)

2.7.1 An additional six evaluation trenches were excavated by Wessex Archaeology in June 2014 within an area of former woodland to the west of the substation. The trenches measured between 15m and 20m and were located within the proposed access road for the new substation to the west. A single Romano-British urned cremation was found within the most eastern trench. An area round the cremation was extended however no further archaeological features or finds were observed.

2.8 Archaeological Excavation (WA 2015)

2.8.1 An archaeological strip, map and sample was undertaken by Wessex Archaeology in July and August 2014 covering an area of 3.7 ha which incorporated the previous two evaluation areas for the new 132 kV substation site (works 6 in the DCO). The excavation revealed activity on the site dating between the Bronze Age and the Romano-British periods. Bronze Age pottery was recovered from a ditch at the very northern edge of the excavation; it is possible further activity of this date exists within the site and/or beyond the limits of excavation to the north.

2.8.2 Low level Early Iron Age activity was confined to the north-eastern area of the site suggesting a pattern of rural open settlement. There is little evidence of enclosure or landscape division at the time although a single east to west aligned ditch does suggest some management of space. The remains of possible roundhouse/four post structures may indicate a more settled way of life although if so these features have been severely truncated.

2.8.3 Most evidence of settlement at the site was of Romano-British date with several phases of enclosures and land divisions in evidence. The phases of rectilinear enclosures and ditches were recorded across the site but were seen to be particularly dense towards the north. Land divisions, as evidenced by two ditch groups suggest a re-organisation of the land albeit along similar alignments. The density of features of this date in the northern region of the site hint at further dense remains of this date beyond the limits of excavation to the north. Paddocks/enclosures were recorded by a number of enclosure groups; these suggest the first real attempt at organising the landscape occurred during the Romano-British period. A further three Romano-British cremations were recorded within the eastern

extension of the site close to the location of the cremation found in the additional evaluation.

3 AIMS AND OBJECTIVES

3.1 Aims

3.1.1 The general aims of the excavation, as stated in the WSI (Wessex Archaeology 2016) and in compliance with the Chartered Institute for Archaeologists (CIfA) *Standard and guidance for archaeological excavation* (CIfA 2014a), were:

- To examine the archaeological resource within a given area or site within a framework of defined research objectives;
- To seek a better understanding of the resource;
- To compile a lasting record of the resource; and
- To analyse and interpret the results of the excavation, and disseminate them.

4 METHODS

4.1 Introduction

4.1.1 All works were undertaken in accordance with the detailed methods set out within the WSI (Wessex Archaeology 2016) and in general compliance with the standards outlined in CIfA guidance (CIfA 2014a). The methods employed are summarised below.

4.2 Fieldwork methods - strip, map and sample

4.2.1 The works comprised the excavation of a c. 23m wide easement along the course of the cable route within the western field and the course of the cable route within the northern field. There were monitored excavations for transition joint bays and associated cable pulling/HDD works, a small length of cable trench in the eastern field/compound area and the beach landfall site works to construct cofferdams and beach anchor points.

4.2.2 As the cable followed a HDD drilled route from the beach landfall to the transition joint bay in the eastern field/compound area, with a small length of cable trench to the east field HDD launch pit, the eastern field/compound area was only subject to penetrative groundworks for the transition joint bay and associated cable trenching to the HDD launch pit rather than a cable easement strip across the eastern field.

4.2.3 All overburden (topsoil and subsoil) was carefully removed by a 360-degree tracked mechanical excavator, fitted with a toothless ditching bucket under constant archaeological supervision, to the top of the first significant archaeological horizon or natural geology, whichever was encountered first.

4.2.4 Excavated material was visually examined for archaeological material and a metal detector was used to enhance artefact recovery.

4.2.5 A sufficient sample of each feature type/deposit was examined in order to establish the date, nature, extent and condition of the archaeological remains.

4.2.6 If unexploded ordinance (UXO) was encountered, excavation immediately ceased and the relevant bodies informed.

4.3 Fieldwork methods - archaeological watching brief

4.3.1 Prior to commencement of the strip, map and sample, areas along the onshore cable route were subject to UXO clearance, which was monitored by an archaeologist as a watching brief.

4.3.2 Areas that were also subject to archaeological monitoring as a watching brief included:

- Landfall HDD –to be excavated near the joint transition bay area (GWFP 2011);
- Sizewell Gap Road HDD- one pit at the launch site, and one pit at the reception site;
- Sizewell Hall Road HDD – one pit at the launch site, and one pit at the reception site;
- Transition Joint Bay – an area excavated to allow for the jointing of the marine cable to the onshore cables.
- Alterations and enhancement works to the existing Volker and VBSM compounds

4.3.3 The beach area was considered to be in a state of continuous movement and therefore any archaeological remains were less likely to be preserved. The area was subject to archaeological monitoring rather than a strip map and sample excavation methodology.

4.3.4 Excavations were carried out using a 360$^{\text{-degree}}$ tracked excavator using a toothed ditching bucket and a JCB 3CX. Excavations on the beach also included monitoring piling.

4.3.5 When required, all ground penetrating works were monitored by an experienced archaeologist.

4.4 Recording

4.4.1 All archaeological features and deposits encountered during the excavation were recorded using Wessex Archaeology's *pro forma* recording sheets using a continuous unique numbering system.

4.4.2 All excavated archaeological features and deposits were drawn at an appropriate scale, typically 1:10 for sections and 1:20 or 1:50 for plans.

4.4.3 Digital photographs were taken as appropriate, providing a record of the excavated features and deposits along with images of the overall trench to illustrate their location and context. The record also includes images of the overall Site. The photographic record comprises digital photography. A photographic register of all photographs taken is contained within the project archive.

5 RESULTS

5.1 Introduction

Stratigraphy

5.1.1 The stratigraphy was consistent across the site, apart for investigations on the beach, the natural geology consisted of a mid-orange yellow sand with patches of white sand **102** was identified in all areas at 0.4m-0.7m below ground level (bgl), sealed by a dark grey brown topsoil **101**. There was no discernible subsoil observed.

5.1.2 Within the western field a deep investigatory trench was excavated during the UXO watching brief, this identified three further layers of sand below the topmost natural geology.

5.1.3 Within the northern field, a berm had been formed around the area of the 2014 strip, map and sample excavations. The berm was constructed of re-deposited material, likely from the construction of the new substation. The berm itself is approximately 9m in height and gradually slopes down to natural ground level.

5.1.4 Investigations on the beach recorded a layer of shingle sealing the same mid-orange yellow sand at 0.10m bgl. The watching brief undertaken during the beach works observed several further layers of sand at depth.

5.2 Watching Brief

UXO survey

5.2.1 Before any strip, map and sample excavations could take place within the Northern, Western, Eastern and Beach areas a watching brief took place to monitor UXO clearance works undertaken by Bactec International Limited. The survey was undertaken in all three areas and the majority of investigation excavation locations measured approximately 0.2m x 0.1m x 0.4m deep, apart from one large pit in the western field which measured 5m x 5m (**Plate 1**). No UXO was found during the watching brief. Two 1.5m deep and 1m wide cable trenches were excavated from the HDD entry pit to the joint transition bay. These were monitored under watching brief conditions, no archaeological finds or features were identified.

6 STRIP, MAP AND SAMPLE EXCAVATION

6.1 Eastern Field

6.1.1 The eastern field was raised in level by the importation of Type 1 hardcore to form a level area for the contractor's compound and for the working area of the HDD rig and winches for cable pulling.

6.1.2 The locations of the transition joint bay, HDD launch/receiver pits, cable location test pits, and cable trenches in the eastern field were excavated through the Type 1 material into the layers below (**Plates 2 - 6**), which were monitored by an archaeologist at all times.

6.1.3 The cable route was to be HDD drilled from the beach landfall to the joint transition bay with a short length of cable trenching to the HDD launch pit to the western field. Due to this arrangement of works there was no strip, map, sample excavation possible for the cable route in the eastern field/compound area.

6.1.4 Topsoil overlying the natural sand geology was identified in all the excavated locations with no archaeological finds or features identified.

6.1.5 The locations of WWII defensive structures such as tank traps, pill boxes and other anti-invasion defences (LCS112, LCS113, LCS116, LCS119) as indicated in the desk based assessment (Wessex Archaeology 2009) either lay outside the development area, or were HDD drilled underneath, and as such were unaffected by any works in the eastern field.

6.2 Western Field

6.2.1 Due to the presence of a water pipe along the onshore cable route a series of test pits were excavated to check the water pipe route. These were monitored under watching brief conditions and no archaeological finds or features were identified (**Plate 7**).

6.2.2 A 23m wide easement strip, map and sample was undertaken along the length of the western field along the route of the cable run. The topsoil measured from 0.35m to 0.46m in depth and was recorded overlaying the natural geology, which consisted of a light yellowish-orange sand, identified on a series of four sections along the northern limit of excavation (**Plates 8 – 11, 25 - 27**). Evidence for intensive ploughing was identified throughout the area with areas of heavy rooting. No archaeological features were identified. A copper coin and two pieces of worked flint were recovered from the topsoil (See section 7 below).

6.2.3 Following the strip, map and sample, three onshore cable trenches were excavated measuring approximately 1m wide and 1.5m deep. Three variations in the natural sand geology were identified. The first stratigraphic layer consisted of white sand approximately 0.30m deep overlaying a layer of mid brown sandy loam 0.45m deep, which, in turn overlaid a layer of yellow sand similar to the natural identified during the easement strip (**Plates 12 – 14**).

6.2.4 Archaeological monitoring occurred during the excavation and installation of the HDD launch and receiver pits located at the western and eastern ends of the western field onshore cable route. No archaeological finds of features were identified.

6.3 Northern Field

6.3.1 An archaeological strip, map and sample was carried out along the onshore cable route within the northern field along the easement of the cable route. The cable route passed through a man-made berm, which was located within the area of the 2014 excavation, and as per section 2.1.9 of the WSI did not require any further archaeological work, but archaeological monitoring was still maintained. The cable route only impacted on the madeground layers that the berm was constructed from, and as such there was no impaction on any underlying archaeological remains that may have been present (**Plates 15 – 19**).

6.3.2 Excavation for the onshore cable trench routes was undertaken to a maximum depth of 2m below ground level (bgl). Where the cable route passed through the berm, it impacted into made ground layers only. No archaeological finds or features were identified in the northern field.

6.3.3 The cable route through the northern field passed through an area that had been highlighted on the Suffolk Historic Environment Records as locations of possible cropmarks (LCS059), medieval pottery and prehistoric flint scatters (LCS058) and further cropmarks of a ring ditch (LCS055) in the adjacent field to the east of the cable route. No evidence of any of these finds or features was identified during the course of the works.

6.3.4 Archaeological monitoring was undertaken during the excavation and installation of the HDD launch and receiver pits within the northern field. Each pit measured approximately 2.5m x 1m x 1m deep (**Plate 20**). A stratified sequence consisting of topsoil directly overlying natural sand geology was identified. No archaeological finds or features were identified.

6.4 Beach

6.4.1 The beach works were monitored as a watching brief due to the relatively high energy conditions of the beach, as per section 2.1.8 of the WSI.

6.4.2 A number of monitoring events took place within the beach area; first was the stripping of the area in preparation for a cofferdam (**Plates 21 and 28**).

6.4.3 Auguring was then monitored prior to the pilling of the metal sheeting for the coffer dam due to the identification of compact gravels at a depth of 3-4m (**Plate 22**). The sand within the coffer dam footprint was removed using a 360° tracked excavator. No archaeological finds or features were identified.

6.4.4 Archaeological monitoring was undertaken at the location of the cable landfall. An area of approximately 12.5m x 4m x 3.5m deep was excavated. The majority of the material removed related to man-made build up and deposition of material on the beach, this in turn overlay natural sands (**Plates 23 and 29**). Two pieces of worked flint were recovered from the spoil during the excavation (See section 7 below).

6.4.5 The post medieval ship's mast, possibly reused as a lookout (LCS 132), was located in the extreme northwest corner of the beach works compound and was unaffected by any works within the beach area (**Plate 24**).

6.4.6 Archaeological monitoring was also undertaken during the excavation of the onshore cable anchors which revealed no archaeological finds or features.

7 ARTEFACTUAL EVIDENCE

7.1.1 Just three artefacts were recovered from across the site; all were from the topsoil of the western field. These comprised a copper alloy halfpenny coin (7g) of post-medieval date and two prehistoric struck flints (22g). The coin was unfortunately too worn to be more closely identified or dated, but two letters J or T and P in an italic hand have been scratched into its obverse face, perhaps as initials.

7.1.2 By contrast, the flints, like those from the earlier phase of archaeological fieldwork in the area (Wessex Archaeology 2015), survive in mint and unpatinated condition. One is a utilised trimming flake from a blade core (15g), and is of early Neolithic date and the second, a small scraper (7g), is less closely datable but is also likely to belong within the earlier prehistoric period.

8 CONCLUSION

8.1.1 The programme of work has been successful in fulfilling the aims and objectives of the WSI in that even though archaeological remains lie to the north of the development area, there was no indication of any surviving archaeology within the development area, possibly as a result of relatively recent ploughing in arable fields and any environmental evidence is unlikely to survive in sandy acidic soils that are present over the site. The development area to the south is at a lower level (10m aOD dropping to 7m aOD to the south) than the 2014 excavation area (archaeology at 11.3m aOD on average across the excavated area) and would be more susceptible to inundation making it an unlikely location for past activity

8.1.2 A relatively consistent stratigraphic sequence was observed across all areas covered in this scheme of work. This comprised a dark grey brown topsoil which varied in thickness

across the monitored areas, which sealed natural sand layers at varying depths. With the exception of the beach, the monitored areas have previously been used as arable farmland.

8.1.3 The anticipated archaeology expected during the watching brief and strip, map, sample comprised WWII remains in the eastern field, medieval pottery scatters, prehistoric flint scatters and a ring ditch in the northern field, with the possibility of features seen in the 2014 excavation continuing into the monitored area in the north field cable easement.

8.1.4 No WWII remains were encountered in the eastern field due to the cable following a HDD drilled route from the beach landfall to the transition joint bay, therefore there was no impact on the WWII remains in the eastern field.

8.1.5 The cable easement in the northern field did not reveal any of the anticipated archaeology from the 2014 excavation or any remains associated with cropmarks seen in aerial photography.

8.1.6 The archaeologically sterile nature of the northern field, which lies immediately to the south of the 2014 excavation, was expected, especially with known linear features and pits to the immediate north of the easement in this field being concentrated towards the northern extents of the 2014 excavation. The projected line of a north-south orientated undated linear feature from the 2014 excavation was projected to continue into the easement, but was not identified when the easement was excavated in this area. By projecting the course of the linear feature with the location of the easement shown on online aerial photography showing the construction works (https://www.bing.com/maps - accessed 08 December 2017), it can be seen that the linear would lie underneath the berm, and would continue outside the easement area in the north field.

8.1.7 The absence of any expected archaeology could stem for the actual position of the easement changing slightly from the proposed location, especially as the works were subject to ongoing design updates and alteration due to onsite logistics. It is also entirely probable that there is a low to no survivability factor of the projected linear feature observed in the 2014 excavation, or it could terminate or change alignment before entering the monitored area, as well as any previously identified cropmarks in the northern field being confined towards higher ground overlooking the lower ground to the south. It is possible that the remains are ephemeral in nature, and have succumb to destruction through ploughing.

8.1.8 By overlaying the results of the 2014 excavation with the projected cable run in the northern field it can be seen that the archaeological features in the 2014 excavation are concentrated towards the north of the excavation, suggesting that settlement activities occurred on the higher ground to the north to escape seasonal inundation, with probable land management in the form of field enclosures on the southern and downslope area of the northern field, which forms the easement area of the cable run in this field.

8.1.9 The sterile nature of the western field could be due to the result of intensive ploughing, which has potentially destroyed any archaeological remains especially during the cultivation of potatoes that requires deep ploughing. The absence of any archaeological material could suggest the possibility of this lower lying area being subject to inundation by the sea and being of a possible intertidal nature. A single post medieval coin was recovered from the topsoil in the western field and this probably represents a discrete loss. No evidence of extensive land use as settlement or similar is indicated.

8.1.10 The eastern field was also similarly sterile of any archaeological remains. As in the western field, the eastern field was used for arable farming before construction work commenced and has been subjected to extensive ploughing. The intrusive groundworks showed the same stratigraphy of a top or ploughsoil directly overlaying plough scarred natural geology of sand as observed elsewhere within the development area.

8.1.11 The beach work area was a relatively high energy environment with rapidly changing conditions with frequent redepositing of material from the marine environment on a twice daily basis. A thin layer of shingle was observed to overlay layers of natural sands. There was no indication of the survivability of any WWII heritage assets such as barbed wire obstructions, or anti-invasion defences (LCS129) within the monitored beach area. Outside of the monitored area WWII remains such as pillbox (LCS 116) and anti-tank cubes (LCS128) were unaffected by any works. The lookout or ships mast, dated to the post medieval period (LCS 132) was within the beach site boundary, but was unaffected by any works in the beach area.

8.1.12 A single post-medieval coin (west field) and two pieces of worked prehistoric flint (beach area) were recovered during the archaeological investigations. These are likely residual in nature and were recovered from the topsoil.

8.2 Museum

8.2.1 The complete project archive will be prepared in accordance with Wessex Archaeology's *Guidelines for Archive Preparation* and in accordance with *Guidelines for the Preparation of Excavation Archives for Long-Term Storage* (Walker 1990) and following nationally recommended guidelines (SMA 1995). On completion of the project, the archive will be deposited with the appropriate museum (SCCAS).

8.3 Archive

8.3.1 The complete site archive, which will include paper records, photographic records, graphics, and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by the Museum, and in general following nationally recommended guidelines (SMA 1995; CIfA 2014; Brown 2011; ADS 2013).

8.3.2 All archive elements will be marked with the accession and a full index will be prepared. The physical archive comprises the following:

- 1 file/document case of paper records and A4/A3 graphics

8.3.3 The project archive including plans, photographs and written records are currently held at Wessex Archaeology's London & South East office under the site code **104812**. The project archive will be deposited with SCCAS.

8.3.4 All archive elements are marked with the site code **104812**, and a full index will be prepared. The physical archive comprises the following:

- 1 files/document cases of paper records and A3/A4 graphics
- 1 box of finds

8.3.5 Provision will be made to integrate the result of this phase of works with previous phases of work undertaken.

8.4 Selection policy

8.4.1 Wessex Archaeology follows national guidelines on selection and retention (SMA 1993; Brown 2011, section 4). In accordance with these, and any specific guidance prepared by the museum, a process of selection and retention will be followed so that only those artefacts or ecofacts that are considered to have potential for future study will be retained. The selection policy will be agreed with the museum, and is fully documented in the project archive.

8.5 Security copy

8.5.1 In line with current best practice (e.g., Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

8.6 OASIS

8.6.1 An OASIS online record (http://oasis.ac.uk/pages/wiki/Main) has been initiated, with key fields and a .pdf version of the final report submitted. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service ArchSearch catalogue.

9 COPYRIGHT

9.1 Archive and report copyright

9.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act* 1988 with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. 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 conforms to the *Copyright and Related Rights Regulations* 2003. In some instances, certain regional museums may require absolute transfer of copyright, rather than a licence; this should be dealt with on a case-by-case basis.

9.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research or development control within the planning process.

9.2 Third party data copyright

9.2.1 This document and the project archive may contain material that is non-Wessex Archaeology copyright (e.g., Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of *the Copyright, Designs and Patents Act* 1988 with regard to multiple copying and electronic dissemination of such material

REFERENCES

ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service and Digital Antiquity Guides to Good Practice

Bing maps https://www.bing.com/maps (accessed 08 December 2017)

British Geological Survey online viewer http://mapapps.bgs.ac.uk/geologyofbritain/home.html (accessed 2016)

Brown, D H 2011 *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (revised edition). Archaeological Archives Forum

English Heritage 2011 *Environmental Archaeology: a guide to theory and practice of methods, from sampling and recovery to post-excavation*. Swindon, Centre for Archaeology Guidelines

CIfA 2014a *Standard and Guidance for Archaeological Excavation*. Reading, Chartered Institute for Archaeologists

CIfA 2014b *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*. Reading, Chartered Institute for Archaeologists

CIfA 2014c *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives*. Reading, Chartered Institute for Archaeologists

SMA 1993 *Selection, Retention and Dispersal of Archaeological Collections*. Society of Museum Archaeologists

SMA 1995 *Towards an Accessible Archaeological Archive*. Society of Museum Archaeologists

Wessex Archaeology, 2009, Greater Gabbard Offshore Windfarm Extension Project: Archaeological Desk Based Assessment. Unpublished report Ref: 73010.01

Wessex Archaeology, 2011a. Galloper Offshore Wind Farm, Onshore Archaeological Works, Sizewell Gap, Leiston, Suffolk: Archaeological Evaluation Report, Unpublished Report Ref: 77610.02

Wessex Archaeology, 2011b. Galloper Wind Farm Onshore Works Heritage Statement. Unpublished Report Ref: 77610.03

Wessex Archaeology, 2013. Galloper Offshore Wind Farm, Geotechnical Test Pitting, Sizewell Gap, Leiston, Suffolk: Archaeological Watching Brief Report. Unpublished Report: 77611.01

Wessex Archaeology, 2014. Gallopers Offshore Wind Farm, Sizewell Gap, Leiston, Suffolk: Archaeological Evaluation Interim Statement. Unpublished Report: 104810.01

Wessex Archaeology, 2015. Galloper Wind Farm Onshore Works, Sizewell Gap, Leiston, Suffolk: Post Excavation Assessment Report and Updated Projected Design.

Wessex Archaeology, 2016. Galloper Offshore Wind Farm, Sizewell Gap, Leiston, Suffolk: Written Scheme of Investigation: Project Design for an Archaeological Strip, Map and Sample Excavation (Onshore Works), Onshore cable route. Ref: T20931.02

APPENDICES

Appendix 1 OASIS FORM

OASIS ID: wessexar1-300212

Project details

Project name	Gallopers Offshore Wind Farm, Sizewell Gap, Leiston, Suffolk: Onshore Cable Route (Phase 2)
Short description of the project	Strip, Map and Sample Excavation and Watching Brief on land at Leiston, Suffolk. The route of the cable was excavated under strip, map and sample conditions. Further works, on the beach, section of cable works and a UXO survey were subject to watching brief conditions. A common stratigraphic sequence was recorded along the majority of the route, comprising topsoil directly overlying natural geology, with isolated areas of made ground identified in the northern field that was associated with the construction of an artificial berm. No archaeological features were recorded during the project, although a single post-medieval coin and two prehistoric flints were recovered from topsoil deposits in the western field
Project dates	Start: 05-04-2016 End: 16-09-2016
Previous/future work	Yes / No
Any associated project reference codes	LCS 161 - Museum accession ID
Any associated project reference codes	104812 - Sitecode
Type of project	Recording project
Site status	None
Current Land use	Coastland 2 - Inter-tidal
Current Land use	Cultivated Land 1 - Minimal cultivation
Monument type	NONE None
Significant Finds	COIN Post Medieval
Significant Finds	FLINT SCRAPER Early Prehistoric
Significant Finds	FLINT BLADE CORE Neolithic
Investigation type	'"Open-area excavation"','"Watching Brief"'
Prompt	Voluntary/self-interest

Project location

Country	England
Site location	SUFFOLK SUFFOLK COASTAL LEISTON Galloper Offshore Windfarm, Sizewell Gap, Leiston, Suffolk

Postcode	IP16 4TT
Study area	0 Square metres
Site coordinates	TM 47116 62561 52.205157855859 1.617141636114 52 12 18 N 001 37 01 E Point

Project creators

Name of Organisation	Wessex Archaeology
Project brief originator	Galloper Offshore Wind Farm Limited
Project design originator	Wessex archaeology
Project director/manager	Mark Williams
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Galloper Offshore Wind Farm Limited

Project archives

Physical Archive recipient	Suffolk County Council Archaeology Service
Physical Archive ID	LCS 161
Physical Contents	"Metal","Worked stone/lithics"
Digital Archive recipient	Suffolk County Council Archaeology Service
Digital Archive ID	LCS 161
Digital Contents	"Metal","Stratigraphic","Worked stone/lithics"
Digital Media available	"Database","GIS","Images raster / digital photography","Text"
Paper Archive recipient	Suffolk County Council Archaeology Service
Paper Archive ID	LCS 161
Paper Contents	"none"
Paper Media available	"Context sheet","Correspondence","Diary","Drawing","Manuscript","Map","Photograph","Plan","Report","Section"

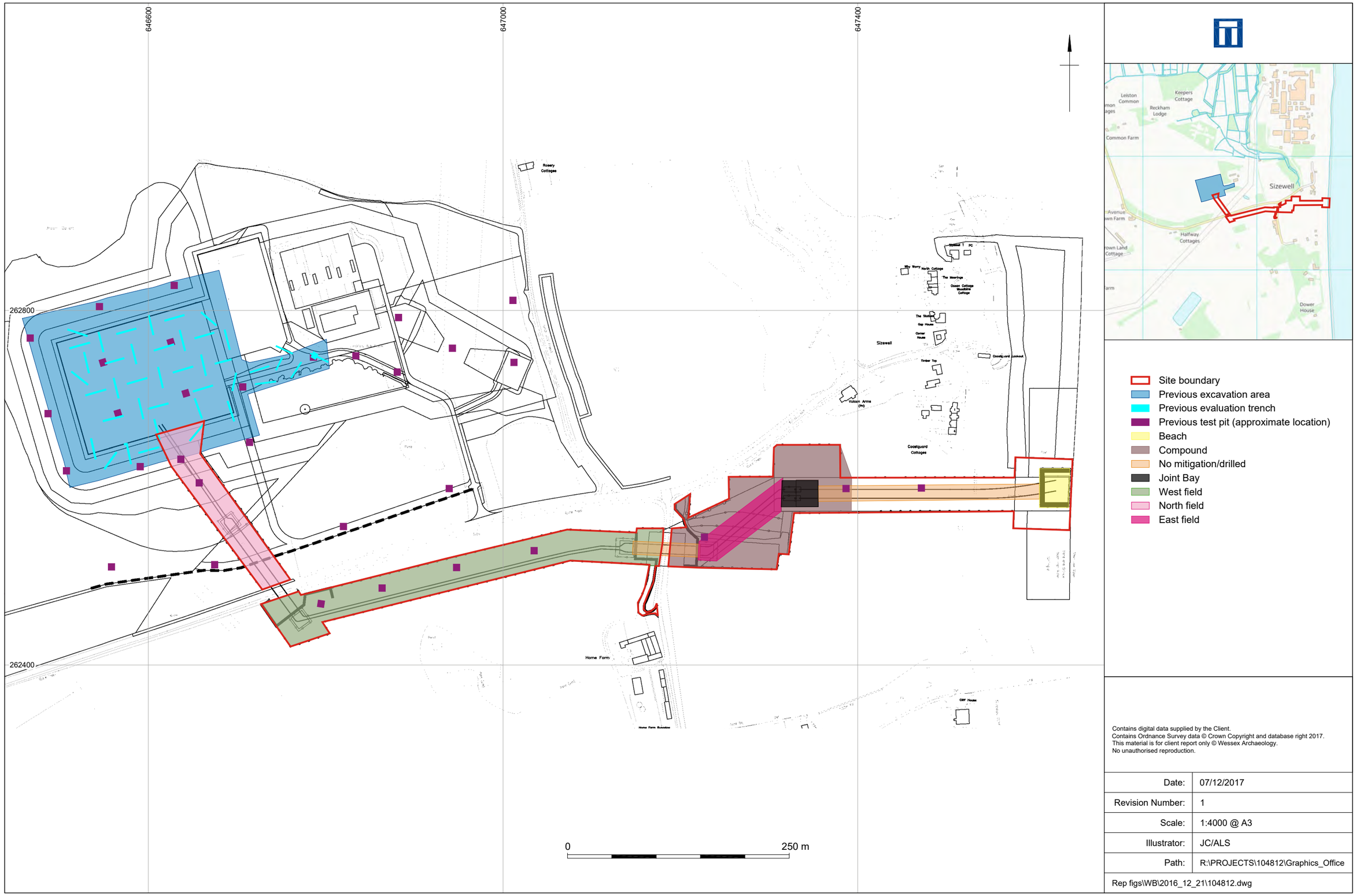
Project

bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Gallopers Offshore Wind Farm, Sizewell Gap, Leiston, Suffolk: Onshore Cable Route (Phase 2):Strip, Map and Sample Excavation and Watching Brief Report
Author(s)/Editor(s)	Lathan, J
Author(s)/Editor(s)	Piggott, T
Other bibliographic details	104812.05
Date	2017
Issuer or publisher	Wessex Archaeology
Place of issue or publication	Maidstone, Kent
Description	A4, comb bound, with A3 figures, in colour
Entered by	Andrew Souter (a.souter@wessexarch.co.uk)
Entered on	1 November 2019

Appendix 2 Written Scheme of Investigation

Appendix 3 Wessex Archaeology Desk-based Assessment



- Site boundary
- Previous excavation area
- Previous evaluation trench
- Previous test pit (approximate location)
- Beach
- Compound
- No mitigation/drilled
- Joint Bay
- West field
- North field
- East field

Date:	07/12/2017
Revision Number:	1
Scale:	1:4000 @ A3
Illustrator:	JC/ALS
Path:	R:\PROJECTS\104812\Graphics_Office
Rep figs\WB\2016_12_21\104812.dwg	

Site location, previous archaeological investigations and areas of monitored works

Figure 1

Plate 1: Working shot of machine excavation during UXO clearance, viewed from the west

Plate 2: Cable trenches in eastern field/compound area, viewed from the south

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 3: HDD receiver pit in eastern field/compound area, viewed from the south

Plate 4: Cable trenching in eastern field/compound area, viewed from the west

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 5: Deep excavation for winch anchor point in eastern field/compound area, viewed from the south

Plate 6: Transition joint bay in eastern field/compound area, viewed from the northwest

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 7: Water pipe test pit, viewed from the west

Plate 8: General shot of strip, map and sample in western field, viewed from the southwest

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 9: Representative section in western field, viewed from the north

Plate 10: Western field, viewed from the west

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 11: Cable easement in western field showing deep ploughing scars in natural sand, viewed from the east

Plate 12: Cable trenches in western field, viewed from the west

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 13: Cable trenching in western field, viewed from the southwest

Plate 14: Cable trenching in western field, viewed from the west

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

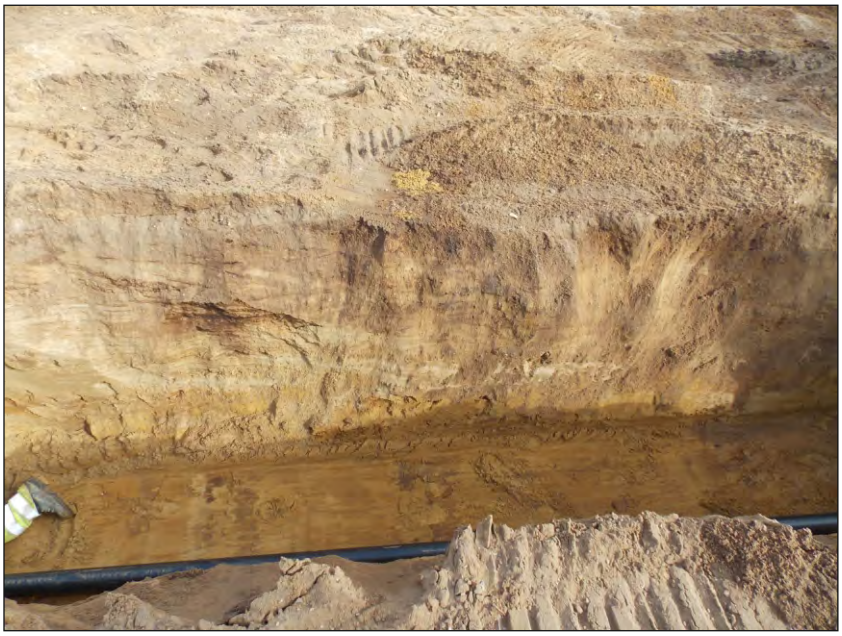


Plate 15: Cable trench in northern field, viewed from the west

Plate 16: Cable easement northern field, viewed from the southeast

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 17: Cable trench in northern field, viewed from the northwest

Plate 18: Ground reduction of berm in northern field, viewed from the southwest

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 19: Cable easement in northern field, viewed from the southeast

Plate 20: Working shot of the HDD receiver pit in the northern field, viewed from the west

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 21: Stripping of beach area, viewed from the northwest

Plate 22: Working shot of piling for the cofferdam, viewed from the northwest

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Plate 23: Layers of sand in beach, viewed from the east

Plate 24: Beach working area with post medieval mast/lookout (LCS129), viewed from the northwest

Date:	11/08/2017	Revision Number:	0
Scale:	N/A	Illustrator:	ALS
Path:	R:\PROJECTS\104812\Graphics_Office\Rep Figs\WB\2017_12_07\104812_Plates.cdr		

Appendix 2 Written Scheme of Investigation

Galloper Offshore Wind, Sizewell Gap, Leiston, Suffolk

Written Scheme of Investigation:
Project Design for an Archaeological Strip, Map and Sample Excavation
(Onshore Works)
Onshore cable route

Prepared for:
Galloper Offshore Wind Farm
Auckland House
Lydiard Fields
Great Western Way
Swindon
Wiltshire
SN5 8ZT

Prepared by:
Wessex Archaeology
Bridgewood House
Laker Road
Airport Industrial Estate
Rochester
Kent
ME1 3QX

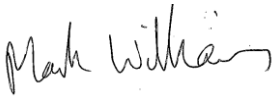
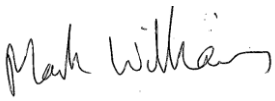
www.wessexarch.co.uk

February 2016

Report Ref: T20931.02

Quality Assurance

Project Code	T20931.01	**HER Code**		**Client Ref.**	
Planning Application Ref.		**Ordnance Survey (OS) national grid reference (NGR)**	647172, 262539		

Version	Status*	Prepared by	Checked and Approved By	Approver's Signature	Date
v01	I	*D Britchfield*	*M Williams*		16/02/2016
File:	R:\TENDERS\T20931\WSI\SMS\v01				
V02	E	*D Britchfield*	*M Williams*		17/02/2016
File:	R:\TENDERS\T20931\WSI\SMS\v02				
File:					
File:					
File:					

* I = Internal Draft; E = External Draft; F = Final

Galloper Offshore Wind, Sizewell Gap, Leiston, Suffolk

Written Scheme of Investigation: Project Design for an Archaeological Strip, Map and Sample Excavation (Onshore Works) Onshore cable route

Contents

Galloper Offshore Wind Farm, Sizewell Gap, Leiston, Suffolk

Written Scheme of Investigation: Project Design for an Archaeological Strip, Map and Sample Excavation (Onshore Works) Onshore cable route

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology (WA) has been commissioned by Galloper Wind Farm Ltd ('the Client') to carry out a programme of archaeological works comprising a strip, map and sample excavation along the cable route on land at Sizewell Gap, Leiston, Suffolk (**Figure 1**) centred on National Grid Reference (NGR) 647172, 262539 (hereafter, 'the Site'). The commissioning of the works follows the award of a development consent order (DCO) in May 2013 to build an offshore wind farm and associated development, including a new onshore substation and associated infrastructure.

1.1.2 The onshore substation is to be constructed on land at Sizewell Gap, Leiston, near the existing substation constructed for the Greater Gabbard Offshore Wind Farm (GGOWF). The onshore cable route will make landfall c. 55m south of the hamlet of Sizewell from where it will travel west across two arable fields before turning north-west across Sizewell Gap road to the new 132 kV substation.

1.1.3 This Written Scheme of Investigation sets out the programme of archaeological works and the methods by which it will be achieved, including reporting and has been prepared in accordance with the relevant standards and guidance issued by the Institute for Archaeologists, with which Wessex Archaeology is a Registered Archaeological Organisation.

1.1.4 Upon completion of the proposed archaeological works the results will be used by the Senior Archaeological Officer at Suffolk County Council to determine further mitigation measures should they be required.

1.2 Scope of Document

1.2.1 This method statement sets out the strategy and methodology by which Wessex Archaeology will implement the archaeological works. In format and content it conforms with current best practice and to the guidance outlined in *Management of Research Projects in the Historic Environment: The MoRPHE Project Manager's Guide* (Historic England 2015), *Standards for Field Archaeology in the East of England* (Gurney, 2003) and the Chartered Institute for Archaeologists' *Standard and guidance: archaeological excavation* (2014) and *Standard and guidance: archaeological watching brief* (2014) and. It will be submitted to, and approved by, SCCAS/CT prior to fieldwork commencing.

2 THE SITE

2.1.1 The Site covered by this WSI is the onshore cable route, which extends from the area of cable landfall on Sizewell beach in the east, to where it joins the new 132 kV substation site (works 6 in the DCO) in the west. The proposed cable route lies within a c. 38 m wide work area which runs roughly east to west across two arable fields divided by a narrow lane situated on a north-south axis. A wider work area is proposed at any bends in the route that primarily consist of temporary construction compounds. Before the route meets Sizewell Gap road it angles to the north-west and crosses the road into the arable field to the south of the new substation.

2.1.2 The proposed works comprise the following construction, operation, maintenance and decommissioning components (GWFL & Royal Haskoning 2011: 5.1.1);

- Wind turbine generators (WTGs) and supporting tower structures;
- WTG foundations with associated support and access structures;
- Offshore platforms to support offshore substation(s), potential collection station and accommodation facilities;
- Meteorological mast(s);
- Subsea inter and intra-array and export cables;
- Cable landfall and reception pits;
- Onshore transition bays;
- Onshore cabling from the landfall to the GWF substation;
- Directional drilling under roads, foreshore habitats and potentially other cables;
- 132kV onshore GWF compound and 132kV/400kV onshore transmission compound, which together are referred to as the “GWF substation”;
- Creation of a landform around three sides of the GWF compound and other landscaping proposals; 132kV connection between the two adjacent compounds;
- Onshore cabling from the 132kV/400kV transmission compound to the sealing end compounds;
- Transmission sealing end compounds adjacent to existing electricity transmission towers (pylons); and overhead line connections to the towers;
- Onshore cabling from the 132kV/400kV transmission compound connecting into the existing Greater Gabbard Offshore Wind Farm(GGOWF) 132kV cables (which run from Sizewell B to the GGOWF substation);
- Alterations to existing electricity transmission towers;
- Relocation of an existing telecommunications mast;
- Temporary works and laydown areas;
- Permanent and temporary access roads; and Service corridors, including telecommunications, water and connection to the local electricity network.

2.1.3 In order to mitigate the impact on potential archaeological remains it is proposed that the stripping of topsoil within the footprint of the proposed cable trenches, and horizontal directional drill launch pits and reception sites, is carried out during any construction works. Galloper wind farm comprises two onshore electrical circuits within the work area.

For each circuit the following areas will undergo strip map and record (**Figure 1** shows provides an indicative layout of the proposed works within the area. The precise route may vary due to on site constraints.);

- One linear trench – from the joint transition bay to the entry to the berm, along those sections which are not horizontally directional drilled. The HDDs which do not require strip map and record between launch and receiver pits, as the cables will be drilled at depth under the ground in these areas. The linear cable trench width is to be excavated to a width of *c*.1200mm in order to allow for the subsidence of the trench walls.

- Landfall HDD – one pit to be dug in the joint transition bay area measuring 12.5 x 4m (GWFP 2011);

- Sizewell Gap Road HDD – one pit at the launch site, and one pit at the reception site. Each pit is 2.5m x 1m (and 1m deep);

- Sizewell Hall Road HDD – one pit at the launch site, and one pit at the reception site. Each pit is 2.5m x 1m (and 1m deep).

2.1.4 Following agreement with the Client areas not requiring open excavation as no topspoil removal will be undertaken include;

- Areas between the launch and receiver pits for each HDD (as described above);

- Any temporary works construction areas, or the two accesses consented under the DCO;

- Area below the overhead 400kV pylons (this will form part of the Sizewell Gap Road HDD for health and safety reasons).

- Additional easement stripping beyond the actual pipe trenches unless described above.

2.1.5 The cable landfall will be achieved by a cable landfall work area of 80 m x 64 m which includes an area for a temporary beach compound measuring 25 x 15 m. The beach compound will include the use of terram matting on the surface to prevent damage to vegetation and by extension will protect any preserved archaeological remains. Additionally, beach anchors will be required to anchor the vessel whist export cables are pulled to shore. The beach area is relatively high energy and therefore archaeological remains are less likely to be preserved and there is relatively limited impact. It is not proposed to excavate this area but to undertake archaeological monitoring be undertaken during this works.

2.1.6 North of the Sizewell Gap Road, the cables will pass through an already constructed berm which surrounds the new 132 kV substation site at the north-west end of the route. The berm falls within the area of the previous 2015 excavation and therefore will not require any further archaeological work (**Figure 1**).

2.1.7 The Site slopes from approximately 12 m Ordnance Datum (aOD) at the new 132 kV substation site to 0 m aOD where the cable makes landfall at Sizewell beach. The underlying geology of the area around the substation comprises soils which are deep sand derived from the underlying glacio-fluvial drift of the Lowestoft Till Formation. The

remainder of the cable route lies over the Crag Group of sands. (Geological Survey of Great Britain, 1:50,000 map sheet 191).

3 ARCHAEOLOGICAL BACKGROUND AND POTENTIAL

3.1.1 A previous Desk-Based Assessment (WA, 2009) was prepared which described the archaeological and historical background to the new 132 kV substation site, the results of which are summarised below.

3.1.2 The recorded historic environment resource within a 1.5 km Study Area around the new 132 kV substation site was considered in order to provide a context for the discussion and interpretation of the known and potential resource within the Site.

3.2 Designated Sites

3.2.1 The Site does not contain any remains with statutory or local heritage designations. There are also no sites with statutory or local heritage designations (e.g. registered battlefields, parks and gardens, Scheduled Monuments or Listed Buildings) within the Study Area.

3.2.2 The nearest Scheduled Monuments are a Bronze Age bowl barrow on Aldringham Common, 1.5 km to the south-west of the Site boundary; two Bronze Age bowl barrows in Square Plantation 2.37 km to the south-west of the Site boundary; another two bowl barrows on Aldringham Green 2.46 km to the south-west of the Site boundary; and the second site of Leiston Abbey *c.* 2.4 km to the north-west of the Site boundary. The second site of Leiston Abbey is also a Grade I Listed Building. None of these sites will be impacted by proposed development.

3.2.3 There are a number of Listed Buildings in Leiston, 1.8 km to the west of the Site, beyond the Study Area, but none of these will be impacted by the proposed development.

3.2.4 The nearest Conservation Area comprises the historic core of Leiston, but this lies beyond the Study Area, 1.9 km to the west of the Site boundary, and will not be impacted by the proposed development.

3.3 Archaeological Background

3.3.1 Upon commissioning of the proposed works the archaeological contractor will undertake a new HER search to place the results within an up to date context of the known archaeological surroundings. Presented below is the archaeological background provided for the *Galloper Offshore Wind Farm: Onshore Works, Sizewell Gap, Leiston, Suffolk: Post Excavation Assessment Report and Updated Project Design* (Wessex Archaeology, 2015).

3.3.2 The evidence of prehistoric activity within the Study Area is suggested by a number of worked flints and pottery sherds, found predominantly as artefact scatters in the vicinity of the Site, with numerous potential ring ditches also visible on aerial photographs, although as yet none have been investigated.

3.3.3 There are no recorded Palaeolithic or Mesolithic finds within the Study Area, although this does not preclude their future discovery. Neolithic and/or Bronze Age activity near the Site is suggested by the presence of several pot-boiler flints and other worked flints found during previous work in the area (HER Nos: LCS 003, LCS 049, LCS 051, LCS 054, LCS 058, LCS 060, LCS 064 & LCS 073). To the north of the Site there are a number of cropmark visible on aerial photographs identified as ring ditches some of which are causewayed as well as a concentric semi-circular ring ditch. All of these are potentially of Bronze Age date but have not be excavated (HER Nos: LCS 048, LCS 050, LCS 052,

LCS 053, LCS 055, LCS 057, LCS 061, LCS 062, LCS067, LCS 068, LCS 069, LCS 070, LCS 072, & LCS 78).

3.3.4 There are currently no known sites or find spots recorded within the Suffolk HER dating to the Iron Age within the Site and Study Area. However, a field walking project by Suffolk County Council Archaeological Service (SCCAS) in 1994 to the east of Crown Farm, recorded a small amount of Iron Age pottery (SCCAS 1995).

3.3.5 Roman remains are known to the north of the Site and across the Study Area. Where present, evidence comprises artefact scatters of pottery and tile fragments found during evaluation in 1994 (HER Nos: LCS 049, LCS 051), with other finds of pottery and coins concentrated within the Leiston village area, to the west of the Site and Study Area. However, excavations to the east of Sandy Lane recorded a system of field and enclosure ditches which preceded the medieval occupation recorded to the east of the Site and have been provisionally dated as Romano-British, although post-excavation work is still ongoing (Atfield, *et al* 2009).

3.3.6 Although no material dating to the Saxon period is recorded within the Study Area, it is likely that the medieval settlements of Leiston and Sizewell had their foundations during the Saxon period, and certainly Leiston is mentioned in the Domesday book. During the medieval period the area of the Site would have been part of the property of Leiston Abbey until the dissolution of the monasteries in *c*.1538. A scatters and spreads of medieval pottery have been found in the immediate vicinity of the Site (HER Nos: LCS 049, LCS 051, LCS 054, LCS 058, LCS 060, LCS 064, LCS 066 & LCS 073).

3.3.7 An early medieval boat was recovered during a second phase of archaeological excavations in advance of the onshore works for the Greater Gabbard windfarm adjacent to the Site to the east. The boat, which was probably a small inshore fishing vessel, had been broken up during the 14th century, and parts of its hull re-used as a timber well lining. The boat was constructed using the same techniques as the great Sutton Hoo ships, although on a much more modest scale (Suffolk Archaeological Service). The same excavations also recorded a wide range of pottery from the 12th to 14th centuries, including high-status wares, as well as personal items such as brooches and buckles. Fishing hooks, weights and fish bones were also found (Atfield, *et al* 2009). Furthermore, excavations in Rosary Field adjacent to Sandy Lane revealed timber buildings, animal corrals and three large external ovens or possible corn-driers, which suggests a high potential for the discovery of medieval remains within the Site.

3.3.8 There is little evidence of post-medieval activity at the Site other than its transition from Common Land to enclosed fields and Broom Covert during the mid-19th century, suggesting land-use at the Site has changed little since the medieval period. A WWII pillbox (HER No: LCS 116) and other 20th century military remains are located within the vicinity of the proposed Site (HER No: LCS 063).

3.3.9 During more recent times, the area immediately to the east of the new 132 kV substation site was planted with a formal arrangement of deciduous woodland, first depicted on the OS 4th edition map of 1947, in the area now containing the substation for the Greater Gabbard wind farm. The Site remains undeveloped as agricultural land.

3.4 Previous Archaeological Evaluation (WA 2011a)

3.4.1 An archaeological field evaluation was undertaken by Wessex Archaeology in July 2011 (WA 2011), which evaluated an available area of *c*.3.1 ha for the new 132 kV substation

site (works 6 in the DCO). The evaluation area was constrained by the suspected potential presence of unexploded ordnance (UXO) on Site, as well as restrictions regarding working beneath the overhead power lines (OHL) connected to the neighbouring Sizewell B nuclear power station.

3.4.2 A total of 35 machine excavated trial trenches, each measuring 25 m x 1.8 m, were excavated. The evaluation proved the existence of features consistent with small scale Late Prehistoric and Romano-British activity probably relating to farming practices. The pottery recovered from the site was of Romano-British date, with the exception of a sherd of Anglo-Saxon pottery. Some struck flint of prehistoric date was also recovered, as were some burnt flints consistent with prehistoric activity.

3.4.3 The evaluation showed that the new 132 kV substation site occupies a raised area distinct from the surrounding low lying ground, suggesting that it may have remained relatively dry during periods of wet weather or tidal inundation, and therefore would have been suitable for occupation. Ditches observed on site dating from the prehistoric and Romano-British periods showed episodes of recutting, suggesting they were re-established on a regular, perhaps seasonal basis.

3.5 Heritage Statement (WA 2011b)

3.5.1 Following the completion of the archaeological evaluation a Heritage Statement was prepared which concluded that despite 'the high potential for archaeological finds and features to be present, the findings from a desk-based assessment and intrusive surveys indicate that the archaeological resource is of low sensitivity' (2011b:20).

3.6 Watching Brief (WA 2013)

3.6.1 An archaeological watching brief was undertaken by Wessex Archaeology in 2013 on the excavation of a total of 36 geotechnical test pits across the proposed new 132 kV substation site and onshore cable route. Ten of the excavated test pits measured c. 4 m x 3 m in plan and *c*. 2.5 m deep, this was to enable safe access into the test pits to allow testing to be carried out. The remaining 26 test pits measured *c*. 2 m x 0.6 m with depths ranging from 2.5 m – 4.5 m. No finds or features of archaeological significance were noted during the watching brief. Only made ground, natural soils and geology were observed.

3.7 Additional Archaeological Evaluation (WA 2014)

3.7.1 An additional six evaluation trenches were excavated by Wessex Archaeology in June 2014 within an area of former woodland to the west of the Greater Gabbard Offshore wind farm substation. The trenches measured between 15 m and 20 m and we located within the proposed access road for the new substation to the west. A single Romano-British urned cremation was found within the most eastern trench. An area round the cremation was extended however no further archaeological features or finds were observed.

3.8 Archaeological Excavation (WA 2015)

3.8.1 An archaeological strip, map and sample was undertaken by Wessex Archaeology in July and August 2014 covering an area of 3.7 ha which incorporated the previous two evaluation areas for the new 132 kV substation site (works 6 in the DCO). The excavation revealed activity on the Site dating between the Bronze Age and the Romano-British period. Bronze Age pottery was recovered from a ditch at the very northern edge of the

excavation; it is possible further activity of this date exists within the Site and /or beyond the limits of excavation to the north.

3.8.2 Low level Early Iron Age activity was confined to the north eastern region of the Site suggesting a pattern of rural open settlement. There is little evidence of enclosure or landscape division at the time although a single east to west aligned ditch does suggest some management of space. The remains of possible roundhouse/four post structures may indicate a more settled way of life although if so these features have been severely truncated.

3.8.3 Most evidence of settlement at the Site was of Romano-British date with several phases of enclosures and land divisions in evidence. The phases of rectilinear enclosures and ditches were recorded across the Site but were seen to be particularly dense towards the north of the Site. Land divisions, as evidenced by two ditch groups suggest a re-organisation of the land albeit along similar alignments. The density of features of this date in the northern region of the Site hint at further dense remains of this date beyond the limits of excavation to the north. Paddocks/enclosures were recorded by a number of enclosure groups; these suggest the first real attempt at organising the landscape occurred during the Romano-British period. A further three Romano-British cremations were recorded within the eastern arm of the Site close to the location of the cremation found in the additional evaluation.

3.8.4 Several features remain undated including pits, postholes and ditches and a small number of discrete features were unexcavated.

4 AIMS

4.1 Project Aims

4.1.1 In accordance with CIfA guidance (CIfA 2014), the general aims of the programme of archaeological works are to:

- *to examine the archaeological resource within the Site;*
- *within a framework of defined research objectives, to seek a better understanding of and compile a lasting record of that resource;*
- *to analyse and interpret the results; and*
- *disseminate them.*

4.2 Project Objectives

4.2.1 The excavation will aim to ascertain the range of past activities, and specifically whether the evidence suggests transient human activity, domestic/settled occupation, burial, industry, agriculture and/or combinations of these. Linked to this, the excavations will also aim to recover stratified assemblage of artefacts and ecofacts which are capable of analysis and research to assist in determining the date and function of the site during different periods.

4.2.2 Analysis of environmental data will aim to examine and address archaeological remains within their contemporaneous environment/s. The relationship between man and his contemporaneous environment will therefore be an objective of the project, including man's responses to the local environment and the effects of human habitation and exploitation of the landscape on local environmental conditions.

5 METHOD STATEMENT

5.1 Introduction

5.1.1 The following methodology is proposed in order to meet the aims and objectives of the investigations at the Site. All works will be carried out in accordance with the CIfA's *Standard and guidance: archaeological excavation* (CIfA 2014) excepting where they are superseded by statements made below.

5.1.2 The areas of excavation have been set out in Section 2, above, and are illustrated on **Figure 1**.

5.2 Health and Safety

5.2.1 Health and Safety considerations will be of paramount importance in conducting all fieldwork. Safe working practices will override archaeological considerations at all times.

5.2.2 All work will be carried out in accordance with the *Health and Safety at Work etc. Act 1974* and the *Management of Health and Safety Regulations 1992*, and all other relevant Health and Safety legislation, regulations and codes of practice in force at the time.

5.2.3 Wessex Archaeology will supply a copy of their Health and Safety Policy and a Risk Assessment to the Client before the commencement of any fieldwork. The Risk Assessment will have been read and understood by all staff attending the Site before any groundwork commences.

5.3 Access

5.3.1 The Client will make all access arrangements for the works; Wessex Archaeology will not deal directly with any landowners etc. unless instructed to do so by the Client.

5.4 Service Location

5.4.1 Before excavation begins the Client will provide information regarding the presence of any below/above ground services. The Site will be walked over and inspected to visually identify, where possible, the location of above and below ground services.

5.4.2 The excavation area will be scanned using a CAT to check for uncharted services.

5.4.3 Plant will not operate beneath overhead utilities. Goalposts will be erected for plant travelling beneath overhead power lines. This will be detailed further within the Site Risk assessment.

5.5 Strip, Map and Sample Excavation

5.5.1 A strip, map and sample exercise will be undertaken as topsoil is mechanically removed in spits by a 360º tracked machine with a smooth ditching bucket. This initial process will be constantly monitored by an archaeologist with any archaeological remains being fully recorded prior to the subsoil being removed down to the natural or the top of the archaeological horizon, whichever is encountered first.

5.5.2 The topsoil will be examined for archaeological material. A metal detector search will also be undertaken.

5.5.3 Excavation of all archaeological deposits will be undertaken by hand unless it can be shown that there will be no loss of evidence by using a machine.

5.5.4 Features of potential archaeological significance will be sampled by hand to determine their date and character; linear features will be sectioned and pits and post-holes will be subject to full excavation. All features which are, or could be interpreted as, structural will be fully excavated. The following minimum sampling levels will be adhered to:

- *Discrete features (e.g. pits, post-holes etc.) will as a minimum be 50% excavated;*
- *Where significant numbers of discrete features are encountered that appear morphologically indistinct, broadly contemporaneous and of probable lesser significance (e.g. a stakehole line), whilst examination of individual features would remain at 50%, a less intensive sampling strategy in terms of the number of features investigated may be considered more appropriate – this would be discussed and agreed in advance with the County Archaeologist;*
- *Exceptionally large discrete features (e.g. quarry pits), particularly where intial investigation indicates low-grade bulk in-fill with a paucity of anthropogenic material, may either be subject to a lesser percentage sample excavation, or if feasible, examined in part through mechanical means – this would be discussed and agreed in advance with the County Archaeologist;*
- *All structural features (e.g. beam slots, ring ditches etc.) will as a minimum be 50% excavated, including all terminals and feature intersections;*
- *Extant structural remains (e.g. walls, collapse/ debris fields) will be cleaned and recorded as is, pending implementation of a more detailed excavation and recording strategy – this would be discussed and agreed in advance with the County Archaeologist;*
- *Domestic and/or industrial working features (i.e. hearths, ovens etc.) will as a minimum be 50% excavated;*
- *All linear features (e.g. ditches, gullies etc.) will as a minimum be 10% excavated, ensuring that such a sample includes examination of all terminals, all intersections with other features and 'clean' sections away from potential contamination from non-contemporaneous features regularly spaced along the length of the feature; and*
- *Should any feature, regardless of morphology, chronology, function or size, reveal significant deposits (e.g. human remains, placed deposits, artefact- or organic-rich layers etc.), or remain potentially undated through initial sample excavation, the target percentage sample will be increased on a case by case basis, up to potentially 100% (i.e. 'whole-earth') of any feature – this would be discussed and agreed in advance with the County Archaeologist.*

5.5.5 The depth and complexity of archaeological deposits across the Site will be assessed. Sections shall always be positioned to record accurate cross-section profiles of any remains and to identify structural/phasing sequences (for example terminus and intersections).

5.5.6 All archaeological deposits and artefacts encountered during the course of excavation will be fully recorded. All artefacts will be collected by hand and retained.

5.5.7 All archaeological deposits will be given individual context numbers and will be recorded using proforma context sheets. Archaeological features will be planned at a scale of 1:20 or 1:50 as appropriate. Sections and profiles through features will be drawn at a scale of

1:10 or 1:20 as appropriate. All levels will be related to Ordnance Datum. A full photographic record of the project will be maintained using an appropriate format.

5.5.8 The excavation of any human remains that are discovered will be carried out in accordance with Ministry of Justice regulations (see **5.11** below).

5.5.9 Where complex archaeological stratification is encountered, deposits will be left *in situ* and measures to assess the depth of this stratification agreed with SCCAS/CT. Where modern features are seen to truncate the archaeological stratification, then these will be carefully removed without damage to surrounding deposits to enable the depth of stratification to be assessed.

5.6 Monitoring of Development

5.6.1 In the event unexpectedly complex and widespread archaeological remains are revealed, the Client and Archaeological Adviser to the LPA will be informed in order that the provisions of this method statement may be reviewed.

5.7 Health and Safety

5.7.1 Health and Safety considerations will be of paramount importance in conducting all fieldwork. Safe working practices will override archaeological considerations at all times.

5.7.2 All work will be carried out in accordance with the *Health and Safety at Work etc. Act 1974* and the *Management of Health and Safety Regulations 1992*, and all other relevant Health and Safety legislation, regulations and codes of practice in force at the time.

5.7.3 Wessex Archaeology will supply a copy of their Health and Safety Policy and a Risk Assessment to the Client before the commencement of any fieldwork. The Risk Assessment will have been read and understood by all staff attending the Site before any groundwork commences.

5.8 Survey

5.8.1 All survey will be undertaken using a Total Station or GPS system and tied into the Ordnance Survey.

5.9 Recording

5.9.1 All exposed archaeological deposits will be recorded using Wessex Archaeology's pro forma recording system. A further more general record of the work comprising a description and discussion of the archaeology is to be maintained as appropriate. Context sheets are to be primarily filled in by the archaeologist excavating the feature or deposit.

5.9.2 Where appropriate, significant artefacts will be 3d recorded and detailed plans made of any special or placed deposits.

5.9.3 A complete drawn record of excavated archaeological features and deposits will be compiled. This will include both plans and sections, drawn to appropriate scales (1:20 for plans, 1:10 for sections), and with reference to a site grid tied to the Ordnance Survey National Grid. The Ordnance Datum (OD) height of all principal features and levels will be calculated and plans/sections will be annotated with OD heights.

5.9.4 A full photographic record will be maintained using both colour transparencies and black and white negatives (on 35 mm film). Digital photography will be used additionally for all photography of significant features, finds, deposits and general site working. The photographic record will illustrate both the detail and the general context of the principal features and finds excavated and the Site as a whole.

5.9.5 All plans and sections are to be drawn on polyester based drafting film and clearly labelled.

5.9.6 Wessex Archaeology will ensure that the complete site archive including finds and environmental samples are kept in a secure place throughout the period of excavation and post excavation works.

5.10 Finds

5.10.1 All finds will be treated in accordance with relevant industry guidance (UKIC 2001; MGC 1991; English Heritage 2005, 2006b).

5.10.2 All artefacts from excavated contexts will be retained (except unstratified modern material) and taken to Wessex Archaeology offices in Salisbury for further work.

5.10.3 All artefacts will (as a minimum) be washed, weighed, counted and identified. Any artefacts requiring conservation or specific storage conditions will be dealt with immediately, in line with *First Aid for Finds* (Neal and Watkinson 1998). Stratified ironwork, all coins, and a selection of other metalwork will be X-rayed and stored in a stable environment along with other fragile and delicate material. Other conservation needs will be assessed by Wessex Archaeology's Conservator.

5.10.4 All artefacts will be recorded by context, with summary listing of artefacts by category to provide simple quantification. Artefacts will be analysed and reported by Wessex Archaeology specialists.

5.10.5 In the event of discovery of artefacts covered or potentially covered by The Treasure Act 1996, their excavation and removal will be undertaken following notification of the Client, Coroner and the SCCAS/CT Archaeological Officer. All discoveries covered by the Act will be notified to the Coroner within 14 days.

5.11 Human remains

5.11.1 In the event of the discovery of any human remains, it is proposed that these will be left in situ, covered and protected until the Client, the Coroner, and the SCCAS/CT Archaeological Officer have been informed. The removal of human remains would be subject to compliance with the relevant Ministry of Justice licence, which will be obtained by Wessex Archaeology.

5.11.2 Should human remains require excavation, all excavation and post-excavation will be in accordance with the standards set out in *IFA Technical Paper 13* (McKinley and Roberts 1993). Any appropriate specialist guidance/Site visits will be undertaken by Jackie McKinley of Wessex Archaeology. Following analysis, the final placing of human remains will be subject to the requirements of the Ministry of Justice licence.

5.12 Treasure

5.12.1 Finds, discovered by the Archaeological Contractor, falling under the statutory definition of Treasure (as defined by the Treasure Act of 1996 and its revision of 2002) will be reported

immediately to the relevant Coroner's Office, the Finds Liaison Officer (FLO) who is the designated treasure co-ordinator for Suffolk County Council, the landowner and the Archaeological Advisor to the LPA. A Treasure Receipt (obtainable from either the FLO or the DCMS website) must be completed and a report submitted to the Coroner's Office and the FLO within 14 days of understanding the find is Treasure. Failure to report within 14 days is a criminal offence. The Treasure Receipt and Report must include the date and circumstances of the discovery, the identity of the finder (put as unit/contractor) and (as exactly as possible) the location of the find.

5.13 Environmental sampling

Introduction

5.13.1 The environmental sampling strategy will follow *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (second edition) (EH 2011).

5.13.2 All sealed and stratified archaeological contexts will be considered for standard environmental sampling. Bulk soil samples for plant macro-fossils, small animal and fish bones and other small artefacts will be taken from appropriate well-sealed and dated/datable archaeological deposits. The collection and processing of environmental samples will be undertaken in accordance with English Heritage guidelines (English Heritage 2011).

5.13.3 Other samples will be taken, as appropriate, in consultation with Wessex Archaeology specialists, SCCAS/CT Archaeological Officer and the English Heritage Regional Science Advisor (e.g. dendrochronology, soil micromorphology, monolith samples, C14, etc).

In situ Samples

5.13.4 Where required, undisturbed samples will be taken for pollen, microfossil or micromorphological study, as well as the further analysis of foraminiferas, diatoms, ostracods, insects, mollusca etc. These will be extracted in appropriately-sized Kubiena tins or monoliths. Only newly exposed or cleaned sections will be examined in order to reduce the risk of contamination or structural deterioration. The samples will be securely wrapped and clearly labelled.

5.13.5 The depth of the extracted sample will be recorded at the top and base of the sample. If contiguous monoliths are required to sample a deep stratigraphic sequence, a 50mm overlap will be maintained between each monolith. The position will be recorded on a section drawing with level reduced to OS datum. If the monolith crosses context boundaries, these will be recorded on the environmental sample sheet.

Bulk Samples

5.13.6 Any samples taken will be stored in ten litre plastic buckets with lids and handles. A waterproof label will be fixed to the bucket and will record site code, context number and sample number. A duplicate label will be retained inside the bucket. Wherever possible, samples will be protected from temperatures below 5° and above 25° celsius and will be prevented from either wetting or drying out. If bulk disturbed samples are taken, the limits of the sampled area will be indicated on a plan/ section.

5.13.7 The residues and sieved fractions of the bulk environmental soil samples will be recorded and retained with the project archive. For charred material, bulk samples of 40-60 litres in volume will be taken for processing by flotation. All samples will be floated on a 250-300

micron mesh and the heavy residues washed over a 0.5-1mm mesh. The heavy residues will be scanned with a magnet to recover micro-slags.

Spot Samples

5.13.8 If it is not possible to extract undisturbed monoliths, sections may be sampled by way of spot samples. These will be at 20mm vertical intervals with a maximum depth of 10mm. If contexts have a visibly low organic content, sampling could extend laterally at a given depth in 10mm deep spits.

5.13.9 If appropriate, contiguous column samples will be taken for the retrieval of macrofossils. Individual sub-samples will be of 1-10 kg depending on the nature of the deposit and the category of material to be retrieved. If taken for several specialist purposes, separate columns may need to be taken.

5.13.10 Consideration will be given to the sampling of suitable material for absolute dating purposes, though the commission of such laboratory analysis will be agreed in advance with the Client.

Sampling strategy for Holocene sequences

5.13.11 If present, fine-grained deposits may be sampled to extract palaeoenvironmental material through wet-sieving and flotation. Office-based wet-sieving will take place in order to inform the sampling strategy, particularly with regard to sample size. In general, fine-grained sediment samples will comprise a minimum of 50 litres, and doubled should the off-site processing demonstrate that significant quantities of plant macro-fossils etc. are present. Samples may also be taken for pollen, foraminiferas, diatoms, ostracods and, if appropriate, molluscs.

5.14 Monitoring

5.14.1 Wessex Archaeology will inform SCCAS/CT of the commencement of fieldwork and the progress of the investigations on the Site. A minimum of five days' notice will be provided prior to commencement.

5.14.2 Reasonable access to the Site will be arranged for SCCAS/CT who will wish to make Site visits to inspect and monitor the archaeological investigations as they progress. Areas required to be handed over for development will need to be signed off by SCCAS/CT once the archaeological fieldwork has been completed.

5.14.3 Variations to the WSI will be agreed in advance with representatives of the Client and the SCCAS/CT.

5.15 Outreach and Education

5.15.1 In the event that significant archaeological deposits are present on the Site and in accordance with Wessex Archaeology's Education and Outreach commitments, that a series of weekly blogs will be prepared as the project develops in order to keep the community informed. Local schools and other interested parties will be informed of the blog and informed when an update is released.

5.15.2 A press release will be issued at project commencement with a link to the project Blog.

5.15.3 A public lecture will be offered to the local archaeological society or Parish council depending on interest shown.

5.15.4 A half day introduction to archaeology will be offered to two local schools this will use finds form the site to introduce the archaeology of the area.

5.15.5 If significant finds are recovered potential for a Museum display in a suitable location.

5.15.6 All outreach and education will be subject to confidentiality issues and will only be carried out consultation and approval from The Client.

6 POST-EXCAVATION AND REPORTING

6.1 Report

6.1.1 Following completion of all fieldwork, an assessment report will be prepared, which will inform the need for further analysis, reporting and publication, as set out in the Brief supplied by SCCAS/CT. This report will be prepared within eight weeks and submitted to SCCAS/CT for approval and will be in keeping with the *Standards and Practices in Archaeological Fieldwork – Archaeological Guidance Paper 3* (English Heritage 1988).

6.1.2 The report will include, as a minimum:

- *A front sheet (setting out the site name, National Grid Reference to minimum eight figures, description of task undertaken, date and duration of the fieldwork, site code/number);*
- *A non-technical summary of the work including the results;*
- *Identity of the organization and individuals carrying out the work (in particular the names of the project director, site supervisor and any specialists);*
- *A general introduction to the project including site description;*
- *Aims and objectives;*
- *Methodologies employed to undertake the works;*
- *Descriptive text presenting the results of the works including finds and environmental data where appropriate;*
- *Confidence rating on the reliability of the results;*
- *Interpretation and discussion of the results;*
- *Assessment of the significance of any archaeological remains identified;*
- *Assessment of the potential of any data for further analysis;*
- *Proposals, if appropriate, for further analysis and dissemination;*
- *Details of the scale, nature and location of the archive and the intended place of deposition;*
- *Report bibliography;*
- *Sufficient illustrations to support the text including figures to show the location of the site in a regional and local context, location of all trial trenches, detailed trench plans and sections as appropriate; and*
- *Appropriate appendices containing context etc. information.*

6.1.3 Following agreement with SCCAS/CT regarding the scope and/or need for further analysis, reporting and publication, a full excavation report will be prepared. The report will

include sufficient documentary research in order to place the results of the evaluation in its archaeological context and in relation to the Regional Research Framework.

6.1.4 Copyright of the report will be retained by Wessex Archaeology under the terms of the *Copyright, Designs and Patents Act* (1988) with all rights reserved, excepting that Wessex Archaeology provides an exclusive licence to the respective client and to the local planning authority for the use of the report in all matters relating to the proposed development. Reports submitted in support of planning applications are considered to be public documents and will be made available for public consultation through the Historic Environment Record.

6.1.5 Copies of all reports will be deposited with the English Heritage Archive where they can be freely copied without reference to the authors for archaeological research.

6.1.6 The need for publication will be discussed with SCCAS/CT at the post ex assessment stage.

6.1.7 Details of the archaeological remains recorded at the Site will be submitted online to the OASIS (Online Access to the Index of Archaeological Investigations) database. AS copy of the OASIS form will be included as an appendix to the post excavation assessment report.

6.1.8 The information will be deposited within the SCC Historic Environment Record (HER) maintained by SCCAS/CT where it can be freely copied without reference to the Archaeological Contractor for the purposes of archaeological research or Development Control within the planning process.

7 ARCHIVE

7.1.1 The complete Site archive, which will include paper records, photographic records, graphics, artefacts, ecofacts and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by the appropriate Museum, and in general following nationally recommended guidelines (SMA 1995; CIfA 2014; Brown 2011; ADS 2013).

7.1.2 All archive elements will be marked with the Site code and a full index will be prepared.

7.1.3 The Site archive will be prepared for long-term storage in accordance with *Guidelines for the preparation of excavation archives for long term storage* (Walker 1990) and *Standards in the museum care of archaeological collections* (Museums and Galleries Commission 1994). It is proposed in principle that, subject to the wishes of the landowner, the entire archive (including the finds) will be deposited with a Museums Service to be agreed with. Provision has been made for the cost of long term storage in the post-fieldwork costs.

7.1.4 Until final deposition with a suitable museum the archive will be stored at the offices of Wessex Archaeology London and South East Office in Maidstone.

7.2 Discard policy

7.2.1 Wessex Archaeology follows the guidelines set out in *Selection, Retention and Dispersal* (Society of Museum Archaeologists 1993), which allows for the discard of selected artefact and ecofact categories which are not considered to warrant any future analysis. Any discard of artefacts will be fully documented in the project archive.

7.2.2 The discard of environmental remains and samples follows nationally recommended guidelines (SMA 1993; 1995; Historic England 2002).

7.3 Security copy

7.3.1 In line with current best practice (e.g. Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

8 STANDARDS

8.1 Quality and Code of Practice

8.1.1 Wessex Archaeology is an archaeological organisation registered with the Chartered Institute for Archaeologists

8.1.2 Wessex Archaeology endorses the *Code of Practice* and the *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* of The Chartered Institute for Archaeologists

8.1.3 All core staff would be of a standard approved by Wessex Archaeology, be employed in line with *The Institute for Archaeologists Codes of Practice* and be members of the Chartered Institute for Archaeologists or be appropriately qualified

8.1.4 Wessex Archaeology operates a *Project Management System*. All projects are undertaken under the direction of the Project Manager who is responsible to a Section Head, who ensures the maintenance of quality standards within the organisation. The Chief Executive has ultimate responsibility for all of the Trust's work.

9 INSURANCE AND HEALTH AND SAFETY

9.1 Policy and Risk Assessment

9.1.1 Health and safety considerations will be of paramount importance in conducting all fieldwork. Safe working practises will override archaeological considerations at all times.

9.1.2 All work will be carried out in accordance with the *Health and Safety at Work etc. Act 1974* and the *Management of Health and Safety Regulations 1992*, and all other relevant Health and Safety legislation, regulations and codes of practice in force at the time.

9.1.3 Wessex Archaeology will supply a copy of their *Health and Safety Policy* and a Risk Assessment to the Client before the commencement of any fieldwork. The Risk Assessment will have been read and understood by all staff attending the Site before any groundwork commences.

9.1.4 Wessex Archaeology has both public liability (£10,000,000) and professional indemnity insurance (£5,000,000).

9.1.5 Wessex Archaeology will ensure that all work is carried out to within the *Health and Safety at Work etc. Act 1974* and the *Management of Health and Safety Regulations 1992*.

9.2 Monitoring

9.2.1 The client will inform the Archaeological Adviser to the LPA of the commencement of fieldwork and the progress of the investigations on the Site.

9.2.2 Reasonable access to the Site will be arranged for representatives of the Local Planning Authority who may wish to make site visits to inspect and monitor the archaeological investigations as they progress. Variations to the Method Statement will be agreed in advance with representatives of the Client and the Archaeological Advisor to the LPA.

10 COPYRIGHT

10.1 Copyright, Designs and Patents Act 1988

10.1.1 The Trust for Wessex Archaeology shall retain full copyright of any report under the *Copyright, Designs and Patents Act 1988* with all rights reserved. Excepting that it hereby provides an exclusive licence to the client for the use of the report by the client in all matters directly relating to the project as described in the specification. Any document produced to meet planning requirements may be copied for planning purposes by the Local Planning Authority.

10.1.2 A licence will also be granted to Historic England, for the use of all documents arising from this project in all matters relating directly to the project, as well as for bona fide research purposes.

11 OTHER

11.1 Insurance

11.1.1 Wessex Archaeology carries insurance as follows:

Employers' Liability: £10 million
Public Liability: £10 million
Fusion Insurance Combined Policy No. CC0009636004

Professional Indemnity: £5 million
Royal & Sun Alliance/Saturn, Policy No. P8531NAECE/1148

11.2 Party Wall Act etc 1996

11.2.1 Wessex Archaeology advises its clients that they must ensure all appropriate requirements and duties under *'The Party Wall etc. Act 1996'* have been, or will be, fully complied with in respect of the proposed archaeological works, prior to those works commencing.

12 REFERENCES

6 Alpha Associates. 2011. *Non-intrusive Magnetometer Unexploded Ordnance Survey Report.* Project P2435, May 2011

ADS 2013, Caring for Digital Data in Archaeology: a guide to good practice, Archaeology Data Service & Digital Antiquity Guides to Good Practice

Atfield, R, Breen, A, Darrah, R and Tyers, I. 2009. 'Leiston, Greater Gabbard Off Shore Wind Farm, Sizewell', *Proceedings of the Suffolk Institute of Archaeology and History* Vol XLII part 1

Brown, D.H., 2011, Archaeological archives; a guide to best practice in creation, compilation, transfer and curation, Archaeological Archives Forum (revised edition)

Chartered Institute for Archaeologists (CIfA), 2014, *Standard and guidance: archaeological field evaluation*, Chartered Institute for Archaeologists, Reading

Galloper Wind Farm Limited, 2011, Galloper Wind Farm Project Design and Access Statement, Ref. 8.2.

Galloper Wind Farm Limited, 2011, Galloper Wind Farm Project Environmental Statement, Royal Haskoning ref. 9V3083/R01/303424/Exet.

GWFL & Royal Haskoning, 2011, Galloper Wind Farm Project Environmental Statement – Chapter 5: Project Details. Document Reference 5.2.5 Version 14

Gurney, D., 2003, *Standards for Field Archaeology in the East of England,* East Anglian Archaeology Occasional Paper No. 14.

Historic England 1991. *Management of Archaeological Projects*. London, English Heritage

Historic England, 2002, *Environmental Archaeology; a guide to theory and practice of methods, from sampling and recovery to post-excavation*. Swindon, Centre for Archaeology Guidelines.
Institute for Archaeologists 2008. *Standard and Guidance for Archaeological Evaluation*

Richmond, A.D.W. 1994. *An Archaeological Evaluation for the proposed Sizewell C Station site*. Suffolk County Council Archaeological Service Unpublished report, ref: 94/31

Suffolk County Council Archaeological Service Conservation Team, 2010, Deposition of Archaeological Archives in Suffolk

Suffolk County Council Archaeological Service Conservation Team, 2011a, Deposition of Archaeological Archives in Suffolk

Suffolk County Council Archaeological Service Conservation Team, 2011b, Requirements for a Trenched Archaeological Evaluation

Suffolk County Council Archaeological Service Conservation Team, 2010b, Deposition of Archaeological Archives in Suffolk

SMA, 1993, Selection, Retention and Dispersal of Archaeological Collections, Society of Museum Archaeologists.

SMA, 1995, Towards an Accessible Archaeological Archive, Society of Museum Archaeologists.

Wessex Archaeology, 2009, Greater Gabbard Offshore Windfarm Extension Project Archaeological Desk Based Assessment Onshore Works, Unpublished report Ref: 73010.01

Wessex Archaeology, 2011a, Galloper Offshore Wind Farm: Onshore Archaeological Works Archaeological Evaluation Report, Unpublished Report Ref: 77610.02, Suffolk HER no. LCS 161

Wessex Archaeology, 2011b, Galloper Wind Farm Onshore Works Heritage Statement, Unpublished Report Ref: 77610.03

Wessex Archaeology, 2012, Galloper Offshore Wind: Written Scheme of Investigation: Onshore, Unpublished Report Ref: 85470.02

Wessex Archaeology, 2013, Galloper Offshore Wind Farm, Geotechnical Test Pitting, Sizewell Gap, Leiston, Suffolk: Archaeological Watching Brief Report, Unpublished Report Ref: 77611.01

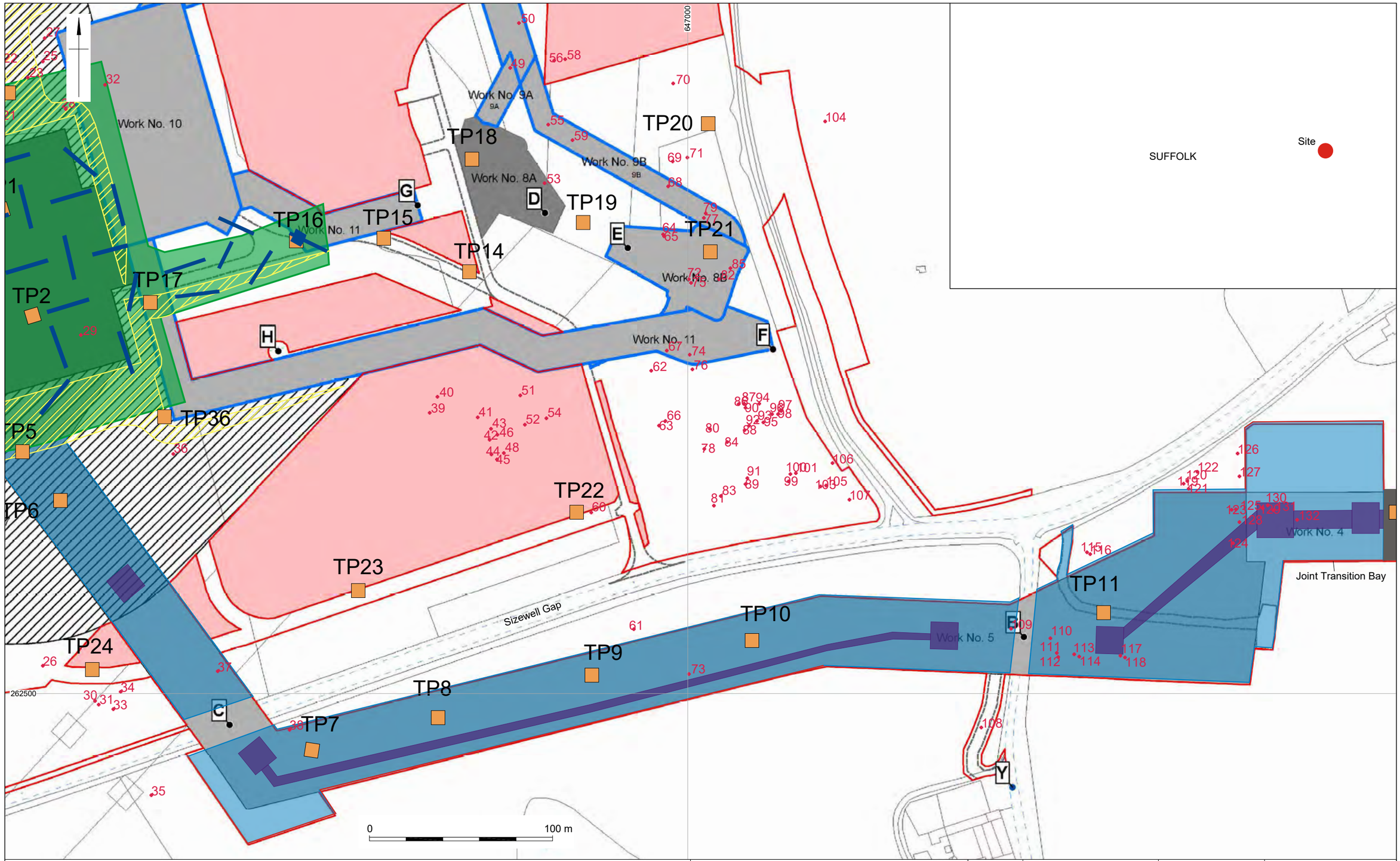
Wessex Archaeology, 2014, Galloper Offshore Wind Farm: Onshore Works, Sizewell Gap, Leiston, Suffolk: Archaeological Evaluation Interim Statement, Unpublished Report Ref: 104810.01

Wessex Archaeology, 2015, Galloper Offshore Wind Farm: Onshore Works, Sizewell Gap, Leiston, Suffolk: Post Excavation Assessment Report and Updated Project Design, Unpublished Report Ref: 104811.07

www.mapapps.bgs.ac.uk

www.galloperwindfarm.com/application-documents.php

13 APPENDIX 1 REQUIREMENTS FOR A TRENCHED ARCHAEOLOGICAL EXCAVATION (2012) AS PREPARED BY SCCAS/CT



Date:	17/02/2016	Revision Number:	0
Scale:	1:2,000 @ A3	Illustrator:	JC & ALS
Path:	R:\TENDERS\T20931\Graphics_Office\Rep figs\WSI\2016_01_25\T20931_WSI.dwg		

Plan of previous archaeological works, potential UXO targets and proposed watching brief

Figure 1

Appendix 3 Wessex Archaeology Desk-based Assessment

Wessex Archaeology

Greater Gabbard Offshore Windfarm Extension Project, Suffolk

Archaeological Desk-based Asessment

Onshore Works

Ref: 73010.01

December 2009

GREATER GABBARD OFFSHORE WIND FARM EXTENSION PROJECT SUFFOLK

Archaeological Desk-based Assessment

ONSHORE WORKS

Prepared for:
Airtricity

by
Wessex Archaeology
Portway House
Old Sarum Park
SALISBURY
Wiltshire
SP4 6EB

Report reference: 73010.01

December 2009

GREATER GABBARD OFFSHORE WINDFARM EXTENSION PROJECT SUFFOLK

Archaeological Desk-Based Assessment Onshore Works

Contents

GREATER GABBARD OFFSHORE WINDFARM EXTENSION PROJECT SUFFOLK

Archaeological Desk-based Assessment Onshore Works

Summary

Wessex Archaeology was commissioned by Airtricity to undertake an archaeological desk-based assessment of an area of onshore works associated with proposed extension to, and cable route for, the Greater Gabbard Offshore Windfarm.

The Site comprises an area of foreshore, beach and coastal mainland immediately to the south and south-west of the Sizewell B Power Station, Suffolk where it is anticipated that the cable route from the Greater Gabbard wind farm will come ashore and connect to the National Grid. There are two proposed substation sites: one option lies immediately to the west of the current substation serving the Greater Gabbard Offshore Windfarm at NGR 646617, 262838; the second lies to the south at NGR 646704, 262212.

The recorded cultural heritage resource within a 1.5km Study Area around the Site was considered in order to provide a context for the discussion and interpretation of the known and potential resource within the Study Area. Archaeological investigations within and around the Study Area have recorded archaeological sites, deposits and find spots dating from the prehistoric to the modern period, with much of the known and potential archaeological resource reflecting the situation of the Site on the coast, comprising a number of WWII defence elements. Within the boundary of the Site there are a number of recorded sites and monuments, dating from the prehistoric period to the modern day. It is considered that the potential for recovering archaeological remains from the Site is high. Overall the potential archaeological resource within the Site may be considered to be of local to regional importance.

There are no statutorily designated sites or monuments within the Study Area. It is considered that development would have a negligible impact on the settings of any Scheduled Monuments and Listed Buildings in the wider area, as these are already compromised by the existing Sizewell Power Station. The historic landscape of the Site and Study Area is of generally degraded character but includes some strong elements such as the Sizewell Belts and geometric fields of Estate Sandlands and lies within the Heritage Coast and an Area of Outstanding Natural Beauty.

It is considered that, in order to comply with the criteria set out in National and Local Planning Legislation further archaeological investigation may be required. The precise nature and scope of further investigations within the Site should be agreed through consultation with the Development Control Archaeologist for Suffolk County Council, and undertaken in line with an agreed Written Scheme of Investigation, produced in advance of any Site works.

GREATER GABBARD OFFSHORE WINDFARM EXTENSION PROJECT SUFFOLK

Archaeological Desk-based Assessment Onshore Works

Acknowledgements

This project was commissioned by Airtricity, and Wessex Archaeology is grateful to Rick Campbell in this regard. Wessex Archaeology would also like to thank Dr Colin Pendelton of the Suffolk Sites and Monuments Record for his assistance, as well as the staff at the Suffolk Record Office in Ipswich. Wessex Archaeology would also like to thank Dave Gill of Suffolk Archaeological Service for providing information on unpublished excavations in the Study Area.

The report was researched and compiled by Nikki Cook. Caroline Russell undertook the site visit and obtained the historic mapping from the Suffolk Record Office. The project was managed for Wessex Archaeology by Nikki Cook.

GREATER GABBARD OFFSHORE WINDFARM EXTENSION PROJECT SUFFOLK

Archaeological Desk-based Assessment Onshore Works

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology was commissioned by Airtricity to undertake an archaeological desk-based assessment of an area of onshore works associated with proposed extension to, and cable route for, the Greater Gabbard Offshore Windfarm, Suffolk, hereafter 'The Site' (see **Figure 1**).

1.1.2 The Site covers an area of *c*.94 ha, although within this area there are two preferred locations for substations to connect the Greater Gabbard Offshore Windfarm Extension to the National Grid. The first substation option (Option 1) lies immediately to the west of the current substation being built to serve the Greater Gabbard Offshore Windfarm at NGR 646617, 262838, whilst the second (Option 2) lies to the south at NGR 646704, 262212 (see **Figure 1**).

1.1.3 At the time of writing, the exact route of the onshore cable run to the new proposed substation is unknown, but it is thought that it will run alongside the existing cable run for the current Greater Gabbard windfarm, outlined in purple on **Figure 1**. Similarly the cable run linking the proposed substation to Sizewell Power Station is also unknown, but is also likely to follow the cable run from the existing substation, with the route outlined in orange on **Figure 1**.

1.1.4 This assessment has been commissioned to inform the Client regarding any relevant archaeological and/or historic environment issues and constraints relating to the onshore works associated with the Greater Gabbard Offshore Windfarm Extension, and will also support a Planning Application for the Site.

1.2 The Site, location and geology

1.2.1 The Site is situated within a lowland coastal strip on the East Anglian coast, immediately to the south and south-west of the Sizewell B Power Station, Sizewell, Suffolk (see **Figure 1**).

1.2.2 The Site comprises an area of foreshore, beach and coastal mainland where it is anticipated that the cable route from the Greater Gabbard Windfarm Extension will come ashore and connect to the National Grid via a new substation.

1.2.3 The underlying geology of the Site comprises thick chalk formations at depth overlain by thin layers of Ormesby Clay Formation and Lambeth Group mudstones, above which lie Harwich Formation layers comprising sandy mudstone and siltstone with volcanic ash deposits. The immediate underlying geology, to a depth of *c*.50m below OD, consists mostly of Crag

Group shelly micaceous sands with local rounded flint gravels ("Westleton Beds"), although in the western portion of the Site the immediate underlying geology comprises sands and gravels of the Lowestoft Till Formation (Geological Survey of Great Britain 1:50,000 map sheet 191).

2 METHODOLOGY

2.1 Aims and scope

2.1.1 The aim of this assessment is to establish the known and potential cultural heritage resource within the Site and its environs, which may be affected by the proposed development.

2.1.2 For the purposes of this assessment, the cultural heritage resource is taken to encompass archaeological remains (both above and below ground), palaeoenvironmental evidence, historic structures, and elements of the historic landscape within the intertidal and terrestrial zones potentially affected by the proposed development.

2.1.3 This report assesses the likely impact of proposed development on archaeology, the built heritage resource and the historic landscape, and provides recommendations on appropriate mitigation strategies.

2.2 Study Area

2.2.1 The recorded cultural heritage resource within a Study Area defined by a 1.5km radius from the centre of the Site at NGR 647013, 262554 was considered in order to provide a context for the discussion and interpretation of the known and potential resource within the Site (**Figure 1**).

2.3 Sources

2.3.1 A number of publicly accessible sources of primary and synthesised information were consulted. A brief summary of the sources consulted is given below.

Sites and Monuments Record

2.3.2 The Suffolk Sites and Monuments Record (SSMR) was consulted for information held pertaining to the cultural heritage resource within the Study Area. The SSMR is a database of all recorded archaeological sites, findspots, and archaeological events within the county, and was consulted for this study in November 2009.

2.3.3 Information from the SSMR along with that from the additional sources, has been reviewed and synthesised for the purposes of this report. The SSMR data is provided in gazetteer format in **Appendix 1** and **2**.

2.3.4 Information relating to any Scheduled Monuments and Listed Buildings within the Study Area was obtained by consulting English Heritage online resources. For full website details see **References**.

Legislative and planning documents

2.3.5 The *East of England Plan 2008*, the *Suffolk Structure Plan 2001*, the *Suffolk Coastal Local Plan 2006* and the *Suffolk Coast and Heaths Management Plan 1994* were consulted. These local planning documents provide

information relating to any existing development controls and additional planning guidance relating to the archaeological resource and cultural heritage. The relevant chapters in these documents have been prepared in accordance with national guidelines including *Planning Policy Guidance Note 16 Archaeology and Planning* (PPG16) and *Planning Policy Guidance Note 15 (PPG15) Planning and the Historic Environment*.

2.3.6 The results of a review of this guidance and, where relevant, details of any statutory and non-statutory designations are included below.

Documentary sources

2.3.7 A search of other relevant primary and secondary sources was carried out digitally, and in Wessex Archaeology's own library. Recent volumes of local journals were consulted, and both published and unpublished archaeological reports relating to excavations and observations in the area around the Site were studied. The sources consulted are listed in the **References** section below.

Cartographic sources

2.3.8 A search of historic manuscript and Ordnance Survey maps was undertaken at the Suffolk Record Office in Ipswich. The study of maps and associated historical sources helps to clarify the archaeological potential of the Site in two ways. First, it suggests aspects of historic land use prior to any modern development. Secondly, it pinpoints areas within the Site that, because of that development, are likely to have become archaeologically sterile. All maps consulted in the preparation of this document are listed in **References**.

Previous studies

2.3.9 As part of the English Heritage (EH) National Mapping Programme (NMP), recent work within the area undertaken for the Suffolk Coastal NMP comprises *The Archaeology of the Suffolk Coast and Inter-tidal Zone* (Hegarty & Newsome 2004). This survey involved the interpretation, mapping and recording of all archaeological features visible on aerial photographs in the coastal and estuarine areas of Suffolk and was carried out between April 2001 and March 2004.

2.3.10 A further project undertaken as part of the EH NMP resulted in *Suffolk's Defended Shore: Coastal Fortifications from the Air* (Hegarty & Newsome 2007). This project used information gathered from the Suffolk Coastal NMP to focus on military and coastal defence sites visible on aerial photographs taken largely from the early 1940s to the present day.

2.3.11 Wessex Archaeology recently completed an archaeological and cultural heritage assessment for the construction of a proposed nuclear power station, Sizewell C, immediately to the north of the existing Sizewell B power station at Sizewell, Suffolk (Wessex Archaeology 2009). The Study Area for this assessment overlaps with the Greater Gabbard Study Area considered here, and draws on the research and conclusions of this recent report.

2.3.12 On a regional scale, the resource assessment for *Research and Archaeology: a Framework for the Eastern Counties* (Glazebrook 1997) includes the study area. The report adopts a highly condensed and

chronological approach whereby period reviews are presented as brief assessments of the archaeological resource of the region.

2.4 Site visit

2.4.1 The Site was visited on 26th November 2009, when full access to the Site was gained. The aim of the visit was to assess the general aspect, character, condition and setting of the Site and to identify any potential impacts not evident from secondary sources. Weather was dry but cloudy. A digital photographic record of the visit is held in the project archive.

2.5 Chronology

2.5.1 Where mentioned in the text, the main archaeological periods are broadly defined by the following date ranges:

- World War II 1939-1945
- Modern 1900-present
- 19th century 1800-1899
- Post-medieval 1500-1799
- Medieval AD1066-1499
- Saxon AD410-1066
- Romano-British AD 43-410
- Iron Age 700 BC- AD 43
- Bronze Age 2400-700 BC
- Neolithic 4000-2400 BC
- Mesolithic 8500-4000BC
- Palaeolithic 500000-10000BP

2.6 Best practice

2.6.1 This assessment has been carried out in accordance with the Institute for Archaeologists' *Standard and Guidance for Desk-based Assessment* (IfA 1994, revised September 2001 and October 2008).

2.7 Assumptions and limitations

2.7.1 Data used to compile this report consists of secondary information derived from a variety of sources, only some of which have been directly examined for the purposes of this Study. The assumption is made that this data, as well as that derived from other secondary sources, is reasonably accurate.

2.7.2 The SSMR is not a record of all surviving elements of the cultural heritage resource, but is a record of the discovery of a wide range of archaeological and historical components of the cultural heritage. The information held within it is not complete and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown.

2.8 Copyright

2.8.1 This report may contain material that is non-Wessex Archaeology copyright (e.g. Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which we are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferrable by Wessex Archaeology. You are reminded that you remain bound by the conditions of the Copyright, Designs

and Patents Act 1988 with regard to multiple copying and electronic dissemination of the report.

3 PLANNING BACKGROUND

3.1 Introduction

3.1.1 There is national legislation and guidance relating to the protection of, and proposed development on or near, important archaeological sites or historical buildings within planning regulations as defined under the provisions of the Town and Country Planning Act 1990. In addition, local authorities are responsible for the protection of the historic environment within the planning system.

3.1.2 The following section summarises the national, regional and local planning and legislative framework governing the treatment of archaeological remains, the historic built environment and the historic landscape within the planning process.

3.2 National legislation and planning guidance

POLICY NO.	TITLE	POLICY TEXT
n/a	**Ancient Monuments and Archaeological Areas Act 1979 (as amended)**	Scheduled Monuments and designated Archaeological Areas are afforded statutory protection and the consent of Secretary of State (Department of Culture, Media and Sport), as advised by English Heritage (EH), is required for any works affecting designated monuments or areas.
PPG15	**Planning and the Historic Environment**	Guidance on protection and enhancement of the historic environment including built heritage and historic landscape through the Local Development Plans (LDPs). Local Planning Authorities (LPAs) administer special consents, in addition to regular planning controls, for planning applications involving Listed Buildings, Conservation Areas, Historic Parks and Gardens and Registered Battlefields.
PPG 16	**Archaeology and Planning**	Archaeology is a material consideration in the planning process and LDPs should include policies for the protection, enhancement and preservation of sites and their settings. There is a presumption in favour of the preservation *in situ* of nationally important remains and their settings, whether Scheduled or not. Planning applications should include an assessment of likely impacts on archaeology. It is reasonable for an LPA to require archaeological evaluation in order to make an informed and reasonable decision. The case for the preservation of archaeological remains must be assessed on the individual merits of each case, taking into account relevant policies and material considerations, including the intrinsic

		importance of the remains, and weighing these against the need for the proposed development.
n/a	**England's Coastal Heritage: A statement on the management of coastal archaeology 1996**	Outlines a number of principles for managing coastal archaeology. These include the promotion of preservation *in situ*, that finds should be managed in accordance with the principles which apply to terrestrial archaeological remains, that marine and terrestrial remains must be considered seamlessly, that a precautionary approach should be adopted and that PPG16 should be applied to the treatment of sub-tidal archaeological remains in order to secure best practice.

3.3 Local planning guidance and policy

POLICY NO.	TITLE	POLICY TEXT
East of England Plan (adopted May 2008)		
ENV6	**Historic Environment**	To identify, protect, conserve and where appropriate, enhance the historic environment of the region; its archaeology, historic buildings, places and landscapes including historic parks and gardens and those features and sites (and their settings) which are especially significant in the East of England.

POLICY NO.	TITLE	POLICY TEXT
Suffolk Structure Plan (adopted 2001)		
ENV4	**The Countryside and Coast**	The landscape quality and character of the countryside and coast will be protected for their own sake and their non-renewable and natural resources will be conserved. Proposal for prominent structures will only be acceptable if the local planning authority is satisfied that they are essential in the countryside, and that the location, siting and design minimises adverse impact on the environment
ENV22	**Archaeology**	Development will not be acceptable if it would have a material adverse effect on Scheduled Ancient Monuments or other sites of national archaeological importance, or their settings. On other sites of archaeological importance or potential, provided there is no overriding case against development, planning permission will be subject to satisfactory prior arrangements.

POLICY NO.	TITLE	POLICY TEXT

Suffolk Coastal Local Plan (adopted 2006) *Note: The Suffolk Coastal Local planning authority is in the process of replacing the Suffolk Coastal Local Plan with the Suffolk Coastal Local Development Framework. Until its replacement, the current Suffolk Coastal Local Plan will contain 'saved policies' that will be used for the purposes of development control. The policies listed below comprise the 'saved policies' relating to the heritage resource.*		
AP7	**Development of Archaeological Sites**	In considering planning applications, outline or detailed, for development that might affect sites that are known or are likely to contain archaeological remains, the Council will require the following: a field evaluation where important archaeological remains may exist but their nature and extent is not fully understood; the preservation of archaeological remains *in situ* where the assessment or field evaluation indicate that the remains are important; a recording of the archaeological remains that would be lost in the course of works for which permission is being sought; a brief setting out the arrangements for recording remains. Development that would adversely affect a Scheduled Ancient Monument, its setting or remains would not be permitted.
AP10	**Management Plans**	The District Council will actively encourage the implementation of the Suffolk Coast and Heaths Management Plan.

3.3.1 The *Suffolk Coast and Heaths Management Plan (adopted June 2008)* (SCHMP) replaced the earlier 2002 Management Plan, which itself replaced the Heritage Coast Plan and River Orwell North Shore Management Plan.

3.3.2 Requirement A: Aim 5 of the SCHMP seeks to conserve the historic resources of the area including landscapes, archaeology and the built environment. This document is non-statutory, but Policy AP10 of the *Suffolk Coastal Local Plan* states that the District Council will actively encourage the implementation of the SCHMP. However, Section 3, para 3.4.5 of the SCHMP also notes that the current nuclear power station at Sizewell and its associated infrastructure has already had a considerable adverse impact on the natural beauty of the area.

4 BASELINE RESOURCE

4.1 Introduction

4.1.1 A consideration of the context of the Site is an important element of establishing the nature of potential elements of the cultural heritage resource within the Site. The following section provides a brief synthesis of the archaeological and historical development of the Site and the Study Area, compiled from the sources detailed above. The aim of the synopsis is to establish the known resource within the Site and to provide a context for the identification and understanding of any potential cultural heritage resource which may survive.

4.1.2 A gazetteer of the sites referred to in the text is provided in **Appendix 1** and **2**. Sites are numbered from **1**-**73** with a **WA** prefix for the ease of reference.

An overall illustration of the sites in the gazetteer are provided on **Figures 2 to 5**.

4.2 Statutory and local heritage designations

4.2.1 The Site does not contain any remains with statutory or local heritage designations. There are also no sites with statutory or local heritage designations (e.g. registered battlefields, parks and gardens, Scheduled Monuments or Listed Buildings) within the Study Area.

4.2.2 The nearest Scheduled Monuments are a Bronze Age bowl barrow on Aldringham Common, 1.2km to the south-west of the Site boundary; two Bronze Age bowl barrows in Square Plantation 2.1km to the south-west of the Site boundary; another two bowl barrows on Aldringham Green 2.3km to the south-west of the Site boundary; and the second site of Leiston Abbey *c.*2km to the north-west of the Site boundary. The second site of Leiston Abbey is also a Grade I Listed Building. None of these sites will be impacted by proposed development.

4.2.3 There are a number of Listed Buildings in Leiston, 1.5km to the west of the Site, beyond the Study Area, but none of these will be impacted by the proposed development.

4.2.4 The nearest Conservation Area comprises the historic core of Leiston, but this lies beyond the Study Area, 1.75km to the west of the Site boundary, and will not be impacted by the proposed development.

4.2.5 The Suffolk Coast between Kessingland and Felixstowe has been defined by the Countryside Agency as Heritage Coast. This definition of a narrow coastal strip recognises the national importance of its high scenic quality and its largely unspoilt nature and the need for these assets to be safeguarded.

4.2.6 The eastern half of the Site lies within the Heritage Coast as defined within the Local Plan, and also within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB). The Site lies within the Sand Dunes and Shingle Ridges Landscape Character Area (LCA) of the AONB, in an area of low-lying coast which is actively eroding.

4.3 Previous archaeological investigations

4.3.1 Several previous archaeological studies have been undertaken in the area within and around the Site, notably in connection with proposals for the onshore works associated with the Greater Gabbard Offshore Windfarm, currently in progress.

4.3.2 Within the area of Rosary Field adjacent to Sandy Lane, archaeological excavations revealed the remains of timber buildings based around earth-fast posts and clay floor, small ditches (indicative of corrals or animal enclosure) and three large external ovens, or corn driers. All appear to date to the medieval period, dating to the 12th to 14th century. There was also a barn building, *c.*16m long and 5m wide, with an aisled ground plan.

4.3.3 A second phase of excavations at the Site found the remains of an early medieval boat, which had been subsequently broken up and parts of the hull used to create a timber lining for a well (Atfield, *et al* 2009). More details

about these excavations can also be found at http://www.suffolk.gov.uk/Environment/Archaeology/FieldProjects/GreaterGabbardWindfarmSizewell.htm .

4.4 Archaeological and historical context

Palaeolithic

4.4.1 There are currently no known sites or find spots confidently assigned to the Palaeolithic period within the Study Area, although within the Site, and in particular within the area of the Option 2 substation, there are sands and gravels and chalky, pebbly, sandy clay of the Lowestoft Till Formation, dating to the Anglian period. This may indicate a limited potential for the recovery of palaeoliths, attesting to hominid or early modern human activity within the Site, although none have yet been recorded.

Mesolithic

4.4.2 The early Mesolithic period, which marked the onset of the Holocene in Britain, saw a warming of the climate accompanied by the development of a forest environment within the Study Area region. The onset of the Holocene is further characterised by the continual rise in sea level, resulting in the deposition of alluvial mud within the coastal plain of the Study Area.

4.4.3 At *c.*9,000 BP sea-level is thought to have been some 30m lower than the present day (Coles and Funnell 1981; Shennan and Horton 2002), suggesting that the Study Area was not submerged during this period. Following a rapid rise in sea-level between 8500 and 7000 BP, high water rose from -25.5m OD to -8.9m OD and the marine extent of the Study Area is likely to have become progressively submerged.

4.4.4 The occurrence of temporary, minor reductions in sea level during the early Holocene enabled plants to colonise the expose mudflats, resulting in the development of peat beds interspersed within the marine alluvium. A significant sea level regression, associated with peat formation, is thought to have occurred in the Late Mesolithic period between 6750 and 6500 BP in the Study Area (Pye & Blott 2006:458).

4.4.5 East Anglia is quite rich in Mesolithic sites, the distribution of which suggests that areas fringed by the coastal zone were particularly favoured by these early communities. The Study Area would have comprised a landscape attractive for human activity during the Mesolithic period, not only providing access to both terrestrial and marine resources but also enabling Mesolithic communities to exploit the herds of red deer and other such mammals which migrated into Britain from the Continent as the climate ameliorated (Sumbler *et al.* 1996:136). The discovery of two Mesolithic maceheads just beyond the Study Area, in an area adjacent to the Sizewell Belts, could suggest Mesolithic activity relating to the wetland resource within the Study Area.

4.4.6 The rising sea level is likely to have progressively forced Mesolithic settlement sites further inland on higher ground, attested by the discovery of a Mesolithic hill-top settlement at Little Bealings, Woodbridge (Martin 1993:41) some 20km south west of the Study Area. Despite this, Mesolithic communities are likely to have continued to exploit the marine resources within the coastal and marine extent of the Study Area. The earliest evidence for watercraft dates to the Mesolithic period with the discovery of a

logboat dating to 7,920-6,470 BC found in Pesse in the Netherlands (McGrail 2004). It is likely that logboats and other such simple craft were utilised within the marine extent of the Study Area for coastal voyages or fishing activities.

Neolithic and Bronze Age Figure 2

4.4.7 Towards the end of the Mesolithic continual sea-level rise meant that by the early Neolithic the coastline within the Study Area would have attained a form approaching that of today. Despite the continual transgression of the Holocene epoch, temporary periods of regression continued to occur within the Study Area. As in the Mesolithic period, a significant regressive period associated with peat formation is thought to have occurred between 4500 and 4300 BP within the coastal region of the Study Area (Pye and Blott 2006:458).

4.4.8 Although the wider region would have provided a landscape rich in resources for hunting, fishing and shellfish collecting during this period, existing evidence for Neolithic sites within the wider region is relatively sparse and of those which are present, few have been examined in any detail. An exception to this is the early Neolithic site at Hurst Fen, Mildenhall (*c.*72km west of the Study Area) which was discovered by the tributary of the Little Ouse (West 1990:106), suggesting a preference for early Neolithic communities to occupy areas adjacent to a wetland resource. This is further supported by the discovery of Neolithic artefacts within alluvial deposits at the mouths of the Rivers Deben and Orwell to the south of the Study Area (Bradley *et al.* 1997:156).

4.4.9 Late Neolithic settlement sites are regarded as nationally rare and elusive (Brown & Murphy 1997:14) although this dearth of evidence could be due to the poor survival of Neolithic sites rather than representative of a low level of activity within these areas during this period.

4.4.10 Of the sites and find spots that are present within the county, a concentration of Neolithic settlements has been noted on the lighter soils within a mile of a watercourse in areas such as the Sandlings (Martin 1999a:36). Specialised activities are likely to have continued near to the coast with fishing activities and the transportation of goods across water. Thus although there are few known Neolithic sites within the region, it is likely that the Study Area provided a favourable environment for these early communities. A large ceremonial enclosure at Freston, Ipswich, implies that reasonably sized Neolithic populations were certainly present within the Suffolk coastal zone (Hegarty & Newsome 2004:25).

4.4.11 Within the Study Area there are a number of finds which can be attributed to the Neolithic or early Bronze Age, although these have yet to be recorded in secure contexts, or in direct association with other archaeological sites or features. A Neolithic chipped flint axe was found on Sizewell Beach (**WA01**), whilst several scatters of worked flint, including flakes and scrapers and pot-boiling flints, have also been recorded within the Site and wider Study Area (**WA02**-**WA07**). Evidence for Bronze Age activity in Suffolk predominantly comprises of funerary monuments, find scatters and palaeoenvironmental deposits. Direct evidence relating to Bronze Age settlements is relatively rare within the region (Hegarty and Newsome 2004:27), although the recovery of the several artefact scatters in the Study Area comprising pot-

boiler flints (**WA02**-**WA07**), may suggest a background level of settlement activity of Bronze Age date within both the Site and Study Area.

4.4.12 Within both the Site and Study Area there are a significant number of recorded cropmark ring ditches (**WA08**-**WA21**), some of which are causewayed, although so far none of these sites have been confirmed by excavation. Such sites may date to the late Neolithic or early Bronze Age, and potentially represent a fairly dense concentration of later prehistoric funerary and ritual monuments. Immediately to the south-west of the Study Area there are the Scheduled bowl barrows on Aldringham Common, and at Square Plantation and Aldringham Green, whilst the discovery of two Bronze Age cinerary urns to the north of Leiston certainly suggests activity of this nature within the wider area during this period.

4.4.13 The resources along the coast would have been important to Bronze Age communities, providing an environment suitable for grazing, hunting, fishing and shellfish collecting.

4.4.14 There would have been seafaring activities within the marine extent of the Study Area throughout the Bronze Age, including the transportation of goods along the coast and further afield. The discovery of what has been interpreted as a shipwreck, comprising 363 Middle Bronze Age objects of Continental origin, offshore at Langdon Bay, Dover, may suggest the occurrence of trade across the North Sea during this period (Fenwick and Gale 1998:26). There is evidence of significant advances in technology and vessel size from the Bronze Age onwards.

Iron Age

4.4.15 At a regional level, it is not until the Late Bronze Age and Early Iron Age period that we begin to see settlements surrounded by substantial ditches and banks within East Anglia (Hegarty & Newsome 2007:11). In the Early Iron Age, the distribution of settlement across the region is sporadic with locally distinct clusters of farmsteads occurring on lighter soils, often within close proximity to a water source (Blagg *et al.* 2004:196; Bryant 1997:23). There was also a wider penetration into the boulder clay areas during this period, although this too was largely confined to areas with reasonable access to water (Martin 1988:68).

4.4.16 The Late Iron Age saw the expansion and intensification of settlement sites within the Study Area region, whereby evidence suggests a movement towards larger, nucleated settlements from the 4th to the 2nd centuries BC (Bryant 1997:28). At this time the Suffolk region was occupied by at least two tribes; the Iceni in Northern Suffolk and Norfolk and the Trinovantes in Southern Suffolk and Essex. Evidence indicates no definable linear frontier between the tribes, although a boundary has been suggested in the vicinity of Hacheston in the Sandlings, approximately 13km west of the Study Area (Moore 1988:14), thus proposing that Sizewell was adjacent to the border line of the two tribes. The presence of the largest Iron Age fortification in Suffolk located at Burgh (*c.*22km south west of the Study Area) suggests significant Iron Age activity within the wider region. The fortification is thought to be within the Trinovantian area and may represent a central point from which the east coast Sandlings could be controlled (Moore 1988:15-16).

4.4.17 Specialist activities along the coast are likely to have continued throughout the Iron Age. It was during this period that specialised activities such as salt production first appear in the archaeological record. Evidence for Iron Age salt-making has been discovered around the River Alde (Bradley *et al.* 1997:159) approximately 5km south of the Study Area.

4.4.18 It is clear that from at least the Iron Age onwards sea-going ships passed through the southern North Sea. Of the vessels which ventured within and around the marine extent of the Study Area, it can be assumed that many are likely to have foundered, as a result of collision, war or natural causes. The seabed topography within the Study Area is characterised by the Sizewell sandbank which runs parallel along the coastline of the Study Area. The crest of the sand bank is very shallow, posing a navigational hazard to vessels which passed through the area.

4.4.19 There currently are no known sites or find spots recorded within the Suffolk SMR dating to the Iron Age within the Site and Study Area. However, a field walking project by Suffolk County Council Archaeological Service (SCCAS) in 1994 to the east of Crown Farm, 250m to the west of the Site boundary, recorded a small amount of Iron Age pottery (SCCAS 1995).

Romano-British Figure 3

4.4.20 After Claudius conquered Britain in AD43, the Trinovantian territory came under Roman rule, while the Iceni tribe who did not oppose the Romans were left as a self-governing kingdom until the death of King Prasutagus in AD60 (Moore 1988:19).

4.4.21 No dramatic changes took place with the introduction of Roman administration within the Suffolk coastal region. The distribution of small towns and the pattern of field systems within the county suggest a continual preference for communities to occupy and exploit areas adjacent to a water resource, although the Romano-British expansion into the central clay plateaux of Suffolk marked the first real exploitation of the heavier soil regions (West 1998:261). The light soils of the region adjacent to a water supply such as the Study Area continued to facilitate for agricultural practices during this period, enabling a mixture of arable farming and stock rearing to take place (Moore 1988:53).

4.4.22 With the introduction of a centralised system of government, the Romans saw the need to defend the province resulting in the construction of inland forts such as Pakenham (*c.* 50km west of the Study Area) and Coddenham (*c.* 35km south west of the Study Area) (Hegarty & Newsome 2007:11). There is limited military evidence within the Study Area region, perhaps because the Icenian territories required only a minimal military presence during the early post-conquest period (Hegarty and Newsome 2004:44).

4.4.23 The Boudican rebellion AD60-61 prompted a change in emphasis of Roman policy, whereby 'civilisation' was sought through urbanisation and road building schemes rather than concentrating solely on the military needs of the frontier zones (Moore 1988:21). There is no evidence for large urban centres or towns with a planned layout of municipal buildings in Suffolk during the Romano-British period, although a large number of settlements were scattered across the county (*ibid*.:38). Hacheston, approximately 13km west of Sizewell situated on the north-side of the river Deben, provides

evidence of one such settlement attesting for Roman activity within the wider region of the Study Area. The evidence for Roman roads towards the coast becomes increasingly fragmentary in Suffolk (Hegarty & Newsome 2004:45).

4.4.24 Specialist activities continued to occur along the coastline and estuaries throughout this period. The practice of marine salt production comprised a marginal element of Romano-British industry which, due to a limited area of reclaimed saltmarsh along the Suffolk coast, occurred to a much lesser extent than in the neighbouring county of Essex. The majority of the earthwork sites known as the 'Red Hills', the remains of salt production, occur within the 5m contour line along the coastal and estuarine zone and have been observed in the area approximately 1.5km north of the Sizewell Power Station. Further salt working sites have been discovered at Snape and Iken approximately 4km to the west of the Study Area (Moore 1988:65).

4.4.25 There would have been extensive seafaring activity within the Study Area during the Roman period. Felixstowe (*c.*30km south of the Study Area) comprises the only known Roman port on the Suffolk coast, although the Dunwich promontory some 6km to the north of the Study Area comprises a possible location for a second coastal Romano-British port which may have been destroyed by coastal erosion (Hegarty & Newsome 2004:49). The Minsmere Haven may thus have been subject to the transportation of goods through coastal voyages from the large port of Felixstowe to Dunwich, with vessels passing through the Study Area.

4.4.26 The known heritage resource suggests fairly limited Romano-British activity within the Study Area. Where present, evidence comprises artefact scatters of pottery and tile fragments found during evaluation in 1994 (**WA22** and **WA23**), with other finds of pottery and coins concentrated within the Leiston village area, to the west of the Site and Study Area. However, excavations within the Site to the east of Sandy Lane recorded a system of field and enclosure ditches which preceded the medieval occupation of the Site and have been provisionally dated as Romano-British, although post-excavation work is still ongoing (Atfield, *et al* 2009).

Saxon and medieval settlement and land use ***Figure 3***

4.4.27 After the withdrawal of Roman administration in the early 5th century AD, town life is thought to have disappeared and the Study Area region returned to a more fragmented society, comprising of settlements of small groups of relatively small timber buildings based on local agriculture (Moore 1988:84).

4.4.28 The Saxon migration into Britain from overseas demonstrates continued seafaring within the region during this period. With the collapse of centralised rule and organised defences, the Suffolk region underwent a number of incursions by Germanic/Saxon invaders which resulted in settlement in the 5th and 6th centuries AD. The Sutton Hoo ship, an early Anglo-Saxon ship burial found on a promontory overlooking the River Deben in Suffolk (*c.*18km south west of the Study Area), not only represents the type of Northern European shipbuilding practices adopted during this period, but further provides evidence of the perceived importance of ships and seafaring within the wider Study Area region at this time (Bruce-Mitford 1972; Evans 1994).

4.4.29 The distribution of sites within the early Anglo-Saxon period suggests a restored preference for the lighter soil regions such as the Sandlings, with little evidence of activity on the central boulder clay belt (West 1998:266). The early Anglo-Saxon cemetery at Snape attests for the presence of communities within the wider region during this period. The village of Leiston, to the west of the Study Area, is also mentioned in the Domesday Book, attesting to a likely Saxon foundation. Despite this, the known heritage resource revealed no sites relating to the Anglo-Saxon period within the Study Area. However, recent excavations at a Heathland Creation Trials Site to the east of Crown Farm, c.250m to the west of the Site boundary, records that Saxon pottery was found within 200m of the site (Heard 2009, 5), although this is not mentioned within the SSMR data. There is also some evidence to indicate that there was a settlement at Sizewell in the late Saxon period (*ibid*.).

4.4.30 The economic and social development of the 7th century saw the founding of the first towns and urban centres since the Romano-British period and the rural and urban landscape of the Study Area and the Suffolk coastal region began to take on a more familiar aspect of medieval Suffolk (Moore 1988:84; West 1998:317). Ipswich, which was occupied in the 7th century, became a major settlement arising from continental trade with the Rhine mouth (West 1998:317). Imported artefacts within the region suggest an expansion of these trade links by the 8th and 9th centuries AD to incorporate Germany, Belgium and Northern France (Wade 1993:148).

4.4.31 Documentary sources record Suffolk as a region of great wealth and importance by the Late Anglo-Saxon period, a status that is not reflected in the quantity and quality of archaeological evidence (West 1998:320). Viking raids on the British coast started in the 8th century AD. As a result of overseas trade and the Danish raids and invasions, the North Sea would have been important during the Late Saxon period in providing a communication, trade and migration route from the Scandinavian home countries to Britain.

4.4.32 Coastal routes would also have continued to be important throughout this period, and with the establishment of Anglo-Saxon towns and anchorages such as Dunwich in the early 11th century, the Study Area is likely to have been subject to such voyages which facilitated for the export of foreign goods from Ipswich to other such distribution centres along the East coast. Log-boats were used for transport along the inland waterways within the region. Evidence of such vessels within the wider region is provided by a dug-out canoe radiocardon dated to 775 to 892AD (Wessex Archaeology 2003:33). The canoe, which was trawled up by a fisherman 1-2 miles off Covehithe, some 16km to the north of the Study Area, is thought to have either washed out of a river valley or to have sank while travelling along to coast close to the shore (Wessex Archaeology 2003:33). Similarly, an early medieval boat was recovered during a second phase of archaeological excavations in advance of the onshore works for the Greater Gabbard windfarm within the Site. The boat, which was probably a small inshore fishing vessel, had been broken up during the 14th century, and parts of its hull re-used as a timber well lining. The boat was constructed using the same techniques as the great Sutton Hoo ships, although on a much more modest scale (Suffolk Archaeological Service). The same excavations also recorded a wide range of pottery from the 12th to 14th centuries, including

high-status wares, as well as personal items such as brooches and buckles. Fishing hooks, weights and fish bones were also found (Atfield, *et al* 2009).

4.4.33 Fisheries were an important component of maritime activity along the region's coastline throughout this period. Fishing activity within the wider region of the Study Area is attested by the discovery of a timber fishtrap discovered within the mudflats of the intertidal zone of the Stour in Holbrook Bay dating to the middle Anglo-Saxon period (Everett 2007:4-7). A further middle Anglo-Saxon timber structure discovered at Barber's Point on the foreshore of the River Alde comprises a series of upright posts, wattle fragments and large horizontally laid pieces of roundwood (*ibid*.:11-12). The structure is thought to represent a possible fish trap, but may also have formed a trackway or a simple quay or wharf (*ibid*.:16).

4.4.34 The Anglo-Saxon settlements which were established from the 7th century onwards eventually became the centres of medieval villages in the Study Area region although they have since been largely obscured by post-medieval development (West 1998:320). Leiston, situated to the west of the Study Area, is recorded as being a medieval town with a grant of market during the 13th century and Sizewell too is likely to be of late Saxon foundation, although only Leiston is mentioned in Domesday.

4.4.35 The medieval period is largely characterised by the reclamation of land in the Study Area region. During this period, the lowland to the north of the Study Area, presently occupied by the Minsmere Nature Reserve, was a small estuary open to the sea (Pye and Blott 2006:459). The Monks from Leiston Abbey, which was founded on the shore of the estuary in 1182, constructed clay embankments to reclaim areas of marshland in the area. These monastic reclamation attempts were ultimately successful, and in response to severe flooding in 1347 and 1366, the Abbey was relocated further inland to Leiston (*ibid.*:461). Earthworks such as these comprised one of the most extensive single class of feature recorded along the Suffolk coast (Hegarty and Newsome 2004:78).

4.4.36 During the medieval period, the area of the Site would have been part of the property of Leiston Abbey until the dissolution of the monasteries in *c*.1538, and is located outside Sizewell, which was an urban centre in the medieval period. Sizewell was granted a market in 1237, 15 years earlier than Leiston, and there were 40 taxpayers recorded for Sizewell in 1524, compared to 33 within Leiston parish. Indeed, Sizewell had a greater population than Leiston during the medieval period, but rising water level and coastal erosion in the early post-medieval period meant that it was gradually being lost to sea, and by 1674 only six inhabited houses were recorded (Atfield 2008).

4.4.37 Excavations in Rosary Field adjacent to Sandy Lane, within the Site, revealed timber buildings, animal corrals and three large external ovens or possible corn-driers. A broad natural channel which runs across the middle of the Site is an extension of the fenland grazing wet common known as Sizewell Belts, and during the medieval period the channel would have formed a fresh water lagoon, and thus a focus for industrial activities, such as hemp retting for the manufacture of linen and rope (Atfield, *et al* 2009).

4.4.38 Throughout the medieval period there is increasing evidence for coastal trade along the east coast. Suffolk was an important region for maritime

activity and East Anglian ports enjoyed a degree of eminence throughout the medieval period (Malster 1969:3).

4.4.39 Fishing continued to comprise an important element of the economy during the medieval period. Fishing hooks, weights and fish bones were found during excavations at the Site in 2008 (Atfield, *et al* 2009). In Suffolk, fish bones are exceedingly common in medieval urban deposits (Murphy 1997:64) and many coastal settlements such as Southwold (*c.*10km north of the Study Area) and Aldeburgh established fishing industries in the late medieval period, particularly with the development of the Icelandic fisheries (Oxford Archaeology 2007:12). Further finds within the wider region comprise a number of fishtraps known as 'kiddles' which may date to the medieval period have been discovered off Stonner Point in the intertidal zone of the River Deben (Hegarty & Newsome 2004:105). These kiddles would have operated on a more extensive scale than the Anglo-Saxon fishtrap at Holbrook Bay (*ibid*.:105) suggesting an increase in fishing industries during this period.

Post-medieval and modern landscape Figures 3 and 4

4.4.40 The exploitation of the wetland and marine resource continued to comprise an important element in post-medieval economy within the Study Area. A number of horizontal timbers discovered within the salt marsh at Snape Warren Causeway, thought to represent a late 19th century crossing point (Everett 2007:3) highlights the need for post medieval communities to access the wetland resource within the region.

4.4.41 Fishing activities played a significant role in this economy. A series of timbers dated to the 16th and 17th century discovered at Holbrook Bay have been identified as possible posts for fish nets (*ibid*.:7, 16) and attests the occurrence of fishing activity within the wider region of the Study Area. The intertidal zone also facilitated for the shellfish industry in Suffolk, whereby a number of oyster pits have been discovered along the coast reflecting the peak of oyster consumption in the mid 19th century when oysters formed the common food for the urban poor (Hegarty & Newsome 2004:98). In an area north-east of Crane's Creek in Suffolk the remains of a probable post-medieval oyster dredger have also been discovered adjacent to oyster beds and a late 19th century boat hard (*ibid*.:112).

4.4.42 Maritime activity expanded dramatically during the post-medieval period. With the opening up of the New World and the founding of the East India Company in 1599, goods were traded further afield from Britain. In the 16th century, the Sandlings region prospered with the increase in demand for wool with the ability to utilise the wetland for sheep grazing.

4.4.43 Coastal and inland shipping continued to be a significant component of the trading and exportation of goods to and from the Study Area region throughout the post medieval period. East Anglia was at the forefront of the 'Agricultural Revolution' in the 18th century, whereby communications were developed to serve the farming economy which lead to improvements to inland navigations (Gilman, *et al* 1997:67). Prior to the construction of the Eastern Counties Railway to Leiston in 1859 and Aldeburgh in 1860, the district had been largely dependent upon transport by sea, with the transport of vital commodities such as coal from the north east by schooners and brigs (Whitehead 1991:109). This dependence is reflected by the Aldeburgh quay

records, which reveal that a total of 40 vessels were registered in Aldeburgh in 1844, a number which had reduced to only 29 in 1861 after the introduction of the railway (Whitehead 1991:115).

4.4.44 The transportation of goods was not always confined to legal conducts within the Study Area. In the post-medieval period, Sizewell was a hub for smuggling and Sizewell Gap to the south of the power station was the haunt of a highly organised band of Smugglers known as the Hadleigh Gang (Bacon & Bacon 1984:38). In 1745, as many as 300 horses and 100 carts were seen on Sizewell beach loading contraband goods (*ibid.*). Within the Site just to the south of Sizewell, there is an old ship's mast with metal footholds to aid climbing sited near some fishermen's old huts and boat winches, which acted as a lookout (**WA32**).

4.4.45 The Sizewell Bank posed a significant threat to the vessels which passed through the Minsmere Haven during this period. In response to this threat, permission was granted for the construction of two lighthouses at Orford Ness to the south of the Study Area in 1634 (Bacon & Bacon 1984:38). The remains of a number of vessels dating to this period are thought to be present within the vicinity of the Sizewell Bank. The timbers of a barge thought to be post medieval in date were discovered approximately 350m east from the Sizewell shore while dredging the channel for the inlet pipe for the Sizewell B power station nuclear generator. In addition to this, a total of 39 vessels of post medieval date are recorded to have wrecked within the area surrounding the Sizewell Bank. Although these vessels are listed as shipping casualties and thus of imprecise location, they highlight the volume of shipping activity which passed through the marine extent of the Study Area during this period.

4.4.46 The post-medieval period also saw the development of fortifications along the coastline within the wider region of the Study Area. During the 16th century, in response to the threat imposed by Europe, Henry VIII concentrated on protecting key anchorages such as the Thames and the Humber, leaving the Suffolk coast largely unprotected (Hegarty & Newsome 2007:15). By the 18th century, Napoleonic France posed an increasing threat to the low-lying shore of Suffolk resulting in the construction of a number of Martello Towers between 1808-1812 on the East coast between Clacton in Essex and Aldeburgh to the south of the Study Area (*ibid*.:18).

Cartographic Evidence

4.4.47 The onset of the post-medieval period saw little change in land use and organisation in the Study Area. The field boundaries that exist within the area are likely to date back to the Anglo-Saxon period and a review of maps from the Leiston Tithe map (not reproduced) and Aldringham Estate Map (*c*.1841) (**Figure 6**) to subsequent Ordnance Survey maps from 1881 to 1976 (**Figures 7**, **8** and **9**) reveals that the medieval and earlier field boundaries within the proposed Site remained largely unaltered throughout the post-medieval and modern periods. Although the Leiston Tithe Map is fragmentary and does not cover the full extent of the proposed Site, the use of land recorded with the map certainly indicates a continued preference for post medieval communities to utilise the lowland soils with high moisture content for pasture and the higher ground drier soils for arable farming.

4.4.48 Historic map regression shows the area of the Site to the west of Sandy Lane to have been unenclosed Crown Land on the Tithe and Aldringham Estate Maps (see **Figure 6**), and is likely to have belonged to the Crown since the dissolution of the monasteries in *c*.1538, having been previously part of the monastic grange of Leiston Abbey. A historic routeway crosses the Site, linking the medieval village of Sizewell with the second site of Leiston Abbey.

4.4.49 By the time of the 1st Edition Ordnance Survey map of the area, surveyed in 1881, the land within the Site had been enclosed, creating Broom Covert (561), the area of rough pasture and furze (185), and fields 184, 186, 202, and 201 (see **Figure 7**), in addition to the already enclosed fields surrounding Sizewell Farm, Crown Cottages and Halfway House, just to the west of the Site boundary, had also been built in this intervening period.

4.4.50 There is little change recorded within the Site on the OS mapping until 1947 when the northern part of field 202, to the east of Broom Covert and west of Rosery Cottages, is planted with a formal arrangement of deciduous woodland, which remains present today (see **Figure 8**). There are no further changes depicted on the 1958 OS map (**Figure 9**), but by 1976 the area of The Warren to the north of the Site, comprising Four Forms Wood, Coronation Wood and Hill Wood had been developed as the Sizewell Power Station.

Second World War Figure 5

4.4.51 Of the 32 sites attributed to the modern period within the Study Area, 31 are recorded as representing coastal and anti-invasion defences dating to World War Two (WWII) (**WA33**, **WA34**, **WA36** and **WA46**-**WA73**) (see **Figures 4** and **5**). The threat of German invasion in the early 20th century thrust Suffolk into a new position of strategic importance, and due to its location on one of Suffolk's most vulnerable stretches of shoreline, some of the earliest British pillboxes were constructed at Sizewell (Hegarty & Newsome 2007:18).

4.4.52 Towards the beginning of WWII, the anti-invasion defences in Suffolk largely comprised of barbed wire and pillboxes (*ibid*.:60). Following an incentive in 1941 to consolidate and expand anti-invasion defences, Sizewell was subject to an increasing complexity of defences. By the end of 1941, beach scaffolding connected anti-tank cubes along the shore at Sizewell, and the spaces between camouflaged pillboxes were filled with complex interlinking barbed wire entanglements (*ibid*.) (**WA49**-**WA53**). Most of these defences have been removed, but some remain extant, including some anti-tank cubes (**WA52**) (**Plate 1**) and pillboxes (**WA36**, **WA57**). Both these pillboxes are within the Site boundary, with one (**WA36**) immediately adjacent to the planned cable route from the windfarm to the substation (**Plate 2**).

4.4.53 There were also a number of strongpoints established along the coast within the Site and Study Area (**WA62**-**WA69**) which comprised various structures and earthworks, including pillboxes, barbed wire entanglements, practice trenches, beach scaffolding, weapons pits and slit trenches.

4.4.54 Towards the end of WWII the need to counter an airborne attack surpassed that of a coastal invasion, and Light Anti-aircraft Artillery (LAA) and Heavy Anti-aircraft Artillery (HAA) positions became an integral part of the coastal defence scheme. A number of HAA sites recorded along the Suffolk coast

are thought to relate to the DIVER strip, a defensive line of HAA batteries that was constructed in 1944 to combat the V1 flying bomb (Lowry 1996:62). In Sizewell a Diver Battery and its camp had been established in 1944 in response to the growing threat imposed by hostile aircraft (**WA46, WA47**) (Hegarty & Newsome 2007:60). Other sites included an extensive area of anti-glider ditches on Aldringham Common (**WA48**).

4.4.55 The Study Area would have been a significant hub of aircraft activity during WWII. The presence of an airfield founded in 1934 known as Theberton, Leiston or Saxmundham airfield was used during WWII as a fighter base for both the United States of American Air Force (USAAF) and the Royal Air Force (RAF).

4.4.56 In times when Britain was not at war, the Study Area region became a focus for recreation during the modern period. In the 1920s, Sizewell beach is thought to have been wider than the present day, enabling organized motorcycle races to be held on the beach (Whitehead 1991:157). In its most recent past, Sizewell remains a very small fishing hamlet on the dunes. Its modern landscape is dominated by the construction of the Sizewell Power Stations. Sizewell A was built in 1961 and de-commissioned in 2006. Sizewell B was built between 1988 and began generating in 1995.

Historic landscape character

4.4.57 Based on the historic mapping consulted for this report (see above), the Suffolk Landscape Character Assessment (2008) and a site visit, the historic landscape within the Site may be characterised as *Estate Sandlands*, comprising 18th and 19th century enclosed fields with a strong geometric structure. This *Estate Sandlands* character is also apparent within the wider Study Area, with an area of coastal levels (the Sizewell Belts) in the northernmost part of the Study Area.

4.4.58 The Suffolk Coast between Kessingland and Felixstowe has been defined by the Countryside Agency as Heritage Coast. This definition of a narrow coastal strip recognises the national importance of its high scenic quality and its largely unspoilt nature and the need for these assets to be safeguarded.

4.4.59 The eastern half of the Site lies within the Heritage Coast as defined within the Local Plan, and also within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB). The Site lies within the Sand Dunes and Shingle Ridges Landscape Character Area (LCA) of the AONB, in an area of low-lying coast which is actively eroding.

5 DISCUSSION

5.1 Summary of presence and survival within the Site

5.1.1 The recorded terrestrial resource within the Site is dominated by records of largely prehistoric and medieval date, with WWII sites prevalent in the eastern, coastal portion of the Site. The relevance and significance of these records is summarised below. The heritage resource recorded within the Site is shown on **Figures 2** to **5**.

5.1.2 Of the prehistoric sites recorded within the Site boundary (**WA02-05**, **WA09-WA10**, **WA16-19**), four sites (**WA02-WA05**) comprise artefact scatters

recorded during an earlier archaeological evaluation in 1994. These artefact scatters comprise pieces of worked flint, scrapers, pottery sherds and pot-boiler flints (flints heated in fire until extremely hot and then dropped into a vessel of liquid to heat it; used for cooking in pots which could not take the heat of a direct flame). None of these artefact scatters were attributed to secure contexts, although evidence from aerial photographs for numerous causewayed, concentric and other cropmark ring ditches (**WA09-10**, **WA16-19**) suggest there may be evidence for Neolithic and Bronze Age settlement at the Site, or for ritual/funerary monuments and associated activity. Such remains are likely to be of local or regional importance.

5.1.3 Within the Site footprint there are known peats and alluvial deposits likely to have formed, in part, in the prehistoric period. It is known from analogy that freshwater wetlands and coastal zones were important resource procurement zones during the prehistoric period. Therefore, it is feasible that these wetland derived deposits could contain anthropogenic evidence or palaeoenvironmental evidence relating to their use and the general environment during this period. The waterlogged conditions of peats and alluvium provide very good conditions for an aerobic preservation of organic remains.

5.1.4 The favourable survival conditions offered by the waterlogged deposits can also preserve later archaeological remains relating to the use of the wetlands. For example, within the Site, archaeological investigations recorded medieval settlement evidence of 12th to 14th century date, including high status pottery (**WA24-27**) and personal goods, as well as earlier ditches and provisionally dated to the Romano-British period (Atfield, *et al* 2009). Some Romano-British pottery and tile fragments were also found at the Site (**WA22-23**). A broad channel which ran across the middle of the Site represented a former extent of the wetland area of the Sizewell Belts and would have formed a fresh water lagoon, which was the focus of industrial activities such as the manufacture of linen and rope (*ibid*.). The remains of a medieval wooden boat were found re-used in the lining of a well contemporary with the settlement. The remains were very well preserved in waterlogged conditions and were the remnants of a small inshore vessel, presumably suitable for navigating through the marshland creeks of the medieval Sizewell Belts.

5.1.5 The potential, therefore, for the presence of remains relating to the prehistoric, Romano-British and medieval use of the wetland area of the Site, is recognised, with such remains of likely local or regional importance.

5.1.6 The recorded resource within the eastern portion of the Site is dominated by large areas of World War II activity including anti aircraft batteries, beach defences, anti tank defences and military buildings (**WA36**, **WA50**, **WA52**, **WA53**, **WA57**, **WA63-66**, **WA70**). Many of these sites are recorded from the 1940s RAF aerial photographs, digitised as part of the county mapping programme (Hegarty & Newsome 2004; Hegarty & Newsome 2007). Most of these wartime defence structures would have been removed in the years immediately after the war to make the coastline safe for civilian use. Where components of the World War II resource do survive they tend to be the more solid constructions like concrete pillboxes and anti-tank blocks.

5.1.7 Only two concrete pillboxes (**WA36**, **WA57**) are visible above-ground within the Site, with one (**WA36**) lying immediately adjacent to the proposed onshore cable route connecting the Greater Gabbard Windfarm to the substation (**Plate 2**).

5.2 Potential development impacts

5.2.1 The Site is proposed for the location of a new substation in one of two preferred locations (**Plates 3** and **4**) and associated installation of underground cables to connect the Greater Gabbard Windfarm Extension to the new substation, and from the new substation to the National Grid via Sizewell Power Station (see **Figure 1**).

5.2.2 Activities associated with the proposed development which could result in an adverse impact on buried archaeological remains within the Site may include:

- groundworks associated with construction of new foundations (for the substation);
- groundworks associated with construction of services (the cable runs, from the windfarm to the substation, and from the substation to the power station); and
- groundworks associated with the construction of new access points and work compounds.

5.2.3 The extent of these impacts will depend on the presence, nature and depth of any archaeological remains, in association with the extent and depth of proposed groundworks. However, there is a **high** potential for buried archaeological remains to be present across the Site, especially relating to the prehistoric and medieval periods, including palaeoenvironmental and waterlogged deposits.

5.2.4 There are some historic boundaries within the Site which are likely to be deemed important under the Hedgerow Regulations Act. One such boundary lies to the east of the preferred location of Substation 2 (**Plate 5**), but will not be affected by the proposed development. The other boundary lies immediately to the east of Sandy Lane, and will be slightly impacted during groundworks for the cabling linking the substation to Sizewell Power Station, if this follows the cable run as indicated on **Figure 1**.

6 CONCLUSIONS

6.1.1 There are no statutory or non-statutory designated sites and monuments within the boundary of the Site or Study Area, and no recorded sites within the footprints of the preferred substation locations.

6.1.2 It is considered that development would have a negligible impact on the settings of any Scheduled Monuments and Listed Buildings in the wider area, as these are already compromised by the existing Sizewell Power Station. The historic landscape of the Site and Study Area is of generally degraded character but includes some strong elements such as the Sizewell Belts and geometric fields of Estate Sandlands and lies within the Heritage Coast and an AONB (**Plate 6**).

6.1.3 Given the nature of the archaeological resource within the Site, it is considered that there is a **high** potential for buried archaeological remains across the Site, especially relating to the prehistoric and medieval periods, including palaeoenvironmental and waterlogged deposits.

6.1.4 Therefore, it is considered that the groundworks associated with the foundations of the substation and laying of underground cabling may present a direct physical impact to the heritage resource within the construction footprint. This would be in conflict with national and local planning policy.

6.2 Recommendations

6.2.1 It is considered that, in order to comply with the criteria set out in National and Local Planning Legislation (see **3.2** above), further archaeological investigation will be required. This is likely to take the form initially of non-intrusive geophysical survey followed by targeted archaeological evaluation excavation. The precise nature and scope of further investigations within the Site should be agreed through consultation with the Development Control Archaeologist for Suffolk County Council, and undertaken in line with an agreed Written Scheme of Investigation, produced in advance of any Site works.

7 REFERENCES

7.1 Bibliography

Ashton, N. and Lewis, S. 2002. Deserted Britain: declining populations in the British Late Middle Pleistocene. *Antiquity* 76: 388-396

Atfield, R. 2008. 'Medieval boat timbers from Sizewell'. *The Newsletter of the Sutton Hoo Society*. No.48/2008

Atfield, R, Breen, A, Darrah, R and Tyers, I. 2009. 'Leiston, Greater Gabbard Off Shore Wind Farm, Sizewell', *Proceedings of the Suffolk Institute of Archaeology and History* Vol XLII part 1, (forthcoming)

Austin, L. 1997. 'Palaeolithic and Mesolithic' in Glazebrook, J. (ed.) *Research and Archaeology: A framework for the Eastern Counties. 1: Resource Assessment.* East Anglia: Scole Archaeology Committee. East Anglian Archaeology Occasional Paper No. 3 pp5-11

Bacon, J. and Bacon, S. 1984. *The Suffolk Shoreline and the Sea.* Essex: Segment Publications

Bennison, G.M. and Wright, A.E. 1969. *The Geological History of the British Isles.* London: Edward Arnold Limited

Blagg, T. Plouviez, J. and Tester, A. 2004. *Excavations at a large Romano-British settlement at Hacheston, Suffolk, 1973-74.* Suffolk: Archaeological Service Suffolk County Council. East Anglian Archaeology Report No. 106

Bournemouth University. 2007. Enhancing our understanding of the marine historic environment: Navigational Hazards Project, unpublished report

Bradley, R. 1993. 'Where is East Anglia? Themes in regional prehistory' in Gardiner, J. (ed.) *Flatlands and Wetlands: Current themes in East Anglian Archaeology.* Suffolk: Scole Archaeological Committee for East Anglia. East Anglian Archaeology Report No. 50 pp5-13

Bradley, R.J. Fulford, M.G. and Tyson, H.J. 1997. 'The archaeological resource: A regional review' in Fulford, M. Champion, T. and Long, A. (eds.) *England's Coastal Heritage: A survey for English Heritage and the RCHME.* England: English Heritage. Archaeological Report 15 pp154-178

Brown, N. and Murphy, P. 1997. 'Neolithic and Bronze Age' in Glazebrook, J. (ed.) *Research and Archaeology: A framework for the Eastern Counties. 1: Resource Assessment.* East Anglia: Scole Archaeology Committee. East Anglian Archaeology Occasional Paper No. 3 pp12-22

Bruce-Mitford, R. 1972. *The Sutton Hoo Ship-Burial.* London: The Trustees of the British Museum

Bryant, S. 1997. 'Iron Age' in Glazebrook, J. (ed.) *Research and Archaeology: A framework for the Eastern Counties. 1: Resource Assessment.* East Anglia: Scole Archaeology Committee. East Anglian Archaeology Occasional Paper No. 3 pp23-34

Cameron, T.D.J. Crosby, A. Balson, P.S. Jeffery, D.H. Lott, G.K. Bulat, J. and Harrison, D.J. 1992. *The geology of the Southern North Sea*. British Geological Survey, United Kingdom Offshore Report, London HMSO

Coles, B.P.L. and Funnell, B.M. 1981. *Holocene Palaeoenvironmentas of Broadland England. Special publications of the International*

Association of Sedimentologists, 5. Oxford: Blackwell Scientific Publications

Evans, A.C. 1994. *The Sutton Hoo Ship Burial.* London: British Museum Press

Everett, L. 2007. *Archaeological Service Report: Targeted intertidal survey.* Suffolk: Suffolk County Council Archaeological Service

Everett, L. with Allen, D. and McLannahan, C. 2003. *Rapid Field Survey of the Suffolk Coast and Intertidal Zone May 2002 – March 2003. Assessment Report.* Ipswich: Suffolk County Council

Fenwick, V. and Gale, A. 1998. *Historic Shipwrecks: Discovered, protected and Investigated.* Stroud: Tempus Publishing Limited

Flemming, N.C. 2002. *The scope of strategic environmental assessment of North Sea areas SEA 3 and SEA 2 in regard to prehistoric archaeological remains: Technical Report SEA3_TR014.* Department of Trade and Industry.

Gilman, P. 1997. 'Fortifications' in Glazebrook, J. (ed.) *Research and Archaeology: A framework for the Eastern Counties. 1: Resource Assessment.* East Anglia: Scole Archaeology Committee. East Anglian Archaeology Occasional Paper No. 3 pp67-68

Gladfelter, B.G. Wymer, J.J. and Singer, R. 1993. 'Dating the deposits and Hoxne' in Singer, R. Gladfelter, B.G. and Wymer, J.J. 1993. *The Lower Palaeolithic site at Hoxne, England.* Chicago and London: university of Chicago Press

Heard, K. 2009. *Heathland Creation Trials Site, Sizewell, Leiston, Suffolk.* LCS 152. Post Excavation Assessment Report. SCCAS Report No.2009/207

Hegarty, C. and Newsome, S. 2004. *The archaeology of the Suffolk Coast and Intertidal zone: a report for the National Mapping Programme.* Suffolk: English Heritage and Suffolk County Council

Hegarty, C. and Newsome, S. 2007. *Suffolk's Defended Shore: Coastal fortifications from the air.* England: English Heritage and Suffolk County Council

Lees, B.J. 1980. *Sizewell-Dunwich Banks Field Study. Topic Report 1.* Institute of Oceanographic Sciences. Natural Environment Research Council Report No. 88. Unpublished manuscript

Lowry, B. 1996. *20th Century defences in Britain: An introductory guide.* York: Council for British Archaeology

Malster, R. 1969. *Maritime East Anglia.* East Anglia: Maritime Museum for East Anglia

Martin, E. 1981. 'The barrows of Suffolk' in Lawson, A.J. Martin, E.A. and Priddy, D. *The barrows of East Anglia.* East Anglia: Norfolk Museums Service, Suffolk County Council and Essex County Council pp64-88

Martin, E. 1988. *Burgh: Iron Age and Roman enclosure.* Suffolk: Suffolk County Planning Department. East Anglian Archaeology Report No. 40

Martin, E. 1993. *Settlements on Hill-tops: Seven Prehistroic sites in Suffolk.* Suffolk: Suffolk County Planning Department. East Anglian Archaeology Report No. 65

Martin, E. 1999a. 'The Neolithic' in Dymond, D. and Martin, E. (eds). *An Historical Atlas of Suffolk. Third Edition.* Ipswich: Suffolk County Council and Suffolk Institute of Archaeology and History, 36

Martin, E. 1999b. 'The Bronze Age' in Dymond, D. and Martin, E. (eds). *An Historical Atlas of Suffolk. Third Edition.* Ipswich: Suffolk County Council and Suffolk Institute of Archaeology and History, 38

McGrail, S. 2004. *Boats of the World: From the Stone Age to medieval Times.* Oxford: University Press

Moore, I. E. 1988. *The archaeology of Roman Suffolk.* Suffolk: Suffolk County Council Planning Department

Murphy, K. 1997. 'Environment and Economy' in Glazebrook, J, (ed.) *Research and Archaeology: A Framework for the Eastern Counties, 1. Resource Assessment*. East Anglian Archaeology, Occasional Paper No.3:63-64

Oxford Archaeology. 2007. England's Historic Seascapes Pilot Study: Southwold-to-Clacton final project report, unpublished report

Parfitt, S.A. Barendregt, R.W. Breda, M. Candy, I. Collins, M.J. Coope, G.R. Durbidge,P. Field, M.H. Lee, J.R. Lister, A.M. Mutch, R. Penkman, K.E.H. Preece, R.C. Rose, J. Stringer, C.B. Symmons, R. Whittaker, J.E. Wymer J.J. and Stuart, A.J. 2005. The earliest record of human activity in Northern Europe, *Nature* 438: 1008-1012.

Preece, R.C. 2001. Molluscan evidence for differentiation of interglacials within the 'Cromerian Complex'. *Quaternary Science Reviews* 20: 1643-1656

Pye, K. and Blott, S.J. 2006. Coastal Processes and Morphological Change in the Dunwich-Sizewell Area, Suffolk, UK. *Journal of Coastal Research* 22(3):453-473

Rose, J. Moorlock, B.S.P. and Hamblin, R.J.O. 2001. Pre-Anglian fluvial and coastal deposits in Eastern England: Lithostratigraphy and Palaeoenvironments. *Quaternary International* 79:5-2

Shennan, I. and Horton, B.P. 2002. Relative sea level changes and crustal movements of the UK. *Journal of Quaternary Science* 16:511-526

Simper, R. 1986. *The Suffolk Sandlings: Alde, Deben and Orwell country.* Ipswich: East Anglian Magazine Publishing Limited

SCCAS. 1995. *Sizewell C Archaeological Evaluation*. Unpublished report.

Sumbler, M.G, Bridgland, D.R, Wymer, J.J. and Balson, P.S. 1996. 'Quaternary' in Sumbler, M.G. (ed.) *British Regional Geology: London and the Thames Valley. Fourth Edition.* London: British Geological Survey, London HMSO pp110-136

Wade, K. 1993. 'The urbanisation of East Anglia: the Ipswich perspective' in Gardiner, J. (ed.) *Flatlands and Wetlands: Current themes in East Anglian Archaeology.* Suffolk: Scole Archaeological Committee for East Anglia. East Anglian Archaeology Report No. 50 pp144-151

Wessex Archaeology. 2003. Cutline Areas 446 and 447: Archaeological Assessment, Technical report, unpublished report 52357.02

Wessex Archaeology 2009 *Sizewell, Suffolk Nuclear Power Station Proposal Heritage Assessment,* unpublished draft report no. 70840.03.01

West, S. 1990. *West Stow, Suffolk: The Prehistoric and Romano-British occupations.* Suffolk: Suffolk County Planning Department. East Anglian Archaeology Report No. 48

West, S. 1998. *A corpus of Anglo-Saxon material from Suffolk.* Suffolk: Suffolk County Council Archaeological Service. East Anglian Archaeology Report No. 84

Whitehead, R.A. 1991. *The beloved coast and the Suffolk Sandlings.* Suffolk: Terence Dalton Limited

Wymer, J.J. 1985. *Palaeolithic sites of East Anglia.* Norwich: Geo Books
Wymer, J.J. 1999. *The Lower Palaeolithic Occupation of Britain.* England: Wessex Archaeology and English Heritage

7.2 Historic Environment Records

Suffolk Sites and Monuments Record

7.3 Cartographic Sources

Ordnance Survey Landplan 1:10,000
Geological Survey of Great Britain (England & Wales) 1:63,360 sheet 191

1840 Estate Map of Aldringham
1841 Leiston Tithe Map and Apportionment ref: FDA 164/A1/Ib and 1a
1841 Aldringham with Thorpe Tithe Map and Apportionment ref: FDA4/A1/A
1881 Ordnance Survey 1st Edition 25" map
1890 Ordnance Survey 1st Edition 6" Map
1905 Ordnance Survey 2nd Edition 6" Map
1928 Ordnance Survey 3rd Edition 6" Map
1938 Ordnance Survey Revised edition 6" Map
1947 Ordnance Survey 6" Map
1958 Ordnance Survey 6" Map
1976 Ordnance Survey 1:10,000 Map

7.4 Online resources

http://www.magic.gov.uk
http://lbonline.english-heritage.org.uk/
http://www.british-history.ac.uk/
http://www.suffolk.gov.uk/Environment/Archaeology/

APPENDIX 1: GAZETTEER OF INFORMATION PROVIDED BY SSMR FOR THE STUDY AREA

WA No	MONU ID	SMR No	Period	Monument Type	Description	Easting	Northing
01	MSF2342	LCS 003	Prehistoric	Findspot	Chipped flint axe, slightly rolled, length four and three quarter inches, found on Sizewell beach (about quarter of a mile from 1966 car park) about April 1966 by Master Kevin Hobbs, Alma Cottage, Ashbocking, who presented it to Ipswich Museum.	647650	263250
02	MSF21571	LCS 049	Prehistoric	Artefact scatter	Several pieces of worked flint plus flint gritted sherd found. Of likely Neolithic or Bronze Age date.	647206	262855
03	MSF21575/ MSF21607	LCS 051 LCS 073	Prehistoric	Artefact scatter	Several pieces of worked flint including pot boiler flints and scrapers plus a Prehistoric sherd found during an evaluation by Suffolk Archaeological Service in 1994. A further 251 burnt flints were recovered in the adjacent field, *c.*100m to the north. Of likely Neolithic or Bronze Age date.	646975	262792
04	MSF21581	LCS 054	Prehistoric	Artefact scatter	Several flint flakes and others were found during an evaluation in 1994, including some pot boiler flints and scrapers. Of likely Neolithic or Bronze Age date.	646825	262643
05	MSF21587	LCS 058	Prehistoric	Artefact scatter	Several pot boiler flints and other worked flints found during an evaluation by Suffolk Archaeological Service in 1994. Of likely Neolithic or Bronze Age date.	646517	262576
06	MSF21589	LCS 060	Prehistoric	Artefact scatter	Prehistoric worked flint including pot boiler flints and scrapers found during an evaluation by Suffolk Archaeological Service in 1994. Of likely Neolithic or Bronze Age date.	646171	262571
07	MSF21595	LCS 064	Prehistoric	Artefact scatter	A number of worked flints including two pot boiler flints and scrapers found during an evaluation by Suffolk Archaeological Service in 1994. Of likely Neolithic or Bronze Age date.	646093	262981
08	MSF21569	LCS 048	Prehistoric	Causewayed ring ditch	A causewayed ring ditch visible on APs as a cropmark near Leiston Common. Of likely Bronze Age date.	646083	263386

WA No	MONU ID	SMR No	Period	Monument Type	Description	Easting	Northing
09	MSF21583	LCS 055	Prehistoric	Causewayed ring ditch	A causewayed ring ditch approximately 8m in diameter plus a series of other cropmarks, possibly field boundaries. Ring ditch of likely Bronze Age date.	646759	262598
10	MSF21585	LCS 057	Prehistoric	Causewayed ring ditch	Large causewayed ring ditch approximately 50m diameter, incomplete. Visible as a cropmark on APs. Of likely Bronze Age date.	646884	262593
11	MSF21592	LCS 061	Prehistoric	Causewayed ring ditch	Causewayed ring ditch approximately 20m diameter, incomplete, visible on APs. Of likely Bronze Age date.	646206	262610
12	MSF21593	LCS 062	Prehistoric	Causewayed ring ditch	Causewayed ring ditch, incomplete, approximately 20m in diameter, visible from APs as a cropmark. Of likely Bronze Age date. Other possible field boundaries also visible.	646156	262604
13	MSF21600	LCS 067	Prehistoric	Causewayed ring ditch	Causewayed ring ditch, approximately 30m in diameter and other cropmarks, possibly tracks, visible on APs. Ring ditch of likely Bronze Age date.	645896	263192
14	MSF21605	LCS 072	Prehistoric	Causewayed ring ditch	Causewayed ring ditch visible from APs. Of likely Bronze Age date.	646077	263447
15	MSF21612	LCS 078	Prehistoric	Causewayed ring ditch	Causewayed ring ditch approximately 10m in diameter, visible from APs. Of likely Bronze Age date.	646230	263447
16	MSF21601	LCS 068	Prehistoric	Concentric ring ditch	Concentric semi-circular cropmark possible ring ditch, approximately 20m diameter, visible from APs. A possible second smaller ring is visible inside. Of likely Bronze Age date.	646530	262745
17	MSF21574	LCS 050	Prehistoric	Ring ditch	Possible track in south end of field, plus possible part of ring ditch and other cropmarks, visible from APs. Ring ditch of likely Bronze Age date.	647267	262789
18	MSF21578	LCS 052	Prehistoric	Ring ditch	Ring ditch approximately 10m diameter, plus other cropmarks, possibly field boundaries & tracks. Ring ditch of likely Bronze Age date.	646951	262825
19	MSF21579	LCS 053	Prehistoric	Ring ditch	Ring ditch approximately 20m in diameter visible from APs. Of likely Bronze Age date.	646991	262729
20	MSF21602	LCS 069	Prehistoric	Ring ditch	A semicircular ring ditch visible from APs, approximately 30m diameter if complete. Of likely Bronze Age date.	646288	262629

WA No	MONU ID	SMR No	Period	Monument Type	Description	Easting	Northing
21	MSF21603	LCS 070	Prehistoric	Ring ditch	Two small (10m diameter) ring ditches together, visible from APs. Of likely Bronze Age date.	646358	263428
22	MSF21572	LCS 049	Romano-British	Findspot	One Romano-British potsherd found during an evaluation by Suffolk Archaeological Service in 1994..	647208	262858
23	MSF21576	LCS 051	Romano-British	Artefact scatter	Roman sherds and possible Roman tile fragment found during an evaluation by Suffolk Archaeological Service in 1994..	646977	262789
24	MSF21570	LCS 049	Medieval	Artefact scatter	Three possible Thetford ware type sherds, dating to between the 9th and 12th centuries, with Medieval coarseware of 12th to 14th century date, & 5 glazed Medieval sherds.	647211	262855
25	MSF21577/ MSF21606	LCS 051 LCS 073	Medieval	Artefact scatter	Medieval pottery found during an evaluation by Suffolk Archaeological Service in 1994. Majority of sherds found were medieval coarseware of 13th or 14th century date with a possible 12th century presence. A further 27 sherds of medieval coarseware were collected in the next field, *c.*100m to the north.	646980	262789
26	MSF21580	LCS 054	Medieval	Artefact scatter	13th and 14th century coarseware pottery sherds found during an evaluation by Suffolk Archaeological Service in 1994.	646826	262643
27	MSF21586	LCS 058	Medieval	Artefact scatter	Medieval coarseware pottery found during an evaluation by Suffolk Archaeological Service in 1994.	646520	262579
28	MSF21590	LCS 060	Medieval	Artefact scatter	One Thetford-type ware sherd and medieval coarseware found during an evaluation by Suffolk Archaeological Service in 1994.	646174	262571
29	MSF21596	LCS 064	Medieval	Artefact scatter	Pottery found during an evaluation by Suffolk Archaeological Service in 1994. Majority of sherds were Medieval coarseware, although there was one stray find of a Romano-British sherd.	646093	262981
30	MSF21598	LCS 066	Medieval	Artefact scatter	Fifteen Medieval coarseware sherds found during an evaluation by Suffolk Archaeological Service in 1994.	645759	263108
31	MSF21599	LCS 066	Post Medieval	Artefact scatter	Thirteen Post Medieval sherds found during an evaluation by Suffolk Archaeological Service in 1994.	645759	263108

WA No	MONU ID	SMR No	Period	Monument Type	Description	Easting	Northing
32	MSF23192	LCS 132	Post Medieval	Lookout	Old ship's mast mounted in metal sheath. Metal footholds set into mast to aid climbing. Sited near old huts and boat winches of fisherman. Possible lookout?	647596	262646
33	MSF21591	LCS 060	Modern	Artefact scatter	Large amount of modern building debris noted on this field during an evaluation by Suffolk Archaeological Service in 1994, and probably of World War II date.	646174	262574
34	MSF21594	LCS 063	Modern	Military feature	Military, probably WW2, rectangular and linear cropmarks, possibly enclosures.	646153	262734
35	MSF21391	ARG 054	Modern	Garden Terrace	Balcony and garden terraces of large house from first quarter of C20th. Now a Christian retreat. Terraces built from brick and cast concrete as in style of Ogilvie's Thorpeness. Balustrading from re-inforced concrete.	647573	262018
36	MXS19701	LCS 116	Modern	Military feature	Pillbox, forming part of WWII strongpoint (**WA 65**), visible on APs and still extant. Square pillbox, of concrete construction, two firing points each side, entrance to rear with blast shield.	647510	262554
37	MSF16197	LCS 023	Undated	Subrectangular enclosure site	Subrectangular enclosure earthwork/cropmark, *c.*70m by 50(+)m, on open heath(?) land. West side not visible due to field boundary.	646255	263155
38	MSF21573	LCS 049	Undated	Findspot	One jet bead found during an evaluation by Suffolk Archaeological Service in 1994..	647219	262863
39	MSF21582	LCS 054	Undated	Findspot	One glass bead found during an evaluation by Suffolk Archaeological Service in 1994, date unknown.	646822	262640
40	MSF21584	LCS 056	Undated	Enclosure	An enclosure approximately 50m x 30m, visible from APs.	646967	262884
41	MSF21597	LCS 065	Undated	Enclosure; Field boundary	A series of linear markings on APs show possible enclosure, also possible ring ditches in south east of field and possible tracks. Some of the features may be of prehistoric date.	646190	263076
42	MSF16195	ARG 018	Undated	Enclosure	Rectangular enclosure earthwork visible on an AP, open-ended to the west, c.80m x 100(+)m.	647155	262105

WA No	MONU ID	SMR No	Period	Monument Type	Description	Easting	Northing
43	MXF19702	LCS 117	Undated	Extractive pit	A quarry pit of unknown date, visible on APs. The pit is c.150m west of Home Farm, and is marked on the 1st and 2nd edition OS maps of 1884 and 1904. On the Aldringham Estate Map (c.1840) it is next to an area marked as a Kiln and Yard, so is likely to have been an extractive pit associated with the kiln.	646927	262393
44	MXF19703	LCS 118	Undated	Extractive pit	Two quarry pits of unknown date in Leiston parish, visible on APs. Both pits are marked on the 1st and 2nd edition OS maps of 1884 and 1904, and on current OS maps.	647081	261733
45	MXF19704	ARG 022	Undated	Extractive pit	A quarry pit of unknown date in Aldringham cum Thorpe parish, visible on APs. The pit straddles the boundary between two fields which hasn't changed since the 1st edition OS map. The pit is also marked on the 1st edition map, and suggests that it may be considerably older than the field boundary and current field system.	647305	261266

APPENDIX 2: GAZETTEER OF WWII DEFENCE SITES PROVIDED BY SSMR FOR THE STUDY AREA (POLYGON DATA)

WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
46	MXS19691	LCS 106	Anti-aircraft battery	Early World War II strongpoints and a late World War II Light and Heavy Anti-aircraft Artillery site at Sizewell in Leiston parish, visible on 1940 APs. All the strongpoints, which comprised pillboxes, slit trenches and barbed wire obstructions, were superceded by a heavy anti-aircraft artillery site and its camp by 1945. The site appears to have been part of the DIVER strip, installed between June and November 1944 to combat the V1 flying bomb. Destroyed by the construction of the Sizewell Power Station.	647270	263655	647270	263655	647270	263655
47	MXS19713	ARG 031	Anti-aircraft battery	A World War II strongpoint and heavy anti-aircraft battery, visible as structures and earthworks on APs at Aldringham cum Thorpe. The strongpoint (which comprised a pillbox and slit trench surrounded by barbed wire) was replaced in 1942 by a heavy anti-aircraft battery and associated camp, with Nissan Huts, removed by 1952.	647210	260954	647210	260954	647210	260954

WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
48	MSF16194	ARG 017	Anti-glider ditches	An extensive area of World War 2 anti-glider ditches are visible as earthworks on APs, on Aldringham Common, Aldringham cum Thorpe. The ditches are c.3m to 5m in width and c.100m to 130m long. The ditches are laid out in an irregular chessboard pattern and cover an area of c.96ha. Although many of the ditches have been ploughed away, some sections are still visible on photographs of 1976 and 1982.	646474	261585	646424	261535	646524	261635
49	MXS19850	LCS 125	Anti-invasion defences	World War II anti-invasion coastal defences at Sizewell, Leiston, visible as structures and earthworks on APs from 1940 onwards. The first defences here were barbed wire and a pillbox. Later additions include various structures and two slit trenches.	647551	263771	647551	263771	647551	263771
50	MXS19858	LCS 129	Anti-invasion defences	World War II anti-invasion coastal defences from Sizewell village to Sizewell Hall, Leiston. Multiple barbed wire obstructions are visible on APs from 1941 on the high ground and sand dunes overlooking the beach, stretching for 1km. There was also a pillbox and tank blocks. A jumble of 11 tank blocks were seen during the Rapid Field Survey of the Suffolk Coast in 2003, some upturned.	647594	262192	647594	262192	647594	262192

WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
51	MXS19855	LCS 127	Barbed wire obstruction	World War II anti-invasion defence barbed wire on the sea-front at Sizewell, Leiston. The barbed wire is first visible on APs of 1940, with the defences elaborated in 1941 with the addition of further entanglements. All barbed wire appears to have been removed by October 1945.	647541	263182	647541	263182	647541	263182
52	MXS19856	LCS 128	Barbed wire obstruction	World War II anti-invasion beach defences near Sizewell village, Leiston, comprising barbed wire obstructions and anti-tank cubes, visible on APs from 1940. Five tank blocks were seen as part of the Rapid Field Survey of the Suffolk Coast in 2003.	647587	262847	647587	262847	647587	262847
53	MXS19837	LCS 119	Beach defences	Extensive World War II beach scaffolding, running southwards for circa 7km from Leiston parish, visible on APs from 1941. Anti-invasion beach scaffolding was one component in a wider system of anti-invasion measures in place along much of the Suffolk coast. A rapid field survey of the coast in 2003 identified remains of these defences eroding from the sandbank, consisting of concrete squares with remains of scaffolding poles cemented in.	647521	262718	647521	262718	647521	262718

WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
54	MXS19689	LCS 104	Bomb crater	A group of c.14 bomb craters of WWII date visible as earthworks on APs dated to 1940/1941.	647376	263851	647376	263851	647376	263851
55	MXS19707	ARG 025	Coastal battery	A coastal battery and associated features of World War II date, Aldringham cum Thorpe, visible as structures and earthworks on APs..	647489	261556	647489	261556	647489	261556
56	MXS19696	LCS 111	Pillbox	A World War II pillbox at Sizewell, Leiston parish, visible on APs in 1941 and 1946, but has been removed by 1952. It was located on high ground overlooking the beach, and protected on its seaward side by the coastal anti-invasion defences (**WA 53**).	647508	263246	647115	262794	647115	262794
57	MXS19697	LCS 112	Pillbox	World War II command post trench and pillbox in Leiston parish, visible on APs from 1940. The pillbox is visible on a AP in 1940, but the trenches do not appear until 1941, by which time the pillbox has been camouflaged. The largest trench is shaped like three arms of a swastika, and has been interpreted as a command post, from which military activities were coordinated. The trenches were infilled and ploughed by 1955. The pillbox remains extant.	647115	262794	647508	263246	647508	263246
58	MXS19694	LCS 109	Radar station	Masts and mast footings of probable World War II radar stations in Leiston parish, visible on APs in 1945.	647432	263375	647432	263375	647432	263375

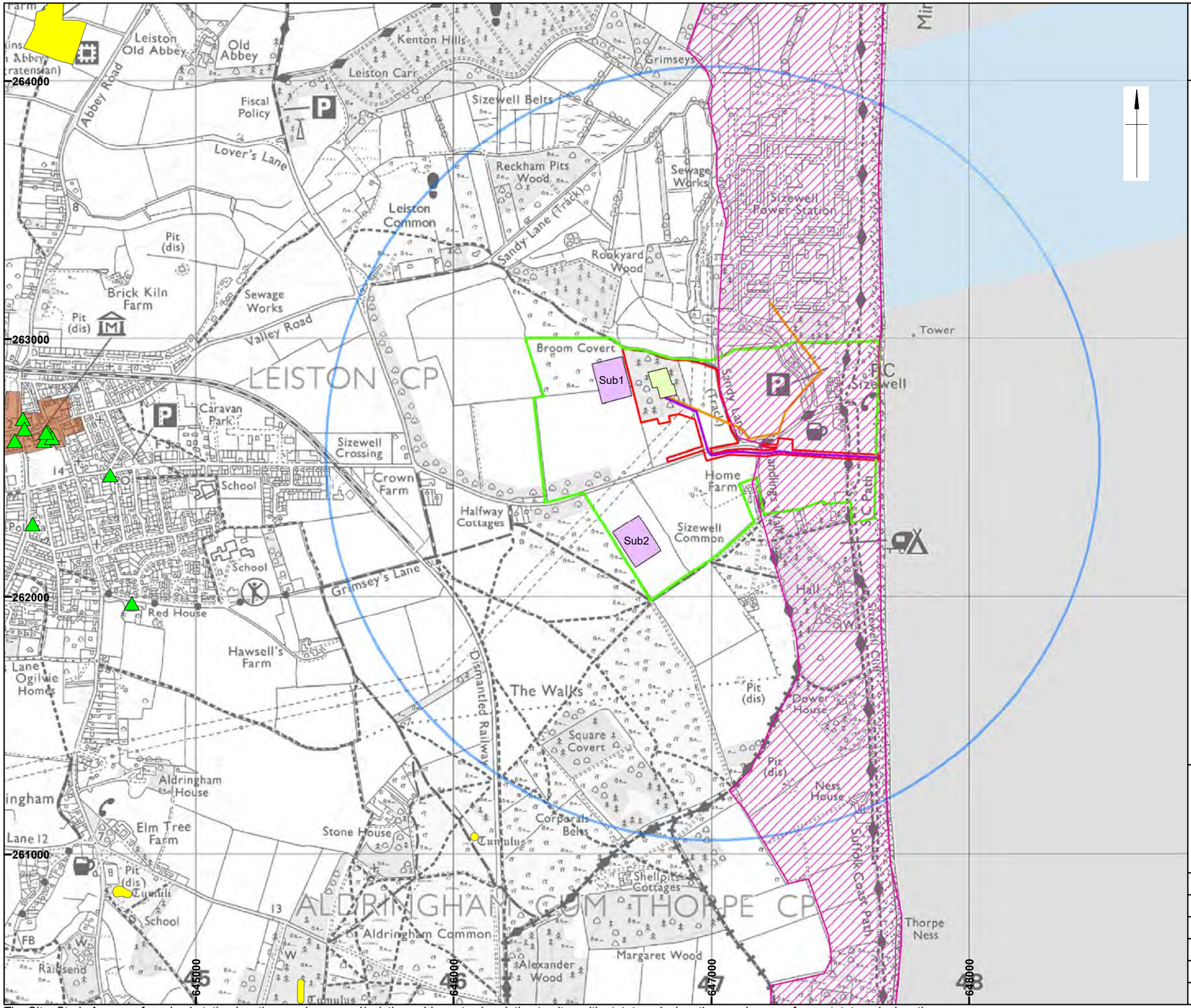
WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
59	MXS19690	LCS 105	Rifle butts	World War II shooting butts in Leiston parish. A shooting range of probable WWII date is visible on APs from 1940 onwards. The range composed a rifle butt and five firing platforms. The butt faces inland towards the SW. The butt and platforms are still visible on OS photographs of 1969, but had been removed by 1973.	647327	263905	647327	263905	647327	263905
60	MXS19706	ARG 024	Slit trench	World War II slit trenches, visible as earthworks on APs in the grounds of Sizewell Hall, Aldringham cum Thorpe.	647470	262200	647470	262200	647470	262200
61	MXS19710	ARG 028	Slit trench	A slit trench of World War II date in Aldringham cum Thorpe parish, visible on APs in 1941. It appears to have been filled in and under cultivation by 1952.	647404	261328	647404	261328	647404	261328
62	MXS19693	LCS 108	Strongpoint	Two World War II coastal strongpoints and practice trenches in Leiston parish, visible as structures and earthworks on APs from 1941. The strongpoints consist of pillboxes located on the higher ground overlooking the beach, surrounded on the landward side by barbed wire entanglements. Destroyed by the construction of the Sizewell Power Station.	647467	263443	646945	261297	646945	261297

WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
63	MXS19695	LCS 110	Strongpoint	World War II strongpoints and barbed wire obstructions in Leiston parish, visible on 1940 APs. The first strongpoint consists of two pillboxes connected by a length of trench c.55m long, and surrounded by a circle of barbed wire enclosing an area of c.1ha. The pillboxes are set into a post-medieval boundary bank. The second strongpoint formed part of the coastal defences, and comprised a pillbox overlooking the beach, protected on its seaward side by the barbed wire and beach scaffolding coastal defences.	647334	263115	647553	262322	647553	262322
64	MXS19700	LCS 115	Strongpoint	A World War II strongpoint or depot at Sizewell village, Leiston parish. WWII beach scaffolding is visible as a structure on APs from 1941, surrounding the village of Sizewell. A large number of square or rectangular structures are also visible on APs, of unknown function. A possible pillbox and coastguard lookout are also apparent. The beach scaffolding also appears to form a small enclave on the beach, leading the site to be interpreted as a military depot or secure access point to and from the sea.	647507	262809	647596	261806	647596	261806

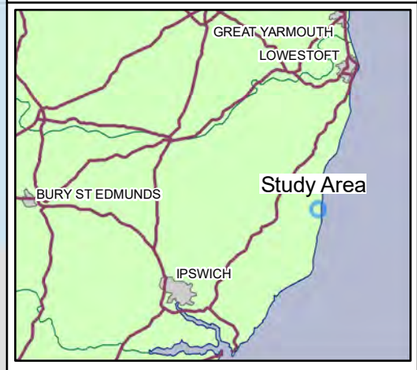
WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
65	MXS19701	LCS 116	Strongpoint	An extensive World War II strongpoint and a later WWII probable experimental radar station in Leiston parish, visible on APs. A number of pillboxes, weapons pits and slit trenches are visible on APs from 1941 and 1942. The area is bounded on the west by an anti-tank ditch (**WA 70**) and on the east by ant-invasion coastal defences (**WA 50**). The radar station is established some time after 1943, and was the focus of intense activity. Pillbox still extant (**WA 36**).	647456	262512	647334	263115	647334	263115
66	MXS19705	ARG 023	Strongpoint	A World War II seafront strongpoint in Aldringham cum Thorpe parish, visible on APs as structures and earthworks on Sizewell Cliffs. The strongpoint is bounded on the east by a stretch of barbed wire, part of the anti-invasion coastal defences (**WA 50**). The strongpoint consists of a pillbox, slit trench, concrete anti-tank cubes and barbed wire.	647553	262322	647467	263443	647467	263443
67	MXS19708	ARG 026	Strongpoint	A World War II strongpoint in Aldringham cum Thorpe, visible as structures and earthworks on APs, comprising a pillbox, slit trenches and barbed wire.	647596	261806	647456	262512	647456	262512

WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
68	MXS19709	ARG 027	Strongpoint	A World War II strongpoint and possible command centre, Aldringham cum Thorpe, comprising two pillboxes, a series of slit trenches and weapons pits, with a number of paths leading to Ness House, possibly requisitioned as a command centre.	647571	261235	647571	261235	647571	261235
69	MXS19712	ARG 030	Strongpoint	A World War II strongpoint in Aldringham cum Thorpe parish, visible on APs from 1945 onwards. The strongpoint is located within a loop of an anti-tank ditch and is focussed on an old rifle butt. The butt is marked on both the 1st and 2nd edition maps of 1884 and 1904 as 'Old Rifle Butt'. The strongpoint consists of two pillboxes and a number of weapons pits and slit trenches, as well as possible anti-aircraft ditches, placed to complement the extensive anti-aircraft ditch site immediately to the north-west (**WA 48**). The Old Rifle Butt and pillboxes are visible on APs of 1969, but their current condition is unknown.	646945	261297	647507	262809	647507	262809

WA No	MONU ID	SMR No	Monument Type	Description	Easting	Northing	MinX	MinY	MaxX	MaxY
70	MXS19698	LCS 113	Tank trap	A World War II anti-tank ditch in Leiston and Aldringham cum Thorpe parish, visible as a earthwork on APs, having been newly cut in 1941. The ditch had been infilled and ploughed by 1952, although sections of the ditch which cut across cultivated fields are visible as a cropmark on APs from 1968.	647301	261915	647442	264038	647452	264048
71	MXS19842	LCS 122	Tank trap	World War II anti-tank cubes near Sizewell, Leiston, visible on APs from 1941. A line of cubes at the northern extent of the group, running W-E, are still extant, although most of the row running N-S were removed during the construction of Sizewell Power Station.	647447	264043	647574	263355	647574	263355
72	MXS19853	LCS 126	Tank trap	A row of World War II anti-tank cubes near Sizewell, Leiston, visible on APs from 1941. They run in a W-E direction from the sand dunes to the beach for c.110m. Still seen on APs from 1982.	647574	263355	647301	261915	647301	261915
73	MXS19711	ARG 029	Weapons pit	A World War II weapons pit and probable slit trench in Aldringham cum Thorpe, visible on APs of 1941.	647137	261131	647137	261131	647137	261131



Wessex Archaeology



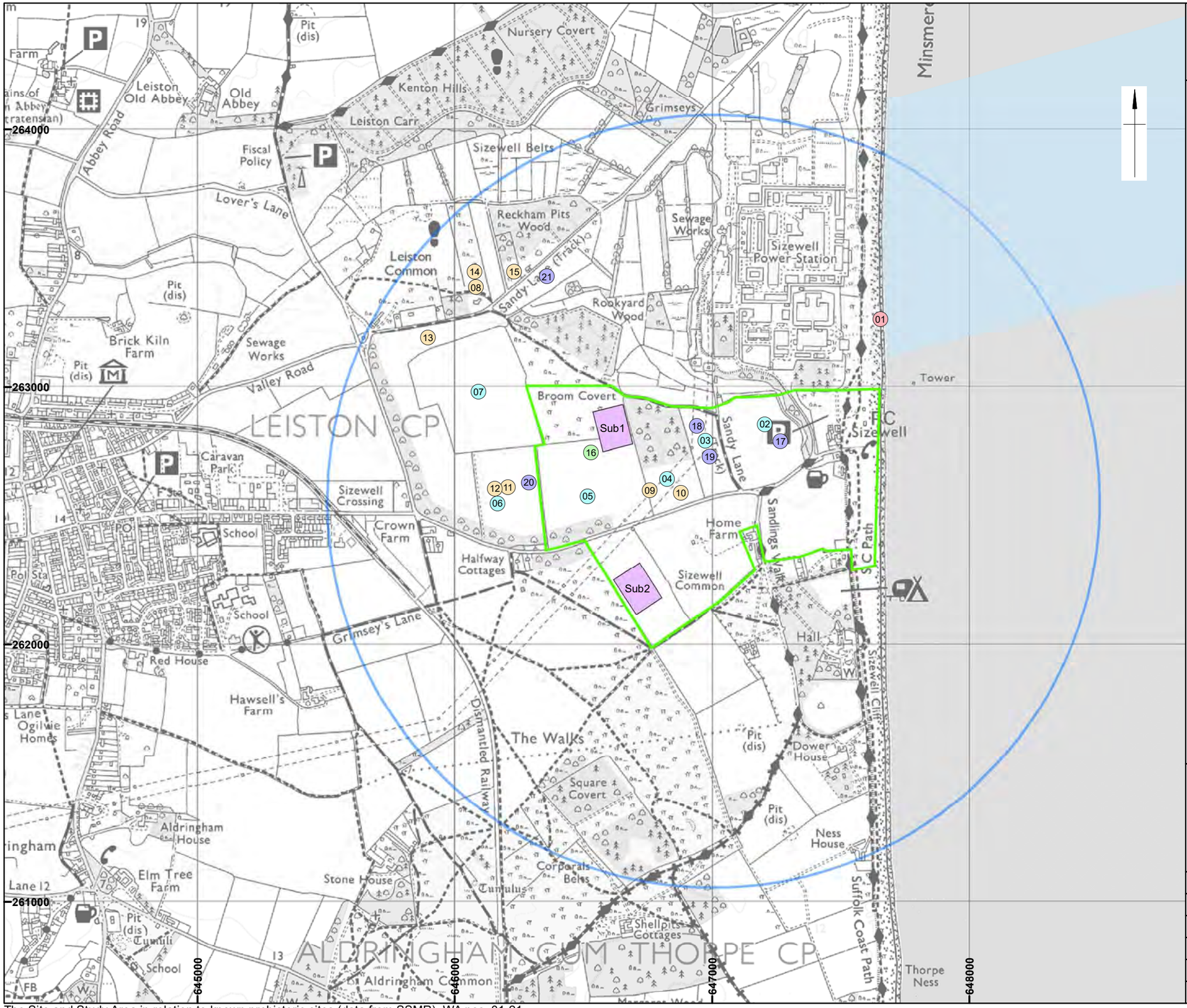
- Scheduled Monuments
- Listed Buildings
- Conservation Area
- Heritage Coast
- Revised extended cable route
- Preferred locations for substations
- Existing substation
- Cable route to existing substation
- Cable route to Sizewell Power Station
- Site
- Previous onshore works
- Study Area

0 500 m

Revision Number:	0
Illustrator:	NJC
Date:	25/11/09
Scale:	1:15,000 at A3
Path:	X:\PROJECTS\73010\GIS\MXD

The Site, Study Area, preferred substation locations and proposed/existing cable routes in relation to sites with statutory designations and areas of non-statutory designation

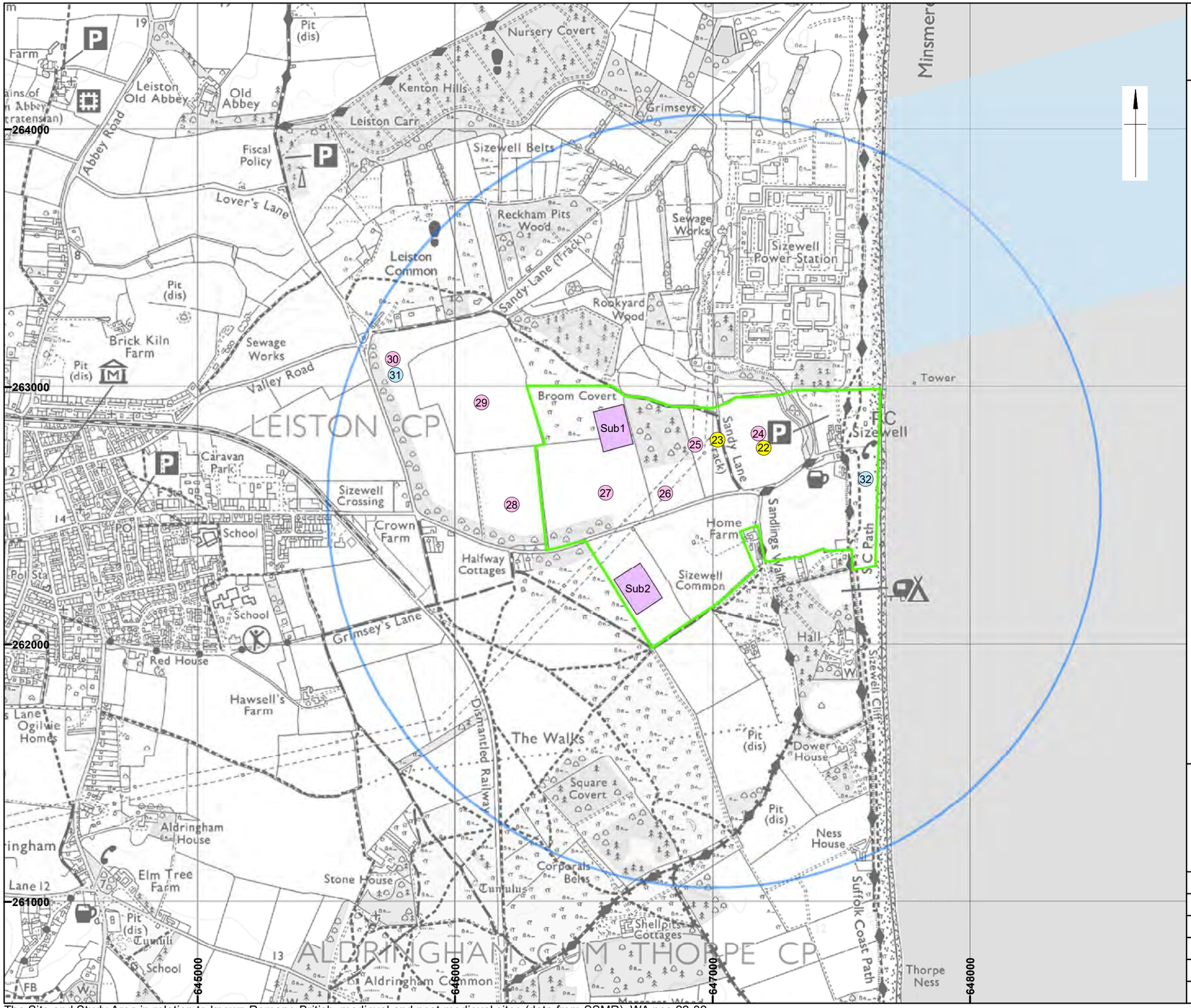
Figure 1



The Site and Study Area in relation to known prehistoric sites (data from SSMR) WA nos. 01-21

Figure 2

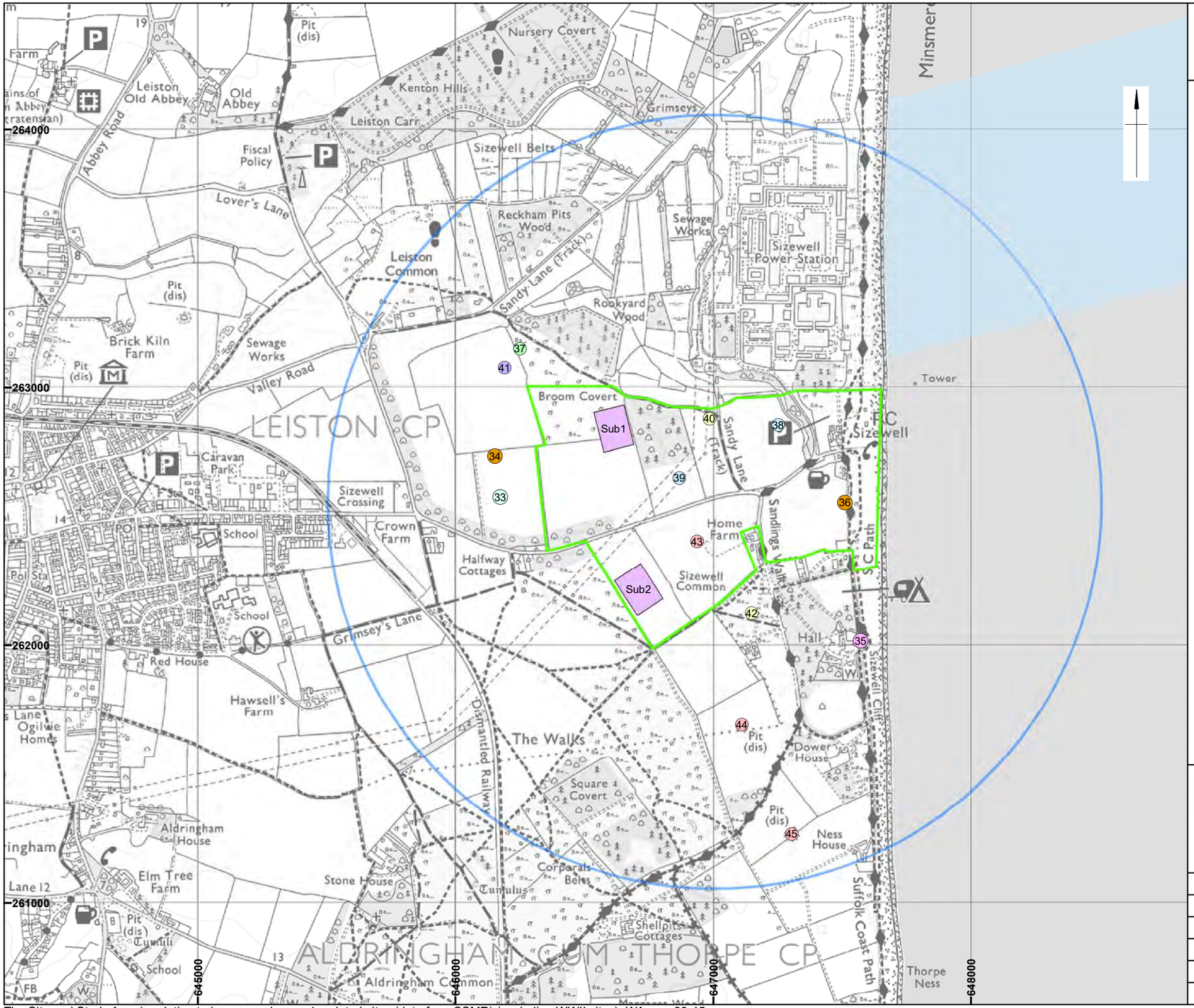
Revision Number:	0
Illustrator:	NJC
Date:	25/11/09
Scale:	1:15,000 at A3
Path:	X:\PROJECTS\73010\GIS\MXD



The Site and Study Area in relation to known Romano-British, medieval and post-medieval sites (data from SSMR) WA nos.22-32

Revision Number:	0
Illustrator:	NJC
Date:	25/11/09
Scale:	1:15,000 at A3
Path:	X:\PROJECTS\73010\GIS\MXD

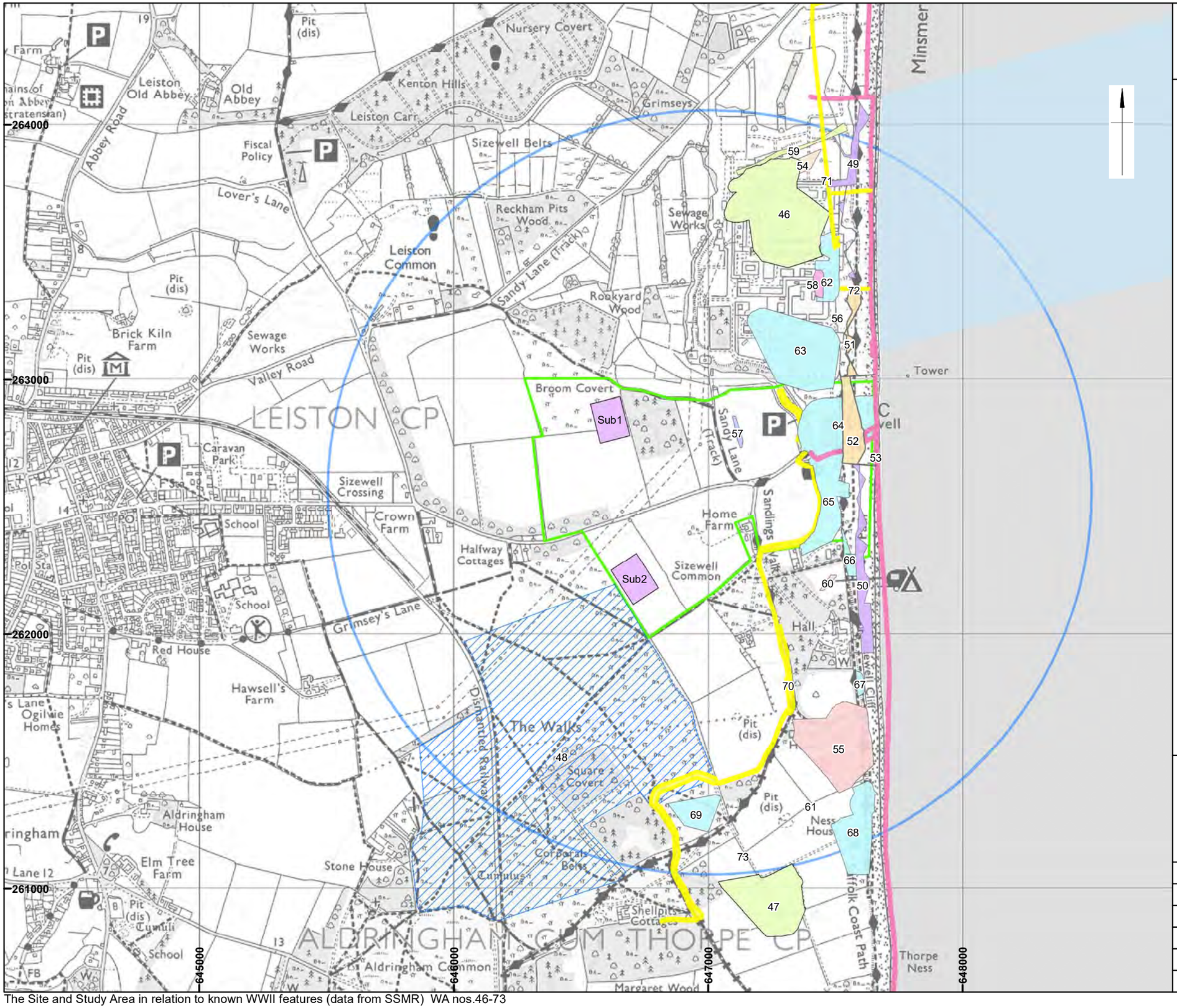
Figure 3



Revision Number:	0
Illustrator:	NJC
Date:	25/11/09
Scale:	1:15,000 at A3
Path:	X:\PROJECTS\73010\GIS\MXD

The Site and Study Area in relation to known modern and undated sites (data from SSMR) (excluding WWII sites) WA nos. 33-45

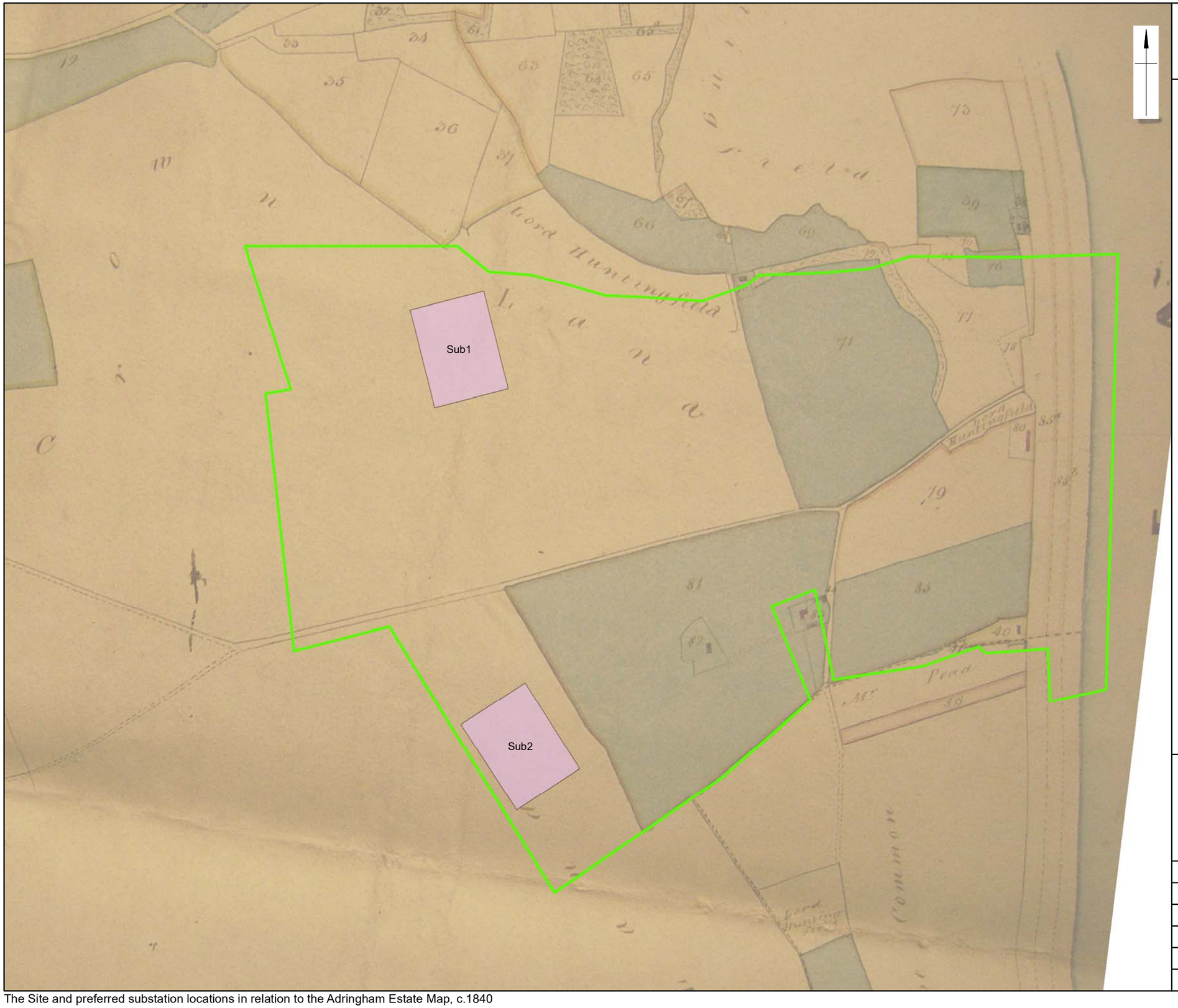
Figure 4



The Site and Study Area in relation to known WWII features (data from SSMR) WA nos.46-73

Figure 5

Revision Number:	0
Illustrator:	NJC
Date:	25/11/09
Scale:	1:15,000 at A3
Path:	X:\PROJECTS\73010\GIS\MXD

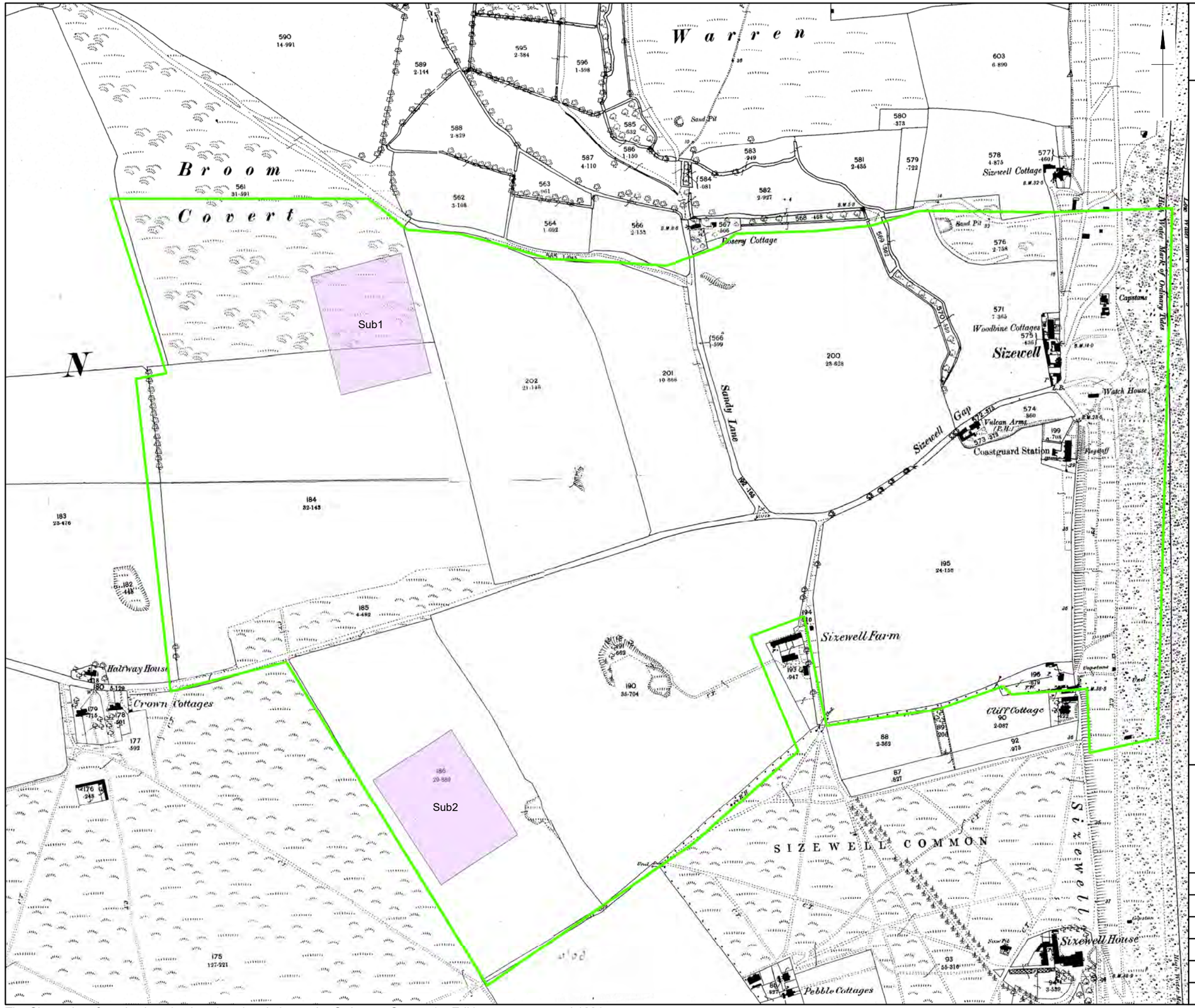


Wessex Archaeology

Revision Number:	0
Illustrator:	NJC
Date:	25/11/09
Scale:	1:6,000 at A3
Path:	X:\PROJECTS\73010\GIS\MXD

The Site and preferred substation locations in relation to the Adringham Estate Map, c.1840

Figure 6



Wessex Archaeology

Site

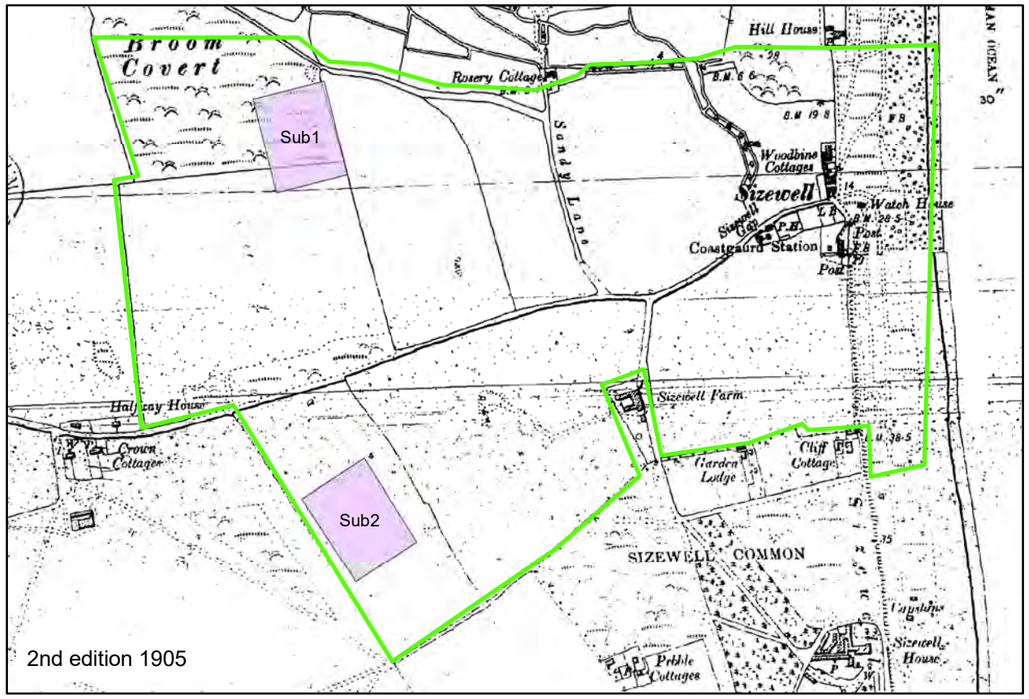
Preferred locations for substations

0 200 m

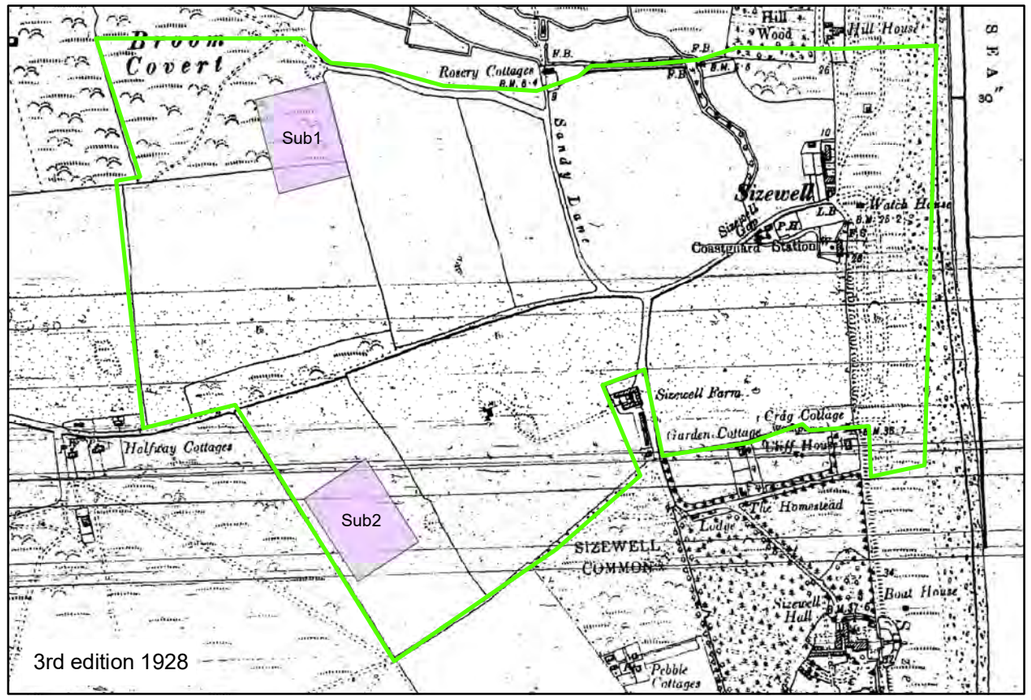
Revision Number:	0
Illustrator:	NJC
Date:	25/11/09
Scale:	1:5,000 at A3
Path:	X:\PROJECTS\73010\GIS\MXD

The Site and preferred substation locations in relation to the Ordnance Survey 1st Edition map, surveyed 1881

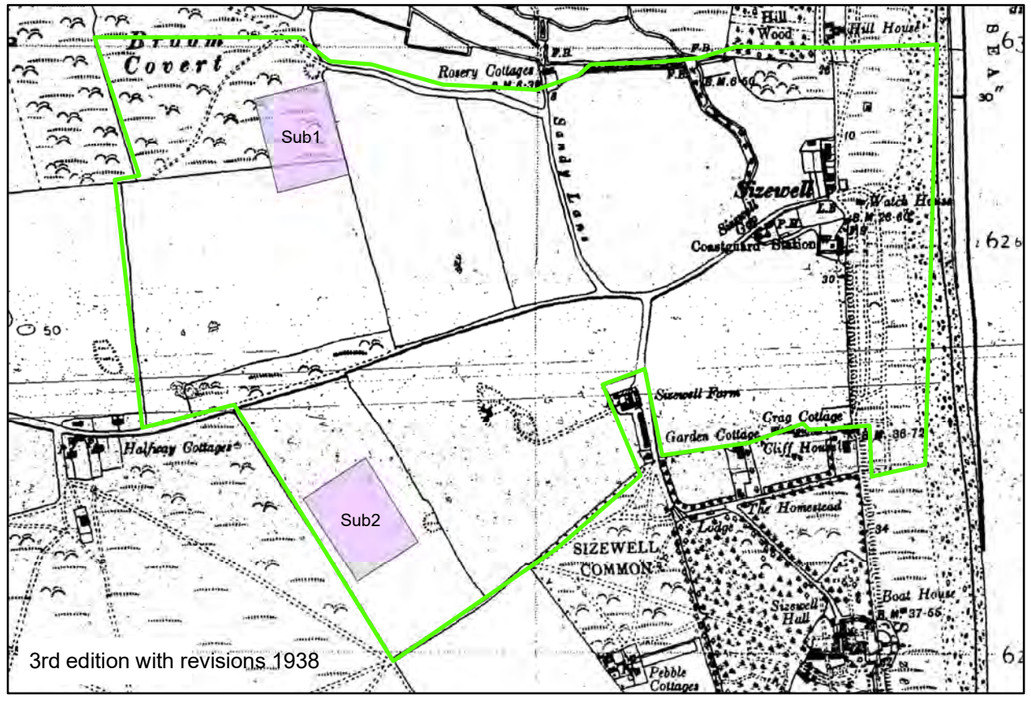
Figure 7



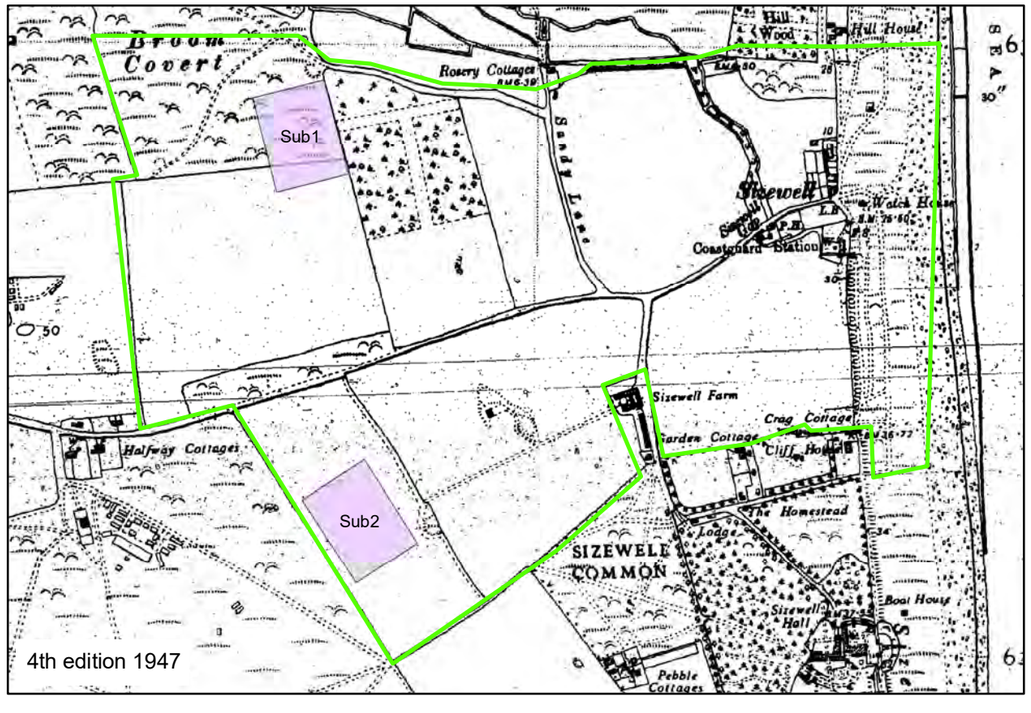
2nd edition 1905



3rd edition 1928



3rd edition with revisions 1938



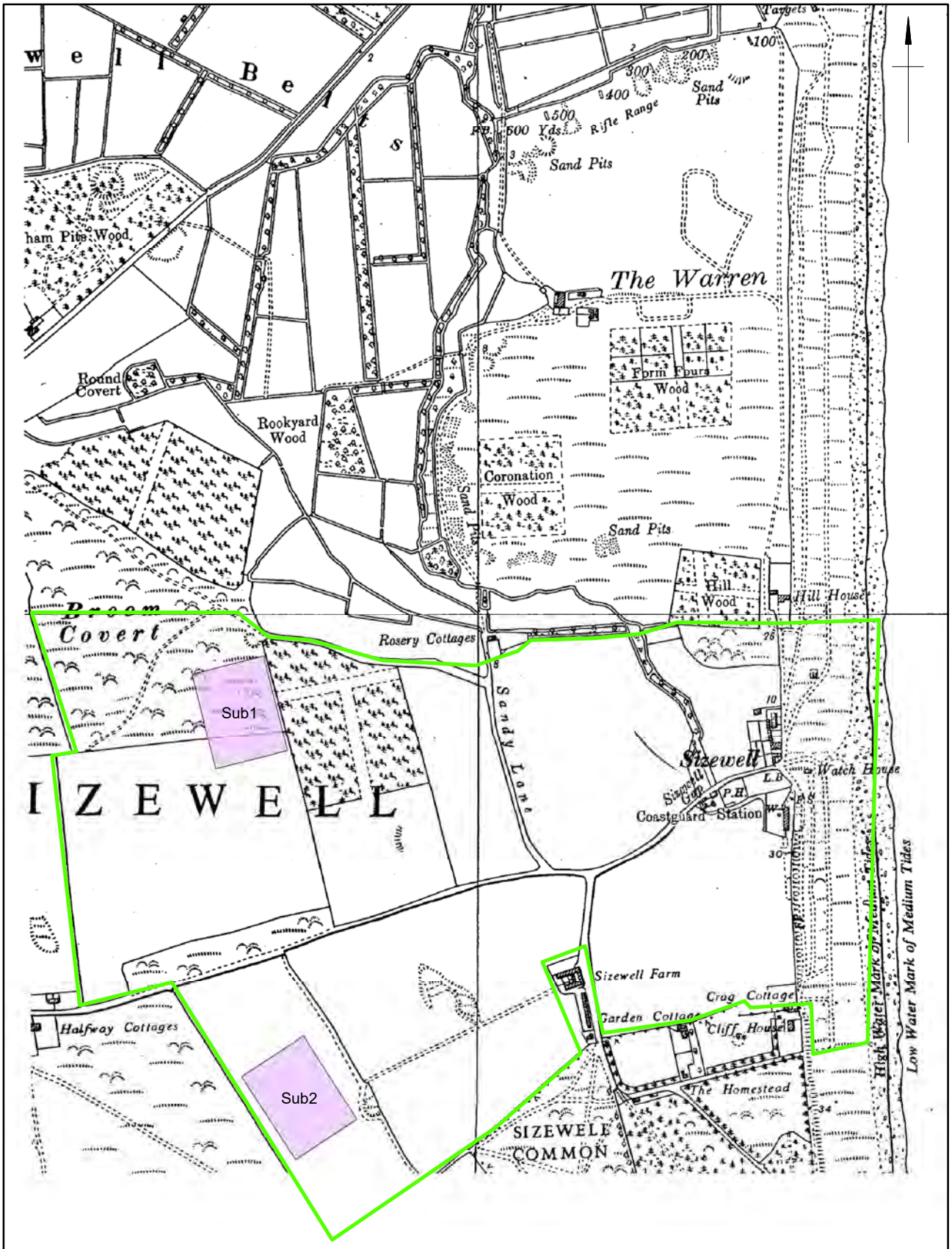
4th edition 1947

Wessex Archaeology

Date:	25/11/09	Revision Number:	0
Scale:	1:10,000	Illustrator:	NJC
Path:	X:\PROJECTS\73010\GIS\MxD		

The Site and preferred substation locations in relation to historic Ordnance Survey mapping

Figure 8



0 300 Metres

Date:	25/11/09	Revision Number:	0
Scale:	1:10,000	Illustrator:	NJC
Path:	X:\PROJECTS\73010\GIS		

Wessex Archaeology

The Site and preferred substation locations in relation to the 1958 OS map

Figure 9

Plate 1 Anti-tank cubes (WA52)

Plate 2 Pillbox (WA36)

Date:	01/12/09	Revision Number:	0
Scale:	n/a	Illustrator:	NJC
Path:	X:\PROJECTS\73010\GIS		

Wessex Archaeology

Plates 1 and 2

Plate 3 Location of substation 1

Plate 4 Location of substation 2

Date:	01/12/09	Revision Number:	0
Scale:	n/a	Illustrator:	NJC
Path:	X:\PROJECTS\73010\GIS		

Wessex Archaeology

Plates 3 and 4

Plate 5 Historic boundary

Plate 6 Area of foreshore at the eastern extent of the Site, within the Heritage Coast and AONB

Date:	01/12/09	Revision Number:	0
Scale:	n/a	Illustrator:	NJC
Path:	X:\PROJECTS\73010\GIS		

Wessex Archaeology

Plates 5 and 6

WESSEX ARCHAEOLOGY LIMITED.
Registered Head Office: Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB.
Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk www.wessexarch.co.uk
Maidstone Office: The Malthouse, The Oast, Weavering Street, Maidstone, Kent ME14 5JN.
Tel: 01622 739381 info@wessexarch.co.uk www.wessexarch.co.uk

Wessex Archaeology Ltd registered office Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB
Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk www.wessexarch.co.uk

FS 606559