FIVE ESTUARIES
OFFSHORE WIND FARM

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10.23 LITTLE CLACTON ROAD EVALUATION REPORT

Application Reference :	EN010115
Application Document Number:	10.23
Revision:	A
Pursuant to:	Deadline 3
EcoDoc Number:	005416681-01
Date:	November 2024

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	Nov 2024	Deadline 3	WA	VE	VE

CONTENTS

Five Estuaries OSWF
North Falls OSWF
Little Clacton Road, Essex

Archaeological Evaluation

Planning Ref: HER FWLC24
Ref: 231918.1
May 2024

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Document Information

Document title	Five Estuaries OSWF, North Falls OSWF, Little Clacton Road, Essex
Document subtitle	Archaeological Evaluation
Document reference	231918.2
Commissioned by	Five Estuaries Offshore Wind Farm LTD
Address	Zentraler Rechnungseingang Essen Germany 45096
Site location	Little Clacton Road, Great Holland, Tendring, Essex, CO13 0EU
County	Essex
National grid reference (NGR)	NGR 620506, 219225
Statutory designations	N/A
Museum name	Colchester Museum
Museum accession code	TBC
HER identifier	FWLC24
OASIS Id	wessexar1-524884
WA project name	
WA project code	231918
Dates of fieldwork	29/04/2024 – 10/05/2024
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Document edited by	Andrew Souter

Quality Assurance

Issue	Date		Author	Approved by
1	23/05/2024	Internal	WA	NO
2	03/06/2024	External	WA	NO
3	03/06/2024	Final after comments	ALS	NO

Contents

List of Figures

List of Tables

Summary

Wessex Archaeology was commissioned by Five Estuaries Offshore Windfarm Ltd and North Falls Offshore Windfarm Ltd, to undertake an archaeological evaluation of a parcel of land located in north of Little Clacton Road, Great Holland, Tendring, Essex, CO13 0EU for both the Five Estuaries and North Falls Offshore Windfarms, centred on NGR 620506, 219225.

The evaluation was undertaken as part of the proposed development of the Five Estuaries and North Falls Offshore Arrays, proposals for which are currently under consideration by the Planning Inspectorate. The evaluation area would be used for part of the onshore infrastructure connecting the offshore arrays with the onshore substation. The current proposals through the Site are for two options for the route of the cable corridor through this area.

The evaluation comprised 16 trenches, each measuring 30m by 2m. A total of three ditches across five of the excavated trenches, with ditch segments in Trenches 7/9 and 12/13 part of the same features. The ditch across Trenches 7 and 9 corresponds with a field boundary recorded on the 1874 Ordnance Survey map, and was identified by the previous APS survey, with the other two ditches also likely to represent field boundaries.

A previous geophysical survey failed to identify any of the recorded features, and a proposed archaeological feature was not identified by any of the three trenches targeted to investigate it.

The evaluation was undertaken between 29 April and 10 May 2024.

Acknowledgements

Wessex Archaeology would like to thank Five Estuaries Offshore Windfarm Ltd and North Falls Offshore Windfarm Ltd for commissioning the archaeological evaluation, in particular James Eaton. Wessex Archaeology is also grateful for the advice of the Historic Environment Consultant at Place Services, who monitored the project for Colchester Borough Council.

Five Estuaries OSWF
North Falls OSWF
Little Clacton Road, Essex

Archaeological Evaluation

1 INTRODUCTION

1.1 Project and planning background

1.1.1 Wessex Archaeology was commissioned by Five Estuaries Offshore Windfarm Ltd and North Falls Offshore Windfarm Ltd, to undertake an archaeological evaluation of a parcel of land located in north of Little Clacton Road, Great Holland, Tendring, Essex, CO13 0EU for both the Five Estuaries and North Falls Offshore Windfarms, centred on NGR 620506, 219225 (**Figure 1**).

1.1.2 The proposed development comprises the construction of the Five Estuaries and North Falls Offshore Arrays. The evaluation area is required for its associated infrastructure consisting of onshore export cables extending from the landfall between Holland on Sea and Frinton on Sea and connecting to an onshore substation at Little Bromley.

1.1.3 All works were undertaken in accordance with a written scheme of investigation (WSI) which detailed the aims, methodologies and standards to be employed (Wessex Archaeology 2023). The Historic Environment Consultant at Place Services approved the WSI, on behalf of the Local Planning Authority (LPA), prior to the fieldwork.

1.1.4 The evaluation, comprising 16 trial trenches and 6 archaeological and geoarchaeological test pits was undertaken 29/04/24 – 10/05/24. No. 1 of the trial trenches measured 50 m x 2 m and the remaining no. 15 trial trenches measured 30 m x 2 m.

1.2 Scope of the report

1.2.1 The purpose of this report is to provide a detailed description of the results of the evaluation, to interpret the results within a local, regional or wider archaeological context and assess whether the aims of the evaluation have been met.

1.2.2 The presented results will provide further information on the archaeological resource that may be impacted by the proposed development and facilitate an informed decision with regard to the requirement for, and methods of, any further archaeological mitigation.

1.3 Location, topography and geology

1.3.1 The evaluation area is located Little Clacton Road is located to the north of Little Clacton Road to the west of Great Holland. The Site is bound by Great Holland Mill and Holland Mill Wood to the west, agricultural land to the north, a track and agricultural land to the east and agricultural land and Little Clacton Road to the south.

1.3.2 The Little Clacton Road site is relatively flat and lies at an elevation of around 22m aOD.

1.3.3 The bedrock geology is mapped as Thames Group (clay, silt and sand) overlain by superficial deposits of Kesgrave Catchment Subgroup (sands and gravels; British Geological Survey (2024).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Introduction

2.1.1 The archaeological and historical background was assessed in a prior desk-based assessment (Royal Haskoning DHV 2022; Wessex Archaeology 2023a), which considered the recorded historic environment resource within a study area surrounding the Site. A summary of the results is presented below, with relevant entry numbers from the Essex Historic Environment Record (HER), the National Heritage List for England (NHLE), and reference numbers assigned during the aerial photographic assessment (Aerial Photo Services (APS) 2022) included. A Geoarchaeological Desk-Based Assessment (Wessex Archaeology 2022) has also been undertaken to establish the sub-surface superficial deposits underlying the Site and provides and assessment of their archaeological and geoarchaeological potential and a summary of the results is included below. Additional sources of information are referenced, as appropriate.

2.2 Previous non-intrusive surveys within the Site Area

Geophysical Survey (Wessex Archaeology 2023b)

2.2.1 The Site area is referred to as LCR_04 in the Geophysical Survey report (Wessex Archaeology 2023). A broad weakly positive circular anomaly is located in the northern part of the Site (4003). It is up to 5m wide, aligned west-east for 65m before it turns towards the south for 101m and then to the west for 55m. This indicates a ditch-like feature that could form a large enclosure opened to the west. However, it could just as well be a past course of the Holland Brook that runs to the west of the Site. A small number of possible archaeological anomalies are located to the west of the possible enclosure.

2.2.2 No other geophysical anomalies have been identified within the evaluation area however to the immediate east of the Site a weakly positive penannular anomaly is located at 4000 and measures 17m in diameter and is 1.4m wide. At its centre is a weakly positive discrete anomaly, which is 2m in diameter as well as three similar anomalies located on the ditch alignment. These anomalies indicate a ditch-like feature such as a roundhouse or round barrow. Small discrete anomalies could relate to postholes or pits. However, given the alluvial sediment present in the area, they as well be natural in origin.

2.2.1 To the north of the circular anomaly at 4000, is a weak linear anomaly at 4001 (also outside of the Site boundary). It is 40m long by up to 3m wide and is surrounded by eight weakly positive sub-circular anomalies that are between 2.5m and 4.5m in diameter. The linear anomaly runs on an east-west orientation and curves towards the south-east at the eastern side. It indicates a ditch-like feature or a hardened surface such as a path. The circular anomalies indicate pit-like features that could relate to wider settlement activity in the area, considering the proximity to the ring-ditch. However, given the alluvial sediments present in the area they could as well be natural in origin.

2.2.2 About 80m further north from 4000 and 4001 are weakly positive responses at 4002 which occupy an area of 12.5m by 18m (also outside of the Site boundary). The perimeter is delineated by a weakly positive linear anomaly that is up to 1.5m wide and appears to have a 3m wide entrance towards the west. Located within are two orthogonal weakly positive anomalies that occupy an area of 4m by 3m. They could relate to dwellings of an uncertain date. It is equally possible that they are a result of natural undulation in the subsurface.

2.2.3 Several small weakly positive discrete anomalies have been identified as possible archaeology to the east of the Order Limits. They indicate pits and could relate to human

activities such as refuse pits or storage pits. However, they could as well be the result of natural undulations in the bedrock for variation within the cover sands.

Aerial Photographic Assessment (APS 2022)

2.2.4 There are no polygons, points or lines relating to the information mapped by the National Mapping Programme within the evaluation area. The work undertaken by Aerial Photo Services has mapped a field system across the central part of the evaluation area. This comprises an east-west oriented boundary, with two spurs, one to extending north east and another extending south. No other features have been mapped within the Little Clacton Road Site from the assessment of aerial photographs.

2.2.5 There is no National Mapping Programme (NMP) data within the evaluation area.

2.3 Previous intrusive surveys in the Site Area

2.3.1 A program of geoarchaeological monitoring of Ground Investigation works has recently been completed to the immediate south of Little Clacton Road, forming part of a broader program of GI monitoring (WA 2023c).

2.3.2 Two boreholes (BHLC-1 and BHLC-3) were monitored by a geoarchaeologist at this location. Both boreholes are situated approximately 100m south of the evaluation area, within GCZ 2 Geoarchaeological Character Zone, representing a zone where no previous stratigraphic data was available, but where there was potential for unmapped Pleistocene deposits to be present. The archaeological potential of the deposits within each GCZ is detailed in the Geoarchaeological Desk Based Assessment (WA 2022).

2.3.3 Both boreholes produced sequences of Quaternary superficial sediments, including 2.5m of Kesgrave Sands and Gravels overlying London Clay bedrock recorded in BHLC-1, with brickearth (0.20-1.20mbgl) overlying Kesgrave Sands and Gravels to 5.60mbgl in BHLC-3.

2.4 Archaeological and Historical context

Post Palaeolithic prehistoric

2.4.1 A neolithic axehead is recorded 350m to the south east of the Little Clacton Road as an isolated find and 1km to the south east a Bronze Age socketed axehead was discovered. Cropmarks relating to ring ditches have been identified within 1km of the Site, although these have not been intrusively investigated, this could relate to prehistoric funerary activity.

Romano-British to Anglo-Saxon

2.4.2 No finds or features of known Romano-British or Anglo-Saxon date have been recorded within 1km of the Little Clacton Road site.

Medieval to Modern

2.4.3 The estuary between Frinton and Clacton became known as the Gunfleet Estuary in the medieval and post-medieval periods. It is thought that boats were able to travel as far up stream as Thorpe-le-soken at this time. The Fan bridge is known to have existed since 1509 and prior to this there was probably a ford or boat crossing at this point. Documents from the 16th century describe the estuary as a ‘haven’ suggesting that it was used for shipping and the channel between the coast and Gunfleet Sands is known to have been used as safe anchorage for larger ships. Within the estuary a number of landing places have been identified which were linked to villages and farms on the higher ground, by lanes. The estuary was reclaimed in the 17th century to stop sea water entering the marshland so that

it could be used for agriculture. A sea wall was constructed across its mouth with a sluice to allow the river water to drain away into the sea.

2.4.4 Great Holland Mill existed adjacent to the Site from at least the post-medieval period to 1985 when it was lost to fire. A mill is shown west of Great Holland on the Chapman and Andre map of 1777 and this is the earliest depiction of the mill at this location. The circular smock mill and associated buildings can be seen on the parish of Great Holland tithe map of 1839. The apportionment indicates that this was occupied by Thomas Beckwith at this time and it is listed as a Homestead in the apportionment. The base of the mill is the only part of the windmill that survived the fire. The Mill House is Grade II listed and is of 19th century date with ranges attached to the rear; a separate granary is also located in the farmstead.

2.4.5 A small number of post-medieval findspots have been recorded within 1km of the Site, the closest of which is located 500m to the south of the Site.

2.4.6 Historic mapping of the area has shown that the Site has been previously sub-divided into smaller parcels of land as shown on the Great Holland Parish tithe map dating to 1839. This shows the site to comprise smaller, irregular shaped parcels of agricultural land. This appears to have remained until the later part of the 20th century when the internal field boundaries were removed to create a single larger field.

Unknown

2.4.7 A large number of cropmarks have been recorded on the HER and through the NMP survey. Many of these relate to field boundaries which could relate to agricultural activities from the medieval period to the 19th century. A polygon relating to field boundaries of unknown date extends within the eastern portion of the Site, although the digitised cropmarks lie outside of the Site to the east. Another lies 500m to the north of the Site which records cropmarks of linear feature and field boundaries.

2.4.8 Possible earlier features such as ring ditches and possible trackways have been recorded 1km to the west of the Site. To the south of the Site a polygon relating to a broad double ditched trackway, possible penannular ditches and pits are recorded of unknown date. Approximately 500m to the south east of the Site an single large ring ditch ash been recorded with a trackway running north east to south west, which could be prehistoric in date. A sub-rectangular enclosure and possible small ring ditches have been identified as cropmarks approximately 500m to the south west of the Site.

3 AIMS AND OBJECTIVES

3.1 General aims

3.1.1 The general aims of the evaluation, as stated in the WSI (Wessex Archaeology 2023), were to:

- provide information about the archaeological and geoarchaeological potential of the site; and
- inform either the scope and nature of any further archaeological and/or geoarchaeological work that may be required; or the formation of a mitigation strategy (to offset the impact of the development on the archaeological resource); or a management strategy.

3.2 General objectives

3.2.1 In order to achieve the above aims, the general objectives of the evaluation were to:

- determine the presence or absence of archaeological features, deposits, structures, artefacts or ecofacts within the specified area through a program of archaeological trial trenching;
- establish the broad presence/absence, nature and distribution of Quaternary deposits within the evaluation area and determine their archaeological and geoarchaeological potential through a program of test pits;
- establish, within the constraints of the evaluation, the extent, character, date, condition and quality of any surviving archaeological and /or geoarchaeological remains;
- place any identified remains within a wider historical and archaeological context in order to assess their significance; and
- make available information about the archaeological and geoarchaeological resource by reporting on the results of the evaluation.

3.3 Site-specific objectives

3.3.1 The site-specific objectives, as defined in the WSI (Wessex Archaeology 2023), were to:

- test the results of the geophysical survey (Wessex Archaeology 2023a);
- examine evidence for any prehistoric activity within the Site; and
- examine evidence for any medieval and post-medieval agricultural activity within the Site.

3.3.2 The trial trenches have been targeted over the geophysical anomalies and positioned to test the apparent ‘blank’ areas. Blank areas have been tested using a 30m trench grid system where possible. A rationale is provided below for the positioning of the trenches.

Table 1 Trench Position Rationale

Trench no.	Trench Position Rationale	Trench Length (m)
Tr.1	Tr.1 is aligned E-W within ‘blank’ area	30m
Tr.2	Tr.2 NE-SW aligned to target geophysical anomaly, possible large enclosure	30m
Tr.3	Tr.3 aligned E-W to target possible large enclosure and internal discrete anomalies from geophysical survey	50m
Tr.4	Tr.4 is aligned NE-SW within ‘blank’ area	30m
Tr.5	Tr.5 is aligned N-S within ‘blank’ area and targeting geological features	30m
Tr.6	Tr.6 aligned N-S to target southern section geophysical anomaly, possible large enclosure	30m
Tr.7	Tr.7 is aligned N-S targeted possible geological feature and field boundary identified by APS	30m
Tr.8	Tr.8 is aligned NW-SE within ‘blank’ area	30m
Tr.9	Tr.9 is aligned N-S to target field boundary identified by APS	30m
Tr.10	Tr.10 is aligned E-W within ‘blank’ area	30m
Tr.11	Tr.11 is aligned NE-SW within ‘blank’ area and targeting geological feature	30m

Tr.12	Tr.12 is aligned N-S within 'blank' area	30m
Tr.13	Tr.13 is aligned N-S within 'blank' area and targeting geological feature	30m
Tr.14	Tr.14 is aligned N-S within 'blank' area and targeting geological features	30m
Tr.15	Tr.15 is aligned E-W within 'blank' area and targeting geological features	30m
Tr. 16	Tr.16 is aligned NE-SW within 'blank' area	30m

3.3.3 Geoarchaeological objectives in the WSI are covered by a separate Geoarchaeological Report (Wessex Archaeology Forthcoming).

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 2023) and in general compliance with CIfA standards and guidance (CIfA 2023a–b). The methods employed are summarised below.

4.2 Fieldwork methods

General

4.2.1 The trench locations were set out using a Global Navigation Satellite System (GNSS), in the approximate positions proposed in the WSI, although trench 2 had to be slightly shortened because of proximity to track road. (Fig. 1).

4.2.2 15 trial trenches, each measuring 30 m in length and 2 m wide, and 1 trial trench measuring 50m in length and 2m wide, were excavated in level spits using a 360º excavator equipped with a toothless bucket, under the constant supervision and instruction of the monitoring archaeologist. Machine excavation proceeded until either the archaeological horizon or the natural geology was exposed.

4.2.3 Where necessary, the base of the trench/surface of archaeological deposits were cleaned by hand. A sample of archaeological features and deposits was hand-excavated, sufficient to address the project aims.

4.2.4 Spoil from machine stripping and hand-excavated archaeological deposits was visually scanned for the purposes of finds retrieval. Artefacts were collected and bagged by context. All artefacts from excavated contexts were retained.

4.2.5 16 Trenches completed to the satisfaction of the client and the Historic Environment Consultant at Place Services were backfilled using excavated materials in the order in which they were excavated, and left level on completion. No other reinstatement or surface treatment was undertaken.

Recording

4.2.6 All exposed archaeological deposits and features were recorded using Wessex Archaeology's pro forma recording system. A complete record of excavated features and deposits was made, including plans and sections drawn to appropriate scales (generally 1:20 or 1:50 for plans and 1:10 for sections) and tied to the Ordnance Survey (OS) National Grid.

4.2.7 A Leica GNSS connected to Leica's SmartNet service surveyed the location of archaeological features. All survey data is recorded in OS National Grid coordinates and

heights above OD (Newlyn), as defined by OSTN15 and OSGM15, with a three-dimensional accuracy of at least 50 mm.

4.2.8 A full photographic record was made using digital cameras equipped with an image sensor of not less than 16 megapixels. Digital images have been subject to managed quality control and curation processes, which has embedded appropriate metadata within the image and will ensure long term accessibility of the image set.

4.3 Finds and environmental strategies

4.3.1 Strategies for the recovery, processing and assessment of finds and environmental samples were in line with those detailed in the WSI (Wessex Archaeology 2023). The treatment of artefacts and environmental remains was in general accordance with: *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014a), *Environmental Archaeology. A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011), and CIfA's (n.d. a) *Toolkit for Specialist Reporting* (Type 2: Appraisal).

4.4 Monitoring

4.4.1 The Historic Environment Consultant at Place Services monitored the evaluation on behalf of the LPA. Any variations to the WSI, if required to better address the project aims, were agreed in advance with the client and the Historic Environment Consultant at Place Services.

5 STRATIGRAPHIC EVIDENCE

5.1 Introduction

5.1.1 5 of the 16 excavated trial trenches contained archaeological features and deposits, indicating archaeological remains are present within the site (Fig. 1).

5.1.2 The uncovered features comprised a number of ditches of post-medieval and modern date.

5.1.3 The following section presents the results of the evaluation with archaeological features and deposits discussed by trench.

5.1.4 Detailed descriptions of individual contexts are provided in the trench summary tables (Appendix 1). Figure 2 shows all archaeological features recorded within the trenches, together with the preceding geophysical survey results (Wessex Archaeology 2023a). Figure 3 shows all archaeological features recorded within the trenches overlaid on historical mapping.

5.2 Soil sequence and natural deposits

5.2.1 The stratigraphic sequence was largely consistent across the site with 0.30-0.38m of mid-brownish grey sandy silt topsoil directly overlying deposits of mid reddish yellow or mid-yellowish brown silty clay natural, with moderate flint inclusions and common manganese inclusions. Trenches 1-6 in the northern part of the evaluation area had particularly rich manganese patches in the natural. Trenches 2,3 and 5, in the northern part of the evaluation area contained a slightly thicker level of topsoil, around 0.43-0.45m.

5.3 Archaeological results

5.3.1 Trenches 1-6, 10, 11 and 14-16 did not contain any archaeological features or deposits and are not discussed further. Trenches 7 and 9 contained a single modern ditch identified in

DBA as part of field system (see Fig 3). Trenches 12 and 13 contained a single east-west aligned modern ditch, possibly an old drainage ditch or boundary ditch. Trench 8 contained a single ditch running approximately north-south, suggesting a possible old boundary ditch.

Trench 7

5.3.2 Trench 7 was located in the central eastern side of the evaluation area, on a north/south alignment, and contained a single ditch. Southwest/northeast aligned ditch 703 was recorded in the southern half of the trench and contained a single secondary fill. The ditch measured at least 2m long, 1.6m wide and 0.49m deep, with moderate, concave sides and a concave base. Two pieces (166g) of stone and two pieces (33g) of CMB were recovered from the fill. This ditch continues in Trench 9 to the west and is a part of previously identified field system.

Trench 8

Trench 8 was located in the central eastern side of the evaluation area, on a northwest/southeast alignment, and contained a single post-medieval ditch. North/south aligned ditch 803 was recorded in the northern half of the trench and contained a single secondary fill. The ditch measured at least 3m long, 1.7m wide and 0.42m deep, with moderate, concave sides and a concave base. A single sherd (6g) of post-medieval/modern pottery and a piece (3g) of clay pipe was recovered from the fill.

Trench 9

5.3.3 Trench 9 was located in central western side of the evaluation area, on a north/south alignment and contained a single ditch. This ditch was not excavated as it was a continuation of ditch 703 to the east, three pieces (24g) of CBM was recovered from the surface of the ditch.

Trench 12

5.3.4 Trench 12 was located in southwestern part of the evaluation area, on a north-south alignment and contained a single ditch. This ditch was not excavated as was a continuation of ditch 1303 to the east.

Trench 13

5.3.5 Trench 13 was located in southeastern part of the evaluation area on a north-south alignment and contained a single modern ditch, possibly an old drainage ditch. East/west aligned ditch 1303 was recorded in southern half of the trench and contained a single secondary fill. The ditch measured at least 2m long, 0.97m wide and 0.24m deep, with moderate, concave sides and a flat base. The ditch continued in Trench 12 to the west. A single piece (60g) of CBM was recovered from the ditch, with common small pieces of modern material recorded on site.

6 FINDS EVIDENCE

6.1 Introduction

6.1.1 A small assemblage of finds totalling just 292 g was recovered from trenches 7, 8, 9 and 13. The finds range in date from the medieval/post-medieval to modern period, although a residual piece stone potentially of earlier date is included. The finds have been cleaned and scanned to assess their nature and condition and are quantified by context in Table 1. Reporting conforms to the CIFA's 'Toolkit for Specialist Reporting (CIFA 2022) Type 2, Appraisal Level' which aims to characterise the finds assemblage with specific reference to dating, where possible.

Table 2 Summary of finds by context (No./Weight in grammes)

Context	Feature/deposit	CBM	Clay pipe	Pottery	Stone	Total
704	Ditch 703	2/33			2/166	**4/199**
804	Ditch 803		1/3	1/6		**2/9**
904	Ditch 903	3/24				**3/24**
1304	Ditch 1303	1/60				**1/60**
Total		**6/117**	**1/3**	**1/6**	**2/166**	**10/292**

6.2 Pottery

6.2.1 A single piece of pottery was collected from ditch 803. This is a narrow, ovate fragment (15x10 mm) from a handle in brown-glazed red earthenware of post-medieval/modern date.

6.3 Ceramic building material (CBM)

6.3.1 Small flat fragments of medieval or post-medieval peg roof tile in an oxidised, fine, sandy fabric with occasional clay pellets were recovered from ditches 703 and 1304, while three small, featureless fragments of modern brick were found in ditch 903.

6.4 Stone

6.4.1 Two pieces of stone were recovered from ditch 703 in trench 7. One is a small, angular fragment of granite which shows no evidence for working or utilisation. Such material does not occur anywhere in the region and can only have been brought here by human agency; its purpose is unclear, but it is likely to a remnant of hardcore used in construction. The other piece, also of non-local material, is a small, angular fragment of Hertfordshire Puddingstone with one smooth flat surface. This stone originally derives from the Chilterns and, although glacial action has transported it as far to the south-east as west Essex (where it now forms a component of drift deposits), its presence here must also be due to human transportation. Puddingstone was particularly favoured for Romano-British quern/millstone production and its use was widespread in the south-east of England (Shaffrey forthcoming). Although no other local evidence for activity during this period has been found, it could be a residual fragment of such an object, possibly further reduced as a result of repurposing during the post-medieval period.

6.5 Clay pipe

6.5.1 A single plain stem fragment of post-medieval/modern clay pipe was found in ditch 803.

6.6 Finds potential

6.6.1 The finds assemblage consists of only four material types which are present in minimal quantities and, with the possible exception of the Puddingstone fragment, all dating to the post-medieval or modern periods. There is very little potential for further analysis to provide any information beyond that presented here. There seems no reason to expect any future archaeological investigations to produce much additional material, but the presence of the Puddingstone (millstone/quern?) fragment may be clarified by any such work.

7 ENVIRONMENTAL EVIDENCE

7.1.1 No archaeological features or deposits requiring environmental sampling were identified during the evaluation.

8 CONCLUSIONS

8.1 Summary

8.1.1 The evaluation has been successful in fulfilling the aims and objectives as set out in the WSI (Wessex Archaeology 2024). The evaluation identified a small quantity of archaeological features across the excavated trenches, comprising 3 ditches recorded across 5 trenches.

8.2 Discussion

8.2.1 None of the identified features contained enough datable material to provide adequate dating based on the artefactual evidence alone. However, ditches 703 and 903 correspond directly with a east-northeast/west-southwest aligned boundary ditch shown on the 1874 Ordnance Survey (OS) map. None of the other ditches correspond to known historic field boundaries, but they likely represent land management features.

8.2.2 None of the identified features correspond with the previous geophysical survey.

9 ARCHIVE STORAGE AND CURATION

9.1 Museum

9.1.1 The archive is currently held at the offices of Wessex Archaeology in Meopham and Salisbury. Colchester Museum has agreed in principle to accept the archive on completion of the project. Deposition of any finds with the museum will only be carried out with the full written agreement of the landowner to transfer title of all finds to the museum.

9.2 Preparation of the archive

Physical archive

9.2.1 The physical archive will be prepared following the standard conditions for the acceptance of excavated archaeological material by Colchester Museum, and in general following nationally recommended guidelines (Brown 2011; CIfA 2014b; SMA 1995).

9.2.2 All archive elements are marked with the site code 231918, and a full index will be prepared. The physical archive currently comprises the following:

- 1 cardboard boxes or airtight plastic boxes of artefacts and ecofacts, ordered by material type
- 1 files/document cases of paper records and A3/A4 graphics

Digital archive

9.2.3 The digital archive, which comprises born-digital data (e.g., site records, survey data, databases and spreadsheets, photographs and reports), will be deposited with a Trusted Digital Repository, in this instance the Archaeology Data Service (ADS), to ensure its long-term curation. Digital data will be prepared following ADS guidelines (ADS 2013 and online guidance) and accompanied by metadata.

9.3 Selection strategy

9.3.1 It is widely accepted that not all the records and materials (artefacts and ecofacts) collected or created during an archaeological project require preservation in perpetuity. These records and materials will be subject to selection to establish what will be retained for long-

term curation, with the aim of ensuring that all elements selected for retention are appropriate to establish the significance of the project and support future research, outreach, engagement, display and learning activities (i.e., the retained archive should fulfil the requirements of both future researchers and the receiving museum).

9.3.2 The selection strategy, which details the project-specific selection process, is underpinned by national guidelines on selection and retention (Brown 2011, section 4) and generic selection policies (SMA 1993; Wessex Archaeology's internal selection policy) and follows CIfA's (n.d. b) *Toolkit for Selecting Archaeological Archives*. It should be agreed by all stakeholders (e.g., Wessex Archaeology's specialists, external specialists, local authority, museum) and fully documented in the project archive.

9.3.3 Project-specific proposals for selection are presented below. The proposals are based on recommendations by Wessex Archaeology's specialists and will be updated in line with any further comment by other stakeholders (e.g., museum, local authority), prior to deposition of the archive. Any material not selected for retention may be used for teaching or reference collections by Wessex Archaeology.

Finds

9.3.4 All the finds have been recorded to an appropriate level prior to any selection proposals being implemented, and the selection process will be fully documented in the project archive. Any material not selected for retention may be used teaching or reference collections by Wessex Archaeology.

- Pottery (1 sherd): minimal assemblage of post-medieval/modern date with no future research potential; discard.
- CBM (6 pieces): minimal assemblage of post-medieval/modern date with no future research potential; discard.
- Stone (2 pieces): undiagnostic fragments with no further research potential; discard but archive photographs of the Puddingstone fragment are recommended.
- Clay pipe (1 piece): minimal assemblage of post-medieval/modern date with no future research potential; discard.

Documentary records

9.3.5 Paper records comprise site registers (other pro-forma site records are digital), drawings and reports (written scheme of investigation, client report). All will be retained and deposited with the project archive.

Digital data

9.3.6 The digital data comprise site records (tablet-recorded on site) in spreadsheet format; finds records in spreadsheet format; survey data; photographs; reports. All will be deposited, although site photographs will be subject to selection to eliminate poor quality and duplicated images, and any others that are not directly relevant to the archaeology of the site.

9.4 Security copy

9.4.1 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.

9.5 OASIS

9.5.1 An OASIS (online access to the index of archaeological investigations) record (http://oasis.ac.uk) has been initiated, with key fields completed (Appendix 2). A .pdf version of the final report will be submitted following approval by the Historic Environment Consultant at Place Services on behalf of the LPA. 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 (ADS) ArchSearch catalogue.

10 COPYRIGHT

10.1 Archive and report copyright

10.1.1 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*.

10.1.2 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.

10.2 Third party data copyright

10.2.1 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.

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Wessex Archaeology 2024. *Written Scheme of Investigation for Archaeological Evaluation* Salisbury: unpublished report ref. 231915.05.

APPENDICES

Appendix 1 Trench summaries

depth bgl = below ground level

Trench No 1	Length 30 m	Width 2 m	Depth 0.40 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
101		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.35
102		Natural	Mid yellowish brown with grey hue. silty clay. abundant small rounded flints. Common manganese.	0.35+

Trench No 2	Length 30 m	Width 2 m	Depth 0.47 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
201		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.43
202		Natural	Mid reddish yellow with grey hue. silty clay. abundant small rounded flints. Common manganese.	0.43+

Trench No 3	Length 50 m	Width 2 m	Depth 0.45 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
301		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.45
302		Natural	Mid reddish yellow with grey hue. silty clay. abundant small rounded flints. Common manganese.	0.45+

Trench No 4	Length 30 m	Width 2 m	Depth 0.44 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
401		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.37
402		Natural	Light reddish yellow with grey hue. silty clay. abundant small rounded flints. Common manganese.	0.37+

Trench No 5	Length 30 m	Width 2 m	Depth 0.45 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
501		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.43
502		Natural	Mid yellowish brown with grey hue. silty clay. abundant small rounded flints. Common manganese.	0.43+

Trench No 6	Length 30 m	Width 2 m	Depth 0.35 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
601		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.30
602		Natural	Mid reddish yellow with grey hue. silty clay. abundant small rounded flints. Common manganese.	0.30+

Trench No 7	Length 30 m	Width 2 m	Depth 0.40 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
701		Topsoil	Mid Brownish grey Sandy Silt, Common small rounded flints	0.0–0.33
702		Natural	Mid reddish yellow with grey hue. silty clay. abundant small rounded flints. Common manganese	0.33+
703	704	Ditch	Linear ditch aligned WSW-ENE with moderate, concave sides and a concave base. Length: >2.00 m. Width: 1.60 m. Depth: 0.49 m.	
704	703	Secondary fill	Mid blueish brown sandy clay with common small sub-angular flint. rare chalk flecks	

Trench No 8	Length 30 m	Width 2 m	Depth 0.46 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
801		Topsoil	Mid Brownish grey Sandy Silt, Common small rounded flints	0.0–0.37
802		Natural	Mid reddish yellow with grey hue. silty clay. abundant small rounded flints. Common manganese	0.37+
803	804	Ditch	Linear ditch aligned N-S with moderate, concave sides and a concave base. Length: 3.00 m. Width: 1.70 m. Depth: 0.42 m.	
804	803	Secondary fill	Mid brownish grey silty sand with moderate small rounded flints, rare chalk flecks	

Trench No 9	Length 30 m	Width 2 m	Depth 0.44 m

Context Number	Fill Of/Filled With	Interpretative Category	Description	Depth BGL
901		Topsoil	Mid brownish grey Sandy Silt, common small rounded flints	0.00–0.30
902		Natural	Mid yellowish brown silty clay. rare small rounded flints	0.30–0.44+
903	904	Ditch	Continuation of ditch 703	
904	903	Fill	Same as fill 704	

Trench No 10	Length 30 m	Width 2 m	Depth 0.36 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
1001		Topsoil	Mid brownish grey. Sandy Silt. Common small rounded flints.	0.00–0.30
1002		Natural	Mid yellowish brown. silty clay. rare small rounded flints.	0.30–0.36+

Trench No 11	Length 30 m	Width 2 m	Depth 0.34 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
1101		Topsoil	Mid brownish grey. Sandy Silt. common small rounded flints.	0.00–0.32
1102		Natural	Mid yellowish brown. silty clay. rare small rounded flints, rare patches of manganese.	0.32–0.34+

Trench No 12	Length 30 m	Width 2 m	Depth 0.36 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
1201		Topsoil	Mid brownish grey. Sandy Silt. common small rounded flints .	0.00–0.30
1202		Natural	Mid yellowish brown. silty clay. rare small rounded flints.	0.30+
1203	1204	Ditch	Continuation of ditch 1303	
1204	1203	Fill	Same as fill 1304	

Trench No 13	Length 30 m	Width 2 m	Depth 0.37 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
1301		Topsoil	Mid brownish grey. Sandy Silt. common small rounded flints.	0.00–0.30
1302		Natural	Mid yellowish brown. silty clay. rare small rounded flints.	0.30+
1303	1304	Ditch	Linear ditch aligned E-W with moderate, concave sides and a flat base. Length: >2.00 m. Width: 0.97 m. Depth: 0.24 m.	
1304	1303	Secondary fill	Mid brownish grey sandy silt with common small rounded flints	

Trench No 14	Length 30 m	Width 2 m	Depth 0.38 m
Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
1401		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.30
1402		Natural	Mid yellowish brown with grey hue. silty clay. rare small rounded flints.	0.30+

Trench No 15	**Length 30 m**	**Width 2 m**	**Depth 0.44 m**

Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
1501		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.00–0.30
1502		Natural	Mid yellowish brown with grey hue. silty clay. rare small rounded flints.	0.30+

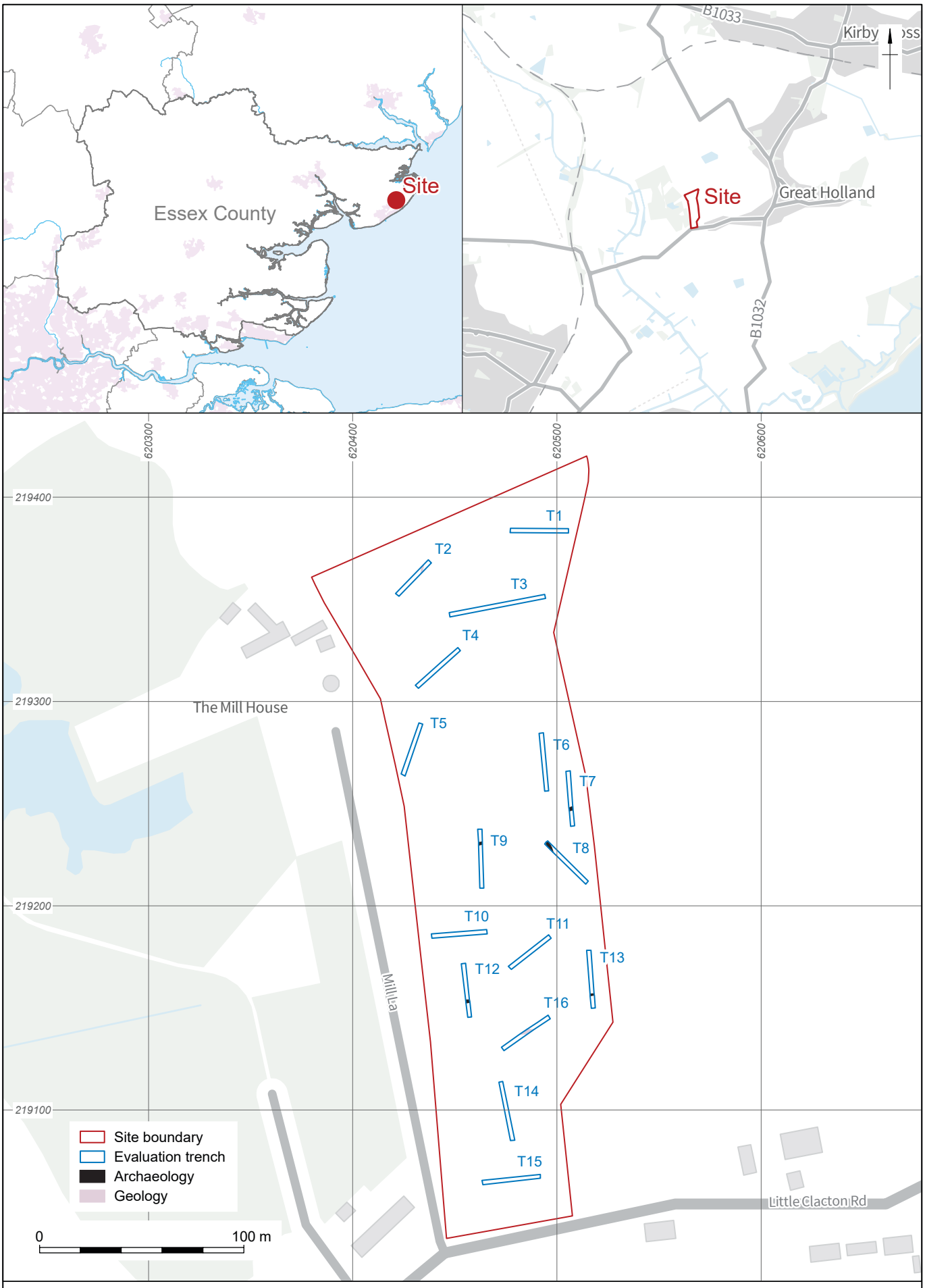
Trench No 16	**Length 30 m**	**Width 2 m**	**Depth 0.42 m**

Context Number	**Fill Of/Filled With**	**Interpretative Category**	**Description**	**Depth BGL**
1601		Topsoil	Mid Brownish grey. Sandy Silt. Common small rounded flints.	0.0–0.38
1602		Natural	Mid grey. silty clay. rare small rounded flints.	0.38+

Appendix 2 OASIS summary

OASIS ID (UID)	wessexar1-525301
Project Name	Five Estuaries OSWF, North Falls OSWF, Little Clacton Road, Essex: Archaeological Evaluation
Sitename	Five Estuaries OSWF, North Falls OSWF, Little Clacton Road, Essex
Sitecode	FWLC24
Project Identifier(s)	231918
Activity type	Evaluation
Planning Id	DCO Five Estuaries Offshore Wind Farm
Reason For Investigation	Planning: Between application and determination
Organisation Responsible for work	Wessex Archaeology
Project Dates	29-Apr-2024 - 10-May-2024
Location	Five Estuaries OSWF, North Falls OSWF, Little Clacton Road, Essex NGR : TM 20506 19225 LL : 51.82809864236768, 1.198657999394559 12 Fig : 620506,219225
Administrative Areas	Country : England County/Local Authority : Essex Local Authority District : Tendring Parish : Frinton and Walton
Project Methodology	15 trial trenches, each measuring 30 m in length and 2 m wide, and 1 trial trench measuring 50m in length and 2m wide, were excavated in level spits using a 360º excavator equipped with a toothless bucket, under the constant supervision and instruction of the monitoring archaeologist. Machine excavation proceeded until either the archaeological horizon or the natural geology was exposed. Where necessary, the base of the trench/surface of archaeological deposits were cleaned by hand. A sample of archaeological features and deposits was hand-excavated, sufficient to address the project aims. Spoil from machine stripping and hand-excavated archaeological deposits was visually scanned for the purposes of finds retrieval. Artefacts were collected and bagged by context. All artefacts from excavated contexts were retained.
Project Results	The evaluation was undertaken as part of the proposed development of the Five Estuaries and North Falls Offshore Arrays, proposals for which are currently under consideration by the Planning Inspectorate. The evaluation area would be used for part of the onshore infrastructure connecting the offshore arrays

	with the onshore substation. The current proposals through the Site are for two options for the route of the cable corridor through this area. The evaluation comprised 16 trenches, each measuring 30m by 2m. A total of three ditches across five of the excavated trenches, with ditch segments in Trenches 7/9 and 12/13 part of the same features. The ditch across Trenches 7 and 9 corresponds with a field boundary recorded on the 1874 Ordnance Survey map, and was identified by the previous APS survey, which the other two ditches are also likely to represent field boundaries. A previous geophysical survey failed to identified any of the recorded features, and a proposed archaeological feature was not identified by any of the three trenches targeted to investigate it.
Keywords	Ditch - UNCERTAIN - FISH Thesaurus of Monument Types Boundary Ditch - POST MEDIEVAL - FISH Thesaurus of Monument Types
Funder	Electricity company Five Estuaries Offshore Wind Farm LTD
HER	Essex HER - unRev - STANDARD
Person Responsible for work	Nina Oloffson
HER Identifiers	HER Event No - FWLC24
Archives	Physical Archive, Documentary Archive, Digital Archive - to be deposited with Colchester & Ipswich Museum Sevice (Colchester Collection);



Coordinate system: OSGB 1936 British National Grid

Date: 14/05/2024	Created by: AW	Revision: 0	Scale: 1:2,500 at A4

Figure 1: Site location and trench layout

620300
620400
620500
620600
219400
219300
219200
219100
219000
The Mill House
Mill La
Little Clacton Rd
T1
T2
T3
T4
T5
T6
T7
703
T8
803
T9
903
T10
T11
T12
1203
T13
1303
T14
T15
T16
Site boundary
Evaluation trench
Intervention
Archaeology
Geology
Geophysical Survey Interpretation
Detailed Survey Extent
Trend
Possible Archaeology
Geology
Ferrous
0
50 m
Coordinate system: OSGB 1936 British National Grid

Date: 29/05/2024 | Created by: AW | Revision: 0 | Scale: 1:1,250 at A3
Figure 2: Archaeological results and previous geophysical survey
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620300
620400
620500
620600
219400
219300
219200
219100
219000
T1
T2
T3
T4
T5
T6
T7
703
T8
803
T9
903
T10
T11
T12
1203
T13
1303
T14
T15
T16
Great Holland Mill
(Corn)
114
6·981
118
·907
117
6·7[illegible]3
115
7·28[illegible]
120
5·974
121
6·212
116
·182
128
·282
75
70
122
·615
·338
F.P.
P
W
Site boundary
Evaluation trench
Intervention
Archaeology
Geology
0
50 m
Coordinate system: OSGB 1936 British National Grid
Historic mapping reproduced with the permission of the National Library of Scotland.
Contains Ordnance Survey data © Crown copyright and database right 2024.
This material is for client report only © Wessex Archaeology. No unauthorised reproduction.
Date: 15/05/2024 | Created by: AW | Revision: 0 | Scale: 1:1,250 at A3
Figure 3: Archaeological results with historic 1896 OS 25 inch map
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620500

620520

219260

219240

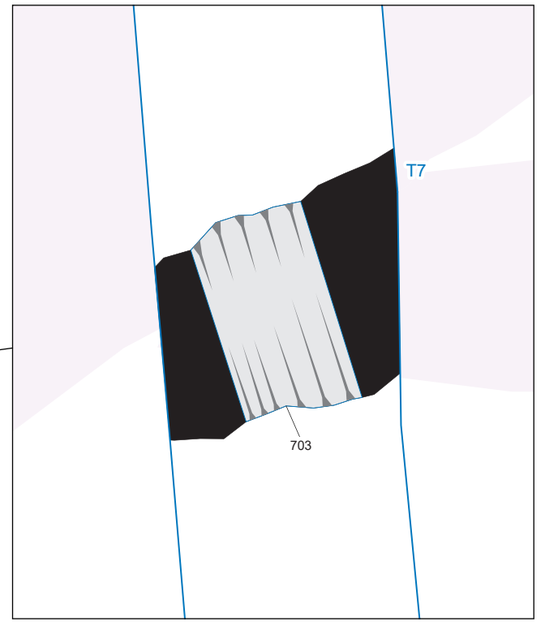
T6

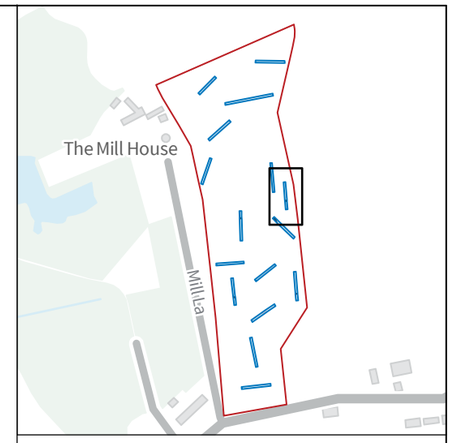
T7

T8

703

803





Site boundary
Evaluation trench
Intervention
Archaeology

Geophysical Survey Interpretation

Detailed Survey Extent
Trend
Possible Archaeology
Geology
Ferrous

Scale for detailed inset

0 2 m

Scale for trench plan

0 10 m

Date: 31/05/2024 | Created by: AW

Scale: 1:200 and 1:50 at A3 | Revision: 0

Figure 4: Plan of Trench 7

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620500

620520

219240

219220

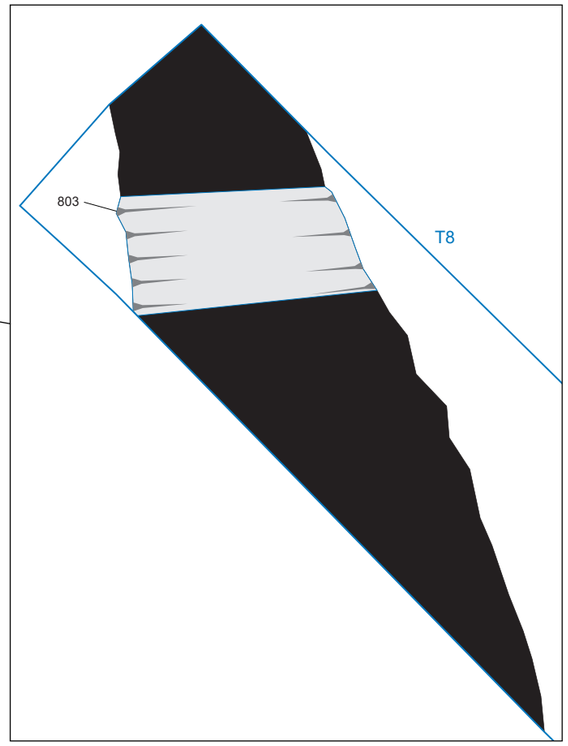
219200

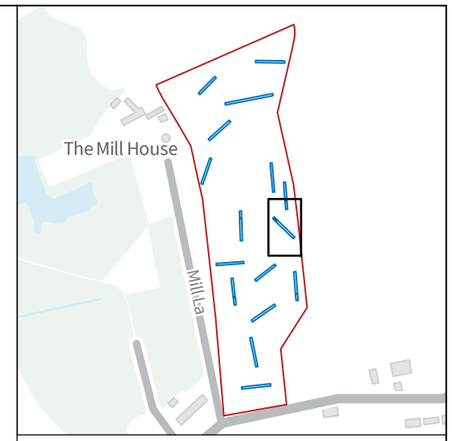
703

T7

803

T8





Site boundary
Evaluation trench
Intervention
Archaeology
Geophysical Survey Interpretation
Detailed Survey Extent
Geology
Ferrous

Scale for detailed inset

0 2 m

Scale for trench plan

0 10 m

Date: 31/05/2024 | Created by: AW

Scale: 1:200 and 1:50 at A3 | Revision: 0

Figure 5: Plan of Trench 8

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620520

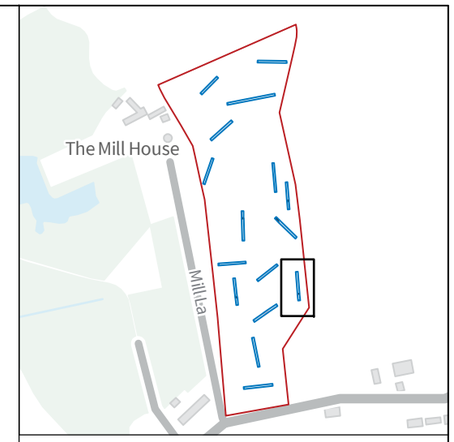
219180

219160

219140

T13

1303



Site boundary
Evaluation trench
Intervention
Archaeology
Geophysical Survey Interpretation
Detailed Survey Extent
Geology
Ferrous

Scale for detailed inset
0 2 m

Scale for trench plan
0 10 m

Coordinate system: OSGB 1936 British National Grid

Date: 31/05/2024 | Created by: AW

Scale: 1:200 and 1:50 at A3 | Revision: 0

Figure 6: Plan of Trench 13

Figure 7: Trench 1, viewed from the northwest (1 m and 2 m scales)

Figure 8: South facing representative section of Trench 3 (1 m scale)

Figure 9: Trench 12, viewed from the north
(1 m and 2 m scales)

Figure 10: South east facing representative section of Trench 10 (1 m scale)

Figure 11: Ditch 803, viewed from the south (1 m scale)

Figure 12: Ditch 703, viewed from the southwest (1 m scale)

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Five Estuaries and North Falls OSWF
Little Clacton Road, Essex

Palaeolithic Geoarchaeological Evaluation

Ref: 286900.01
June 2024

wessexarchaeology

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Document Information

Document title	Five Estuaries and North Falls OSWF, Little Clacton Road, Essex
Document subtitle	Palaeolithic Geoarchaeological Evaluation
Document reference	286900.01
Client name	Five Estuaries Offshore Wind Farm LTD
Address	Trigonos Building Windmill Hill Business Park Whitehill Way Swindon SN5 6PB
Client name	Royal HaskoningDHV
Address	2 Abbey Gardens Great College St Westminster London SW1P 3NL
On behalf of	North Falls Offshore Wind Farm Ltd
Site location	Little Clacton Road, Great Holland, Tendring, CO13 0EU
County	Essex
National grid reference	620506 219225 (TM 20506 19225)
Planning authority	Essex County Council
Planning reference	N/A
Museum name	Colchester Museum
Museum accession code	TBC
HER identifer	FWLC24
OASIS ID	wessexar1-525618
WA project name	Five Estuaries OSWF, North Falls OSWF, Little Clacton Road, Essex
WA project code	286900
Project management by	Dr Dan Young
Document compiled by	Agata Kowalska and Dr Andrew Shaw
Graphics by	Kitty Foster

Quality Assurance

Issue number & date		Status	Author	Approved by
1	06/06/2024	Draft	AK	ADS

Contents

List of Figures

List of Tables

Summary

Wessex Archaeology was commissioned by Five Estuaries Offshore Windfarm Ltd and North Falls Offshore Windfarm Ltd to undertake a Palaeolithic geoarchaeological evaluation through a program of test pitting of a c. 3.52 hectares (ha) parcel of land located north of Little Clacton Road, Great Holland, Tendring, Essex. The Site is centred on National Grid Reference (NGR 620506 219225).

The evaluation was carried out in advance of proposed development relating to the construction of the Five Estuaries and North Falls Offshore Wind Farm (OSWF) Projects. The OSWF Projects require onshore export cables linked to the offshore arrays. The Site includes the proposed routes for two options of the onshore export cable corridor. The aim of the evaluation was to provide information on the Palaeolithic geoarchaeological resource that may be impacted by the cable route and facilitate an informed decision with regard to the requirement further Palaeolithic geoarchaeological investigations.

The evaluation comprised the excavation, investigation and recording of six machine-dug test pits. These were excavated under the supervision and instruction of a Palaeolithic geoarchaeological specialist. Sediment samples were taken at regular intervals through the Pleistocene stratigraphy in each test pit and assessed for artefacts and/or macro vertebrate faunal remains. The potential for deposits to preserve paleoenvironmental evidence and any requirements for sedimentological and dating sampling was assessed.

The evaluation has successfully characterised the Pleistocene deposits present within the Site and has enabled the Palaeolithic geoarchaeological resource to be assessed. Broadly similar sequences of Pleistocene deposits were present across the Site. The earliest are Middle Pleistocene fluvial deposits of Cooks Green Gravel of the River Thames/Medway. In the Site these comprised fluvial sands and gravels, and a sand filled channel/point bar. The Cooks Green Gravel is dated to MIS 13–14 (563–478 Kya). Whilst the Cooks Green Gravel has potential to contain significant Lower Palaeolithic archaeology, no archaeology was identified by the evaluation and their potential within the Site may be limited. The evaluated sediments of the Cooks Green Gravel generally have low palaeoenvironmental potential. A localised deposit of silts and clays within the channel/point bar sediments was recorded, which may have palaeoenvironmental potential. A bulk sample of this was taken, which is suitable for assessing this potential.

The Cooks Green Gravel were overlain by wind-blown coversands. Deposited in cold dry periglacial environment, these are undated but could date from the Anglian glaciation (MIS 12) onward. Such coversands can contain/bury stable surfaces/soils associated with periods of climatic improvement. These provide contexts for Palaeolithic activity, including lithic scatters, but no archaeology or such surfaces were identified in the Site. The Cooks Green Gravel and coversands are truncated by erosion and overlain by undated, but likely Pleistocene, slope deposits. As with the coversands, these slope deposits can bury/contain surfaces with Palaeolithic archaeology. They can also contain archaeology reworked within the slope deposits. No evidence for stable surfaces or archaeology within these slope deposits was identified and their potential for preserving palaeoenvironmental evidence is low.

The evaluation indicates that there is low potential for development proposals to impact on a significant Palaeolithic geoarchaeological resource. Locally a unit within Cooks Green Gravel with palaeoenvironmental potential was identified and sampled. Palaeoenvironmental assessment of this sample is recommended.

Acknowledgements

Wessex Archaeology would like to thank Five Estuaries Offshore Windfarm Ltd and North Falls Offshore Windfarm Ltd for commissioning the Palaeolithic evaluation. In particular Wessex Archaeology would like to thank James Eaton. Wessex Archaeology is also grateful for the advice and support of the Historic Environment Consultant at Place Services, who monitored the project for Colchester Borough Council.

The fieldwork was directed by Hayley Hawkins, with the assistance of Jann Beresford and Kerensa Montante. This report was written by Agata Kowalska and Dr Andrew Shaw. The report was edited by Dr Andrew Shaw. The project was managed by Dr Daniel Young on behalf of Wessex Archaeology.

Five Estuaries and North Falls OSWF, Little Clacton Road, Essex

Palaeolithic Geoarchaeological Evaluation

1 INTRODUCTION

1.1 Project and planning background

1.1.1 Wessex Archaeology was commissioned by Five Estuaries Offshore Windfarm Ltd and North Falls Offshore Windfarm Ltd to undertake a Palaeolithic geoarchaeological evaluation through a program of test pitting of a c. 3.52 hectares (ha) parcel of land located north of Little Clacton Road, Great Holland, Tendring, Essex ('the Site'). The Site was centred on National Grid Reference (NGR 620506 219225) (**Figure 1**).

1.1.2 The evaluation was carried out in advance of proposed development relating to the Five Estuaries and North Falls Offshore Wind Farm (OSWF) Projects. The proposed OSWF Projects require onshore export cables linked to the offshore arrays. These onshore export cables will extend from a landfall between Holland on Sea and Frinton on Sea to an onshore substation at Little Bromley. The Little Clacton Road Site includes the proposed routes for two options of the onshore export cable corridor.

1.1.3 This Palaeolithic evaluation is part of staged approach in determining the archaeological potential of the onshore areas of the OSWF Projects. It follows previous non-intrusive archaeological work, including Archaeological and Geoarchaeological Desk-Based Assessments (Royal Haskoning DHV 2022, Wessex Archaeology 2023a; 2024a), Aerial Photographic Assessment (Aerial Photo Services 2022), Geophysical Survey (Wessex Archaeology 2023b) and Geoarchaeological monitoring of Ground Investigation (GI) Works (Wessex Archaeology 2023c).

1.1.4 Geoarchaeological Desk-Based Assessment (Wessex Archaeology 2024a) and geoarchaeological monitoring of GI (Wessex Archaeology 2023b) identified the presence of geological deposits within the Site that have Palaeolithic archaeological potential. To evaluate this potential six geoarchaeological test pits have been excavated. The results of this evaluation will inform a future planning application

1.1.5 The evaluation was undertaken from the 7th to the 10th of May 2024.

1.2 Scope of works

1.2.1 The Geoarchaeological Desk-Based Assessment (Wessex Archaeology 2024a) and geoarchaeological monitoring of GI (Wessex Archaeology 2023c) identified Pleistocene geological deposits within the Site. Such geological deposits may have potential to contain Palaeolithic archaeology, as well as environmental remains reflective of past human activity, landscapes and environments.

1.2.2 Assessment of the archaeological resource associated with Pleistocene deposits is 'deposit-led', with the aim to provide lithostratigraphic and chronostratigraphic frameworks and to assess the archaeological and palaeoenvironmental records associated with

different deposits. A multidisciplinary 'geoarchaeological' approach combining archaeological, geological, geophysical and palaeoenvironmental investigative techniques is required.

1.2.3 The Palaeolithic geoarchaeological evaluation was carried out alongside a program of archaeological evaluation through a program of trial trenches (Wessex Archaeology 2024c). The agreed program of Palaeolithic evaluation works comprised:

- A total of 6no. test pits located within ends of selected archaeological trenches (**Figure 1**).

1.2.4 All works undertaken were in accordance with Written Schemes of Investigation (WSI) which detailed the aims, objectives, methodologies and standards to be employed to undertake the evaluation (Wessex Archaeology 2024a). The Historic Environment Consultant at Place Services approved the WSI, on behalf of the Local Planning Authority (LPA), prior to fieldwork commencing.

1.3 Scope of document

1.3.0 The purpose of this report is to provide a detailed description of the results of the Palaeolithic geoarchaeological evaluation, to interpret the results within a local, regional or wider archaeological context and to assess whether the aims of the evaluation have been met.

1.3.1 The presented results will provide further information on the Palaeolithic geoarchaeological resource that may be impacted by the proposed development and facilitate an informed decision with regard to the requirement for, and methods of, any further geoarchaeological works; or the formation of a mitigation strategy (to offset the impact of the development on the archaeological resource); or a management strategy.

1.3.2 To help frame Palaeolithic geoarchaeological investigations, Wessex Archaeology has developed a four-stage approach, encompassing successive levels of investigation appropriate to the results obtained, accompanied by formal reporting of the results at the level achieved. The stages are summarised below (**Table 1**). This evaluation represents Stage 2 of this process.

Table 1 Staged approach to Palaeolithic geoarchaeological investigations

Stage 1: Geoarchaeological deposit model and Desk-based Assessment (GDBA)	A geoarchaeological deposits model and desk-based assessment (GDBA) examines a range of information (published and unpublished ("grey literature"), geological mapping, Ground Investigation data, historic maps etc.) to inform on the geoarchaeological potential of deposits within a Site The GDBA may include a Geoarchaeological Landscape Characterisation (GLC) which divides the Site into different zones (Geoarchaeological Characterization Zones – GCZs) based on variations in deposits and potential. The GDBA establishes the requirements for and scope of Stage 2 geoarchaeological field investigations. Should Stage 2 work be required, appropriate and proportionate recommendations for each GCZ are provided. The GDBA highlights any areas of a Site where Pleistocene deposits with possible Palaeolithic geoarchaeological potential may occur.
Stage 2: Palaeolithic geoarchaeological evaluation	Field evaluation to establish the Palaeolithic geoarchaeological potential of Pleistocene deposits within a defined Evaluation Area, which informs on the requirements and scope of Stage 3 palaeoenvironmental assessment and/or Stage 4 mitigation. The principal methods of evaluation are through targeted machine-dug test pits and boreholes.

	An evaluation report is produced, which includes updated deposit modelling and an updated GLC. If required, recommendations for Stage 3 sample assessment and/or Stage 4 mitigation are made.
Stage 3: Sample assessment	Palaeoenvironmental samples and/or sediment samples recovered during Stage 2 are assessed to inform on the geoarchaeological potential of deposits and guide the scope and need for Stage 4 mitigation. Dating of samples taken during Stage 2 may be required to inform on the geoarchaeological potential of deposits and to guide the scope and need for Stage 4 mitigation. If this is the case, dating will be carried out at this stage. Alternatively dating samples will be retained for Stage 4 mitigation, if required. Recommendations for dating requirements during Stage 3 are made in the Stage 2 report. A sample assessment report is produced outlining the palaeoenvironmental and dating potential of the deposits including targeted and proportionate recommendations for Stage 4 mitigation.
Stage 4: Palaeolithic geoarchaeological mitigation	Based on the results of the Stage 2 and 3 investigations Palaeolithic geoarchaeological mitigation may be required to offset development impacts. Mitigation may include targeted geoarchaeological sampling for palaeoenvironmental assessment and scientific dating, potentially alongside archaeological excavation. A final mitigation report is provided on completion of mitigation program.
Publication	The scope and location of a publication report will be agreed in consultation with the client and LPA advisor. The publication report may comprise a note in a local journal or a larger publication article or monograph, dependant on the significance of the archaeological work.

2 BACKGROUND

2.1 Introduction

2.1.1 This section provides background information relevant to the evaluation, including site location, topography and geology, and information relating to possible Palaeolithic geoarchaeological resource present.

2.1.2 Background on the Site and the Palaeolithic resource that may be present was assessed in a prior GBDA (Wessex Archaeology 2024a), with information relevant to current program of works summarised in a WSI (Wessex Archaeology 2024b). This information is outlined below.

2.2 Location and topography

2.2.1 The Site is located on the Tendering Peninsula, north of Little Clacton and to the west of Great Holland. It is bounded by Great Holland Mill and Holland Mill Wood to the west, agricultural land to the north, a track and agricultural land to the east and agricultural land and Little Clacton Road to the south.

2.2.2 The Site covers 3.52 ha and comprises relatively flat land at elevations of around 22m OD. The Site is situated above the valley containing the Holland Brook, located c. 500m from the Site, which drains eastwards across the Tendring Peninsula.

2.2.3 Historic mapping (Ordinance Survey Six-inch to the mile 1874; 1896; 1921; 1938) demonstrates that in the late nineteenth and early twentieth century the Site was agricultural land. On the 1921 and 1938 maps gravel pits are recorded to the west of the Site, west of Mill Lane. BGS mapping records this to be an area of worked-our ground, whilst an area of infilled is mapped to the east of the Site, which may relate to further aggregate extraction.

2.3 Chronology

2.3.1 Palaeolithic geoarchaeological investigations are typically undertaken with reference to geological periods (e.g., Quaternary), epochs (e.g., Pleistocene) and sub-epochs (e.g., Devensian) that reflect major climate sea-level and/or environmental changes. Here we adopt British nomenclature correlated to the Marine Isotope Stage (MIS) record to distinguish between different climatic periods, with dates given in Kya BP (thousands of years before present).

2.3.2 Marine Isotope Stages are deduced from marine palaeoclimatic records and reflect alternating warm (interglacial and interstadial) and cold (glacial and stadial) periods throughout the Quaternary (**Table 2**).

2.3.3 Where age estimates are available these are expressed in millions of years (Mya), thousands of years (Kya) and within the Holocene epoch as either years Before Present (BP), Before Christ (BC) and Anno Domini (AD). These are linked to the global Marine Isotope Stage (MIS) chronological framework.

Table 2 British Quaternary chronostratigraphy

Geological Period	Chronostratigraphy		Age (Kya)	MIS
Holocene	Holocene interglacial		11.7 – present	1
Late Pleistocene	Devensian Glaciation	Loch Lomond Stadial	11.7 – 12.9	2 – 5d
		Windermere Interstadial	12.9 – 15	
		Dimlington Stadial	15 – 26	
		Upton Warren Interstadial	40 – 43	
		Early Devensian	60 – 110	
	Ipswichian interglacial		115 – 130	5e
Middle Pleistocene		Unnamed cold stage	130 – 374	6
		Aveley interglacial		7
		Unnamed cold stage		8
		Purfleet interglacial		9
		Unnamed cold stage		10
	Hoxnian interglacial		374 – 424	11
	Anglian glaciation		424 – 478	12
	Cromerian Complex		478 - 780	13 – 19

2.4 Previous investigations

2.4.1 Previous investigations relevant to the evaluation are listed in **Table 3** and summarised below.

Table 3 Previous investigations

Report type	Title	Report no	Reference
Geoarchaeological Desk-Based Assessment	North Falls Offshore Wind Farm - Onshore Project Area Geoarchaeological Desk Based Assessment. Unpublished client report	265330.01	Wessex Archaeology 2022
Geoarchaeological GI monitoring	Five Estuaries OSWF Onshore Cable route: Geoarchaeological monitoring of GI works. Unpublished client report	231914.03	Wessex Archaeology 2023c
Geoarchaeological Desk-Based Assessment	Five Estuaries and North Falls Offshore Wind Farm - Onshore Project Area. Updated Geoarchaeological Desk Based Assessment	231919.01	Wessex Archaeology 2022; 2024a

Geoarchaeological Desk-Based Assessment (Wessex Archaeology 2022 and 2024a)

2.4.2 A GDBA was prepared by Wessex Archaeology (2022) for the North Falls Offshore Wind Farm (OWF). This utilised BGS archive borehole records, BGS mapping of superficial deposits, analysis of LiDAR data and previous relevant archaeological discoveries to consider the distribution of Quaternary geological deposits and provide an initial assessment of their possible geoarchaeological potential. This included an assessment of the Pleistocene deposits and their potential to contain Palaeolithic archaeology and palaeoenvironmental datasets. This GDBA was subsequently updated to incorporate newly acquired GI data (Wessex Archaeology 2024a).

2.4.3 The GDBA divided the North Falls OWF scheme into nine Geoarchaeological Character Zones (GCZs). The Little Clacton Road Site is located in GCZ 3.

2.4.4 The geoarchaeological assessment suggests that Pleistocene river terrace deposits are present in the Site, and across GCZ 3, that are overlain by later Pleistocene windblown and/or colluvial sediments deposits, with uppermost colluvial sediments of Holocene date present in places.

2.4.5 The GDBA suggested that the Pleistocene deposits in the Site have potential to contain a Palaeolithic geoarchaeological evidence, but that the available data is insufficient to fully characterise this potential.

Geoarchaeological GI monitoring (Wessex Archaeology 2023c)

2.4.6 A program of geoarchaeological monitoring of Ground Investigation (GI) works has recently been completed.

2.4.7 Geoarchaeological monitoring was undertaken on a total of seven boreholes. Two boreholes (BHLC-1 and BHLC-3) were situated approximately 100m to the south of the Site. Both boreholes recorded London Clay Formation bedrock, overlain by c. 2.5m of

Pleistocene fluvial sands and gravels and c.1.5m of Pleistocene sands and sandy clays, sealed by made ground and/or topsoil.

2.5 Pleistocene deposits and Palaeolithic geoarchaeological context

2.5.1 The bedrock geology underlying the Site is mapped by the British Geological Survey (BGS GeoIndex) as belonging to the Thames Group – described as Clay, Silt and Sand (**Figure 2**). This is a sedimentary bedrock formed approximately 34 to 56 Mya in the Palaeogene period. Descriptions in historic boreholes suggests that the bedrock in the area of the Site is part of the London Clay Formation of the Thames Group.

2.5.2 Based on a review of BGS mapping (BGS GeoIndex), previous GI monitoring (Wessex Archaeology 2023c) and the updated GDBA (Wessex Archaeology 2024a), the following Quaternary geological deposits have been highlighted as potentially present in the Site:

- Slope Deposits (Pleistocene-Holocene)
- 'Coversand' (Pleistocene)
- Kesgrave Catchment Subgroup river terrace deposits (Pleistocene)

2.5.3 Relevant background information on these deposits, including their broad potential to preserve Palaeolithic archaeology and palaeoenvironmental datasets, and previous discoveries of archaeological and palaeoenvironmental records associated with them, is outlined below.

Kesgrave Catchment Subgroup

2.5.4 The bedrock is overlain by superficial deposits of the Kesgrave Catchment Subgroup (**Figure 3**). The Kesgrave Catchment Subgroup are fluvial deposits of the River Thames, which is some areas are confluent with deposits of the River Medway. They predate the configuration of regional drainage systems during the Anglian Glaciation (MIS 12; 478– 424 Ka). At the time the Kesgrave Catchment Subgroup sediments were deposited the River Thames flowed south-eastwards from Wales and the West Midlands, eastwards through the current middle Thames valley, north eastwards into East Anglia, then progressively eastwards to a contemporaneous shoreline in Suffolk and Essex, where it was confluent with the northward flowing River Medway (Bridgland 1994, Bridgland and Allen 1996, Rose et al. 1999, Allen et al. 2022).

2.5.5 River terraces associated with this river system were formed between c. 1.81 Mya and 460 Kya (late Early to early Middle Pleistocene), forming the older Sudbury and younger Colchester Formations. On the basis of their altitude and position, Whiteman (1992) identified 10 terrace landforms associated with the Sudbury and Colchester Formations. The deposits underlying the Five Estuaries OSWF and North Falls OSWF Scheme belong to the Colchester Formation and date to 860–460 Kya. **Table 4** provides a summary of the lithostratigraphy of deposits mapped as Kesgrave Catchment Sub-Group in Essex.

Table 4 Kesgrave Catchment Sub-Group stratigraphy (after Bridgeland and Allen 1996; Bridgeland et al 1990; 1999; and Allen et al. 2022).

High-Level East Essex Gravel				**Thames**	**Thames-Medway confluence**
Postulated MIS	**Southend area**	**Dengie Peninsula**	**Mersea Island**	**Tendring Peninsula**	**Tendring Peninsula**
MIS 12-11-10	Southchurch Gravel	Asheldham Lower and Upper Gravel	Mersea Island Gravel		Wigborough Channel

MIS 11	Southend Channel	Asheldham Channel			Clacton Channel
MIS 12 (Anglian Ice)	Chalkwell Gravel	Caigde Gravel		Upper St Osyth Gravel	Upper Holland Gravel
MIS 12 (early)				Lower St Osyth Gravel	Lower Holland Gravel
MIS 13	Canewdon Gravel	St Lawrence Gravel		Wivenhoe Upper Gravel	Cooks Green Gravel
MIS 13				Wivenhoe Interglacial deposits	
MIS 14				Wivenhoe Lower Gravel	
MIS 14	Belfairs Gravel	Mayland Gravel		Ardleigh Upper Gravel	Colluvium
MIS 15				Ardleigh interglacial deposits	Little Oakley Silts and Sands
MIS16	Ashingdon Gravel			Ardleigh Lower Gravel	
MIS 16	Oakwood Gravel			Waldringfield Gravel	(Offshore)
MIS 18	Daws Heath Gravel				
MIS 20/22	Claydon Gravel				

2.5.6 The deposits of the Kesgrave Catchment Sub-Group underlying the Site belong to the Cooks Green Gravel (MIS 14–13). On the Tendring Peninsula there are four terraces of the Kesgrave Catchment Sub-Group, including the Wivenhoe Upper and Lower Gravels and the Wivenhoe interglacial deposits (MIS 14–13; 563–478 Kya) of the Thames and the Cooks Green Gravel, which represents equivalent deposits in areas where the Thames was confluent with the River Medway.

2.5.7 The Cooks Green Gravel deposit generally comprise fluvial sands gravels which may principally reflect deposition during cold climates, but at Wivenhoe organic sediments containing palaeoenvironmental datasets indicative of temperate conditions have been encountered interbedded with cold-climate (periglacial) gravels (see **Table 4**). These organic sediments comprise silty clay containing pollen, plant macrofossils and insect remains. Two small flint flakes from were found in the organic sediment representing possible Palaeolithic artefacts (Allen et al 2022).

2.5.8 The Cooks Green Gravels have the potential to contain Lower Palaeolithic archaeology (Wessex Archaeology 2022 and 2024a). The sediments were deposited during a period immediately prior to Anglian glaciation during a period where human occupation is wide documented in southern Britain, including in East Anglia (Davis et al 2021). Palaeolithic archaeological findspots associated with the Cooks Green Gravel include surfaces find of a handaxe and four flakes from the western edge of the valley of the Holland Brook at Lodge Road, located c. 2.5 km north-west form the Site.

'Coversand'

2.5.9 The BGS consistently maps deposits of clay, silt and sand overlying Kesgrave Catchment Sub-Group on the Tendering Peninsula, which are referred to as 'Coversand'. Coversands are wind-blown sands deposited in cold, dry periglacial environments. The deposits mapped as 'Coversand' by the BGS are lithologically varied and likely include other deposits, including slope deposits (see below).

2.5.10 The age and geoarchaeological potential of the deposits mapped as 'Coversand' by the BGS on the Tendering Peninsula is poorly understood. Coversands can contain/bury stable horizons and soils reflecting periods of climatic amelioration and landscape stabilisation which can contain significant, minimally disturbed archaeology, such as Palaeolithic lithic scatters, and associated palaeoenvironmental evidence.

Slope deposits

2.5.11 Deposits mapped as 'Coversand' by the BGS likely include slope deposits. These are sediments reworked downslope from earlier formations through solifluction processes (alternate freeze thawing) and colluviation (rainwash, sheetwash and/or slow continuous downslope creep). Slope deposits are most widely found at the base of slopes and along valley edges.

2.5.12 In addition to Pleistocene sediments, slope deposits may also include Holocene colluvium. During the Holocene colluviation occurs in areas of topographic relief where soil instability has been brought on by activities such as clearance of woodland, agricultural activity and soil degradation, leading to downslope movement of sediment.

2.5.13 Slope deposits can contain archaeology reworked from locations and deposits further upslope; these source deposits may be at least partially extant or entirely eroded. Slope deposits can also contain or bury stabilisation horizons (which can be associated with soil formation) that may be associated with minimally disturbed archaeology and palaeoenvironmental evidence.

3 AIMS AND OBJECTIVES

3.1 Introduction

3.1.0 The aims and objectives of the evaluation are in accordance with those outlined within the WSI (Wessex Archaeology 2024b).

3.2 Overarching aims

3.2.0 The overarching aims (or purpose) of the evaluation, in compliance with the CIfA' *Standard and guidance for archaeological field evaluation* (CIfA 2023a), were to:

- provide information about the Palaeolithic geoarchaeological potential of the Site;
- consider the possible significance of any Palaeolithic geoarchaeological evidence present, or potentially present, in the context of national and regional research priorities and agendas (e.g., English Heritage 2008, Medlycott ed. 2011), and
- inform on possible requirements for further geoarchaeological work that may be required to further characterise the Palaeolithic geoarchaeological resource, to offset the impact of the development on the Palaeolithic geoarchaeological resource or develop a management strategy.

3.3 Overarching objectives

3.3.0 In order to achieve the above aims, the overarching objectives of the evaluation were to:

- establish the broad presence/absence, nature and distribution of Pleistocene deposits within the Site;
- establish the potential of Pleistocene deposits to preserve Palaeolithic archaeology;

- establish the potential of Pleistocene deposits to preserve paleoenvironmental evidence;
- establish the potential of the Pleistocene deposits for scientific dating;
- place the results of the evaluation within a wider geoarchaeological context;
- provide an assessment of the Palaeolithic archaeological potential of deposits and consider the possible significance of the resource, and
- make recommendations for further work, where appropriate, including for Stage 3 assessment of retained samples (see **Table 1**).

4 FIELDWORK METHODS

4.1 Introduction

4.1.0 All works will be undertaken in accordance with the detailed methods set out within WSI (Wessex Archaeology 2024a).

4.1.1 The evaluation comprised the excavation, investigation and recording of six machine dug test pits.

4.2 Setting out of interventions

4.2.1 All interventions were set out using GNSS in the positions shown in **Figure 1**.

4.3 Service location and other constraints

4.3.1 Prior to fieldwork commencing the client provided information regarding the presence of any below/above-ground services, and any ecological, environmental or other constraints.

4.3.2 Before excavation began the evaluation area was walked over and visually inspected to identify, where possible, the location of any below/above-ground services. All intervention locations were scanned before and during excavation with a Cable Avoidance Tool (CAT) to verify the absence of any live underground services.

4.4 Test Pits

Excavation methods

4.4.1 The test pits were excavated using 360º mechanical excavator with a toothless bucket. Machine excavation was under the constant supervision and instruction of a geoarchaeological specialist experienced in interpreting Pleistocene sediments and identifying Palaeolithic lithic artefacts, who recorded and number the sequence of sedimentary units as excavation progressed following standard descriptive practices. The textural characteristics (grain-size, consolidation, colour, material and sedimentary structures) of sedimentary units were recorded, and the shape and nature of their lithostratigraphic contacts (dip, conformity and overall geometry).

4.4.2 Machine excavation proceeded in level spits of approximately 50-100 mm, respecting the interface between sedimentary units, until either the solid geology was exposed, or further excavation became impractical.

4.4.3 Test pits were entered at the maximum safe depth (c. 1.2 m) to record the upper stratigraphy. After excavation progressed beyond this depth, recording took place without entering the test pit.

4.4.4 Sediment samples of at least 100 litres were taken at regular intervals in stratigraphic succession through the Pleistocene stratigraphy in each test pit and sieved on-site through a 10 mm mesh to investigate whether artefacts and/or macro vertebrate faunal remains were present. When sediments encountered were not suitable for dry-sieving (i.e. too clayey), excavation proceeded in shallower spits of c. 50 mm, looking carefully for the presence of any archaeological or geoarchaeological evidence, and the spit samples carefully investigated by hand (using archaeological trowels) for any archaeological or geoarchaeological evidence. A total number of 4800 litres were dry-sieved.

4.4.5 Consideration was given to the suitability of any sediment units for luminescence dating. Deposits suitable for luminescence were identified but occurred at depths that were not accessible for sampling.

4.4.6 The potential for deposits to preserve paleoenvironmental evidence and any requirements for sedimentological sampling was assessed for each Pleistocene sediment unit by the monitoring geoarchaeological specialist. Recording

4.4.7 The test pits were recorded in the form of a measured sketch sections of at least one face and accompanying geoarchaeological descriptions and interpretations.

4.4.8 Descriptions included information such as:

- *Depth*
- *Texture*
- *Composition*
- *Colour*
- *Inclusions*
- *Structure*
- *Shape and nature of contacts between deposits*

4.4.9 Interpretations included, where possible, probable depositional environments and formation processes.

4.4.10 All samples were individually numbered. The location, size, stratigraphic context, purpose and whether retained or processed on-site were recorded.

4.4.11 A full photographic record was made using digital cameras equipped with an image sensor of not less than 10 megapixels. This recorded both the detail and the general context of the principal lithostratigraphic features of the sediments, and the evaluation areas as a whole. Digital images are subject to managed quality control and curation processes which will embed appropriate metadata within the image and ensure long term accessibility of the image set. Photographs were taken of all areas, including access routes, to provide a record of conditions prior to and on completion of the evaluation.

Reinstatement

4.4.12 Test pits were immediately backfilled on completion using excavated materials in the order in which they were excavated. No further reinstatement was carried out.

4.5 Survey

4.5.1 The real time kinematic (RTK) survey of all as dug intervention was carried out using a Leica GNSS connected to Leica's SmartNet service. All survey data was recorded in OS National Grid coordinates and heights above OD (Newlyn), as defined by OSGM15 and OSTN15, with a three-dimensional accuracy of at least 50 mm.

4.6 Monitoring

4.6.1 The client informed the Historic Environment Consultant, Place Services, of the start of the evaluation. The Historic Environment Consultant monitored the evaluation on behalf of the LPA.

5 POST-EXCAVATION METHODS

5.1 Stratigraphic evidence

5.1.1 All written and drawn records from the evaluation have been collated, checked for consistency.

5.1.2 A written description was made of all geological deposits, ordered by intervention and lithostratigraphy. Details of all lithostratigraphic contexts are provided in the geoarchaeological test pit logs in **Appendix 1**. Where possible, probable depositional environments, formation processes and chronostratigraphic context have been considered.

5.1.3 The results of the evaluation were supplemented by a review of the stratigraphic logs arising from GI works (2023b) and a review of British Geological Survey (BGS) archive boreholes, resulting in a total of 16 additional deposit records (**Appendix 2**).

5.1.4 The log review was undertaken by a suitably qualified geoarchaeologist, who assessed the quality of the sediment descriptions and provided a geoarchaeological interpretation of the deposits.

5.2 Deposit modelling

5.2.1 Deposit records have been utilised to provide a deposit model for the Site. Deposit modelling identifies the range of Quaternary deposits that may be present in a defined area and maps the lateral extent and depth. The deposit modelling has been carried out in accordance with *Deposit modeling and archaeology: guidance for mapping buried deposits* (Historic England 2020).

5.2.2 Only lithostratigraphic records with sufficiently detailed descriptive terminology and location data (including surface elevation) were included in the model. In total 22 deposit records were used.

5.2.3 All available data points were entered into industry standard geological utilities software (Rockworks™ 23). Each stratigraphic unit was given a colour allowing cross correlation and grouping of the different sedimentary units. The grouping of these deposits is based on lithological descriptions, which define distinct depositional environments referred to as 'stratigraphic units' (e.g., Bedrock, Alluvium and Made Ground)

5.2.4 Sedimentary units from the boreholes were classified into five stratigraphic units: (1) Bedrock, (2) Cooks Green Gravel, (3) Coversands, (4) Slope Deposits (5) Backfill. The classified data for groups 1 to 5 were then input into a database within the RockWorks 23™ program.

5.2.5 Outputs include two-dimensional stratigraphic profiles ('transects') of selected interventions, generated using RockWorks 23™.

5.3 Finds evidence

5.3.0 No archaeological finds were made during the evaluation.

5.4 Palaeoenvironmental, sedimentological and scientific dating samples

5.4.0 A sample (<208>) suitable for palaeoenvironmental assessment were obtained during the evaluation. This will be utilised in accordance with the staged approach outlined in **Table 1.** Recommendations for Stage 3 sample assessment of retained samples are made in **Section 8.2.1**.

5.4.1 No sedimentological or scientific dating samples were taken during the evaluation.

6 RESULTS

6.1 Introduction

6.1.1 This section outlines the results of the evaluation. It includes summaries of the deposits identified, integrated within a deposit model for the Site.

6.2 Deposits

6.2.1 The lithostratigraphy of deposits encountered during the evaluation is listed and summarised below. The specific lithologies and lithostratigraphic succession recorded in each intervention are outlined in **Appendix 1**.

6.2.2 The generalised lithostratigraphic sequence within the Site comprised:

- Backfill (Modern)
- Slope Deposits (Pleistocene)
- Coversands (Pleistocene)
- Cooks Green Gravel (Pleistocene)
- Bedrock (Palaeogene)

6.2.3 Deposit modelling has been carried out, which allows the vertical and horizontal distribution of these lithostratigraphic units to be considered. The outputs of the deposit modelling comprise two transects aligned north-south providing cross-sections through the geological deposits within the Site and their relationship to those in the wider area. The locations of these transects are illustrated in **Figure 4**, with the transects provided as **Figures 5** and **6**.

6.2.4 The deposits, their lithostratigraphic relationship and their distribution are described below, from the oldest to youngest.

Bedrock

6.2.5 Within the Site bedrock was only reached in WATP3, WATP04 and WATP6 Figure 5). It consisted of stiff brownish grey to grey clay and represents the upper part of the London Clay Formation. Bedrock surfaces were encountered at approximately 18.00m and 19.00m OD.

6.2.6 West of the Site (TM22SW15, TW22SW14, TM22SW18 and TM22SW13) bedrock surfaces are at a similar elevation, whilst further west (BHR-S) bedrock surface elevations fall to c. 11.00m OD, where the bedrock has been incised into by a dry valley (**Figure 6**).

Cooks Green Gravel

6.2.7 Overlying the bedrock, Pleistocene fluvial deposits were recorded in all of the test pits in the Site (**Figure 5**). Based on their elevation and previous mapping (Allen et al 2022) these deposits are interpreted as Cooks Green Gravel, which is a part of the Kesgrave Catchment Subgroup. In the north of the Site (WATP1, WATP2 and WATP3) a tripartite division in the stratigraphy of the Cooks Green Gravel is apparent. These sub-units comprise:

- Upper Sands and Gravels
- Lower Sands
- Lower Sands and Gravels

6.2.8 The earliest of these is the Lower Sands and Gravels, recorded in WATP3 with their base at 19.3m OD (**Figure 7**). The sediments were c. 0.60m thick and comprised of orangish brown very sandy gravel. The sand fraction was fine to very coarse. The gravel ranged from fine to coarse clasts and was moderately well size-sorted with fine to medium gravel being most common. The clasts were sub-angular to sub-rounded, mostly flint with few quartz clasts. Sub-horizontal fluvial bedding structures were observed. The sub-unit was lain-down by high energy fluvial processes. A sharp, erosive upper boundary separated Lower Sands and Gravels from overlying Lower Sands.

6.2.9 This Lower Sands was recorded in WATP1, WATP2 and WATP3 with basal elevations of c. 19.50m OD. In WATP3 the Lower Sands were 1.90m thick (**Figure 5** and **Figure 7**); in the other test pits the lower boundary of this sub-unit was not reach. The Lower Sands consisted of moderately well sorted, fine to medium sands with rare sub-angular and sub-rounded, fine to coarse-sized flint clasts. Occasional beds of clayey silt and coarse sands were noted. The Lower Sands were likely deposited as fluvial channels fill or as a sandy point bar within a river. A sharp, horizontal erosive contact separated the Lower Sands from the overlying Upper Sands and Gravels.

6.2.10 Upper Sands and Gravels were recorded in WATP1, WATP2 and WATP3with their base at approximately 21.50m OD. The thickness ranged between 0.65m to 0.30m (**Figure 5**). This unit consisted of mid-orangish brown sandy gravel. The gravel was poorly sorted and included sub-angular to sub-rounded fine to coarse flint clasts. The matrix comprised coarse sand. Sub-horizontal fluvial bedding was identified. These Upper Sands and Gravels are high energy fluvial sediments. In all test pits the Upper Sands and Gravels were unconformably overlain by later Pleistocene deposits.

6.2.11 In the south of the Site (WATP4, WATP5 and WATP6) and beyond the southern Site boundary (BHLC-1) Pleistocene fluvial deposits equivalent with those further north were identified, but were not divisible into separate sub-units. These principally consisted of flint dominated, sub-angular to sub-rounded flint clasts in sand matrices, with occasional sand layers. Sub-horizontal bedding was noted in WATP6. The deposits ranged in thickness from 1.70m in WATP4 to 2.90m in WATP6, with a basal elevation at around 18.00–19.00m OD (**Figure 5**).

6.2.12 Pleistocene fluvial sands and gravels up to 6.00m thick and with similar basal elevations have been recorded to the north-west of the Site (TM22SW13, TM22SW14, TM22SW15

and TM22SW18) (**Figure 6**). The similar basal elevations suggests that these also principally belong to the Cooks Green Gravel.

Coversands

6.2.13 Overlying the lower fluvial deposits were light orangish brown slightly clayey fine to coarse sands with few randomly distributed flint clasts. The clasts were predominantly sub-angular to sub-rounded, fine to coarse-sized flint. No bedding was observed. These sands were present in WATP1, WATP5 and WATP4 (**Figure 5**). They varied in thickness between 0.30m (WATP1) to 1.0m (WATP5) and occurred at depths ranging from 22.60m OD (WATP1) to 21.46m OD (WATP4). These sands were likely deposited as wind-blown coversands in cold dry periglacial environment. In the Site the Coversands have been truncated, and in some instances (WATP2 and WATP3) entirely removed, by later erosion. These Coversands continue south of the Site (BHLC-1).

Slope Deposits

6.2.14 Across much of the Site the Cooks Green Gravel and Coversands are overlain by orangish brown, poorly sorted and structureless gravelly sands to sandy gravels with occasional clay and silt components. The sand fraction was predominantly fine to coarse. The clasts were mainly sub-angular to sub-rounded, fine to coarse-sized flint, but rounded quartzite clasts were occasionally recorded (**Figure 5**). These gravelly sands likely reflect the reworking through slope processes of sediments derived from the earlier Cooks Green Gravel and the Coversands. Slope processes could have included solifluction (if deposited under periglacial conditions) and/or colluviation.

Backfill

6.2.15 In most test pits Pleistocene deposits were sealed by backfill from archaeological trial trenches. A truncated subsoil was recorded in WATP5.

6.3 Palaeoenvironmental, sedimentological and scientific dating samples

6.3.1 The Pleistocene deposits evaluated have generally low palaeoenvironmental potential. A localised grey silt and clay bed was identified in WATP1 within the Lower Sands of the Cooks Green Gravel (context 1004). This has potential to contain paleoenvironmental evidence, principally microfossils (ostracods, foraminifera, pollen). A 20l bulk sample (<208>) suitable for palaeoenvironmental assessment was recovered.

6.3.2 Sand units within the Pleistocene stratigraphy may be suitable for luminescence dating. The age of Cooks Green Gravel prohibits the application of this dating technique. Dependant on their age, units within the Coversands may be suitable for luminescence dating but deposits were not safely accessible for sampling. No units suitable for luminescence dating were identified within the Slope Deposits

7 DISCUSSION

7.1 Introduction

7.1.1 The evaluation has successfully characterised the Pleistocene deposits present within the Site and evaluated their geoarchaeological potential. The following discussion reviews the Pleistocene deposits identified and considers the geoarchaeological resource in the Site.

7.2 Sedimentary sequences and depositional environments

7.2.0 A consistent sequence of Pleistocene deposits has been identified across the Site, which overlies London Clay Formation Bedrock.

7.2.1 The earliest sediments are fluvial and belong to the Cooks Green Gravel, which are considered to have been deposited between MIS 14–13 (563-478 Kya) at the confluence of the Rivers Thames and Medway (Allen et al 2022). Within the Site divisions within the stratigraphy of the Cooks Green Gravel were apparent. Generally, these sediments were coarse, higher energy fluvial sands and gravels, but within the north of the Site a sand filled a channel or point bar was identified.

7.2.2 Within the Site the Cooks Green Gravel was overlain Coversands. These are windblown sediments deposited under cold, dry conditions in a periglacial environment. The age of these Coversands is unknown. Given their stratigraphic position overlying the Cooks Green Gravel it is possible that they date to succeeding Anglian, MIS 12 (478–424 Kya), glacial period. However, in the absence of chronological data, deposition during a subsequent cold stage, or stages, of the Pleistocene is equally likely. These Coversands have been extensively truncated across the Site by later erosion and in some locations have been entirely removed.

7.2.3 Deposits of the Cooks Green Gravel and Coversands were overlain by gravelly sands which reflect the reworking of the earlier deposits through slope processes. Slope processes are caused by landscape insatiability. During the Pleistocene these processes and landscape instability are climatically driven (e.g. periglacial conditions with a lack of vegetation and seasonal freeze thaw initiating solifluction of sediments down slopes), whilst in the Holocene anthropogenic factors including vegetation and agricultural cultivation can be causal factors. The age of the Slope Deposits in the Site is unknown. There stratigraphic and topographic context suggest a Pleistocene date is most likely, but a Holocene age cannot be excluded.

7.3 Assessment of Palaeolithic geoarchaeological potential and significance

7.3.1 The results of the evaluation allow the Palaeolithic geoarchaeological potential of the identified Pleistocene deposits to be assessed and the significance of the geoarchaeological resource to be considered.

7.3.2 A Palaeolithic geoarchaeological potential rating has been assigned to the Pleistocene deposits, representing a measure of probability. This has been determined via the application of professional judgement, informed by the evidence from the Site itself and equivalent deposits in the surrounding area. The Palaeolithic geoarchaeological potential rating comprises two variables, an assessment of potential to preserve archaeological evidence and to preserve paleoenvironmental remains. '*Potential'* is expressed on a four-point scale, assigned in accordance with the following criteria:

- **High** Situations where evidence is known or strongly suspected to be present within deposits and which are likely to be well preserved.
- **Moderate** Includes cases where there are grounds for believing that evidence may be present, but for which conclusive evidence is not currently available.
- **Low** Circumstances where the available information indicates that evidence is unlikely to be present, or that their state of preservation is liable to be severely compromised.
- **Unknown** Cases where currently available information does not provide sufficient evidence on which to provide an informed assessment with regard to the potential for material to be present.

7.3.3 The relative '*Significance'* of known and potential geoarchaeological evidence has been determined in accordance with the criteria set out in **Table 6.** These criteria are related to national (e.g. English Heritage 2008) and regional (Medlycott ed. 2011) research themes and priorities.

Table 5 Generic schema for classifying the significance of geoarchaeological assets (based on Historic England 2015)

Significance	Categories
Very High	World Heritage Sites (including nominated sites) Assets of recognised international importance Assets that contribute to international research objectives
High	Scheduled Monuments Non-designated assets of national importance Assets that contribute to national research agendas (for Palaoelithic assets these are likely to be contemporary with the deposits)
Moderate	Assets that contribute to regional research objectives (for Palaoelithic assets these are likely to be reworked to some degree)
Low	Assets compromised by poor preservation and/or poor contextual associations Assets with importance to local interest groups (for Palaoelithic assets these are likely to be reworked to a significant degree)
Negligible	Little or no archaeological or geoarchaeological interest
Unknown	The importance of the asset has not been ascertained from available evidence

7.3.4 The geoarchaeological potential of deposits is summarized in **Table 6** and discussed below.

Table 6 Assessment of Palaeolithic geoarchaeological potential and significance

Unit	Geological Period	Archaeological Period	Depth m bgl	Archaeological potential	Paleoenviron. potential	Geoarchaeological significance
Slope Deposits	?Middle to Late Pleistocene	Unknown	0.35 - 0.55	Low	Low	Unknown
Coversands	?Middle to Late Pleistocene	Unknown	0.35-0.90	Low	Low	Unknown
Cooks Green Gravel	Early Middle Pleistocene	Lower Palaeolithic	0.70-2.10	Moderate	Generally low	High

Cooks Green Gravels

7.3.5 The geoarchaeological investigations across the Site enabled stratigraphic units through much of Cooks Green Gravel above bedrock to be evaluated at six locations. No archaeology was recovered, which indicates that the Palaeolithic archaeological potential of these deposits may be limited. However, the deposits date to a period (MIS 14–13; 563-478 Kya) when humans were known to be present both locally and nationally (Davies et al. 2023) and a moderate potential rating has been assigned. Any archaeology from these deposits would relate to the period of Lower Palaeolithic occupation of Britain, immediately prior to the MIS 12 (478–424 Kya) Anglian glaciation. Lower Palaeolithic archaeology that was contemporary with units of the Cooks Green Gravel would have high significance for national and regional Palaeolithic research themes and priorities.

7.3.6 The Cooks Green Gravel in the Site consisted of coarse fluvial sands and gravels and sand units. These sediments have generally low potential for preserving palaeoenvironmental

evidence. A localised silty and clay bed (context 1004, WATP1) with palaeoenvironmental potential was identified and a sample (<208>) suitable for assessment was taken. This may be of significance for assessing the climatic and environmental context of Lower Palaeolithic activity in the region.

Coversands

7.3.7 Coversands have the potential to contain or bury landsurfaces and soils reflecting periods of climatic improvements that can be associated with Palaeolithic archaeology, including lithic scatters. No surfaces or soils were identified in the Site and no archaeology was recovered by the evaluation from these sediments. Their Palaeolithic archaeological potential is assessed as low. No units within the Coversands were considered likely to preserve significant palaeoenvironmental remains and a low potential rating is assigned,

Slope Deposits

7.3.8 Slope deposits overlying and reworking the earlier sediments have the potential to bury landsurfaces associated with archaeological activity, including lithic scatters and to contain reworked archaeology. The evaluation did not identify any archaeology within these deposits or any buried surfaces. This indicates that their archaeological potential is low. The gravelly sands forming these Slope Deposits also have low palaeoenvironmental potential.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

8.1.0 A Palaeolithic geoarchaeological test pitting evaluation comprising six test pits was carried within Site. The results have been integrated with GI borehole records from previous GI monitoring (Wessex Archaeology 2023c) and BGS records from the surrounding area to provide a deposit model for the Site and to set the deposits in their wider geoarchaeological context.

8.1.1 The evaluation has successfully characterised the Pleistocene deposits present within the Site, confirmed the presence of deposits identified by GDBA (Wessex Archaeology 2022 and 2024a) and enabled their lithostratigraphy of this geology to be clearly established.

8.1.2 The geological sequences within the Site comprised London Clay Formation bedrock overlain by up to approximately 4.00m of Quaternary deposits. The earliest Quaternary sediments are Pleistocene fluvial deposits of the Cooks Green Gravel of the Kesgrave Catchment Subgroup. In the Site these comprised fluvial sands and gravels, with a sand filled channel/point bar. The Cooks Green Gravel is dated to MIS 13-14 (563–478 Kya).

8.1.3 Whilst the Cooks Green Gravel has the potential to contain Lower Palaeolithic archaeology, no archaeology was identified during the evaluation. The sediments evaluated generally have low potential for containing significant palaeoenvironmental datasets but a llocally present unit within these sediments may yields paleoenvironmental evidence. The Cooks Green Gravel are overlain by later wind-blown Coversands deposited in a cold, dry periglacial environment. These are undated but will date to a Pleistocene cold stage, or stages. Such Coversands can contain/bury stable surfaces/soils associated with periods of climatic improvement and could provide contexts for Palaeolithic activity, including lithic scatters, but no archaeology or such surfaces were identified.

8.1.4 The Cooks Green Gravel and Coversands are truncated by Slope Deposits consisting of sediments reworked by slope processes which have reworked material from these earlier deposits. The age of the Slope Deposits is uncertain, but they most likely date to the

Pleistocene. As with Coversands, Slope Deposits can bury/contain surfaces preserving Palaeolithic archaeology. They can also contain archaeology reworked within the Slope Deposits. No evidence for stable surfaces or archaeology within these Slope Deposits was identified and their potential for preserving palaeoenvironmental evidence is low.

8.2 Recommendations

8.2.0 The evaluation indicates that development proposals are unlikely to impact on a significant Palaeolithic geoarchaeological resource in the Site. Consequently, further detailed Palaeolithic geoarchaeological work on the Pleistocene deposits identified is not recommended.

8.2.1 Locally a unit within Cooks Green Gravel with palaeoenvironmental potential was identified (context 1004, WATP1) and a 20 litre bulk sample was taken (<208>). This sample could contain microfossils, principally ostracods, foraminifera and pollen, which could inform on landscape environments during deposition of Cooks Green Gravel. Palaeoenvironmental assessment of this sample is recommended to considered whether analysis may be warranted to mitigate against any potential develop impacts on this deposit.

9 ARCHIVE STORAGE AND CURATION

9.1 Museum

9.1.0 The archive resulting from the evaluation is currently held at the offices of Wessex Archaeology in Salisbury. Colchester Museum has agreed in principle to accept the archive on completion of the project, when an accession code will be assigned. Deposition of any finds with the museum will only be carried out with the full written agreement of the landowner to transfer title of all finds to the museum.

9.2 Preparation of archive

Physical archive

9.2.0 The archive, which includes paper records, graphics, artefacts and ecofacts, will be prepared following the standard conditions for the acceptance of excavated archaeological material by Colchester Museum, and in general following nationally recommended guidelines (Brown 2011; CIfA 2020; SMA 1995).

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

- 01 files/document cases of paper records

Digital archive

9.2.2 The digital archive generated by the project will be deposited with a Trusted Digital Repository, in this instance the Archaeology Data Service (ADS), to ensure its long-term curation. Digital data will be prepared following ADS guidelines (ADS 2013 and online guidance) and accompanied by metadata.

9.3 Selection strategy

9.3.0 It is widely accepted that not all the records and materials (artefacts and palaeoenvironmental data) collected or created during the course of an archaeological project require preservation in perpetuity. These records and materials will be subject to selection in order to establish what will be retained for long-term curation, with the aim of ensuring that all elements selected to be retained are appropriate to establish the

significance of the project and support future research, outreach, engagement, display and learning activities, i.e. the retained archive should fulfil the requirements of both future researchers and the receiving Museum.

9.3.1 The selection strategy, which details the project-specific selection process, is underpinned by national guidelines on selection and retention (Brown 2011, section 4, CIfA 2022) and generic selection policies (SMA 1993; Wessex Archaeology's internal selection policy) and follows CIfA's *Toolkit for Selecting Archaeological Archives*. It should be agreed by all stakeholders (Wessex Archaeology's internal specialists, external specialists, local authority, museum) and fully documented in the project archive.

9.3.2 Project-specific proposals for selection are presented below. These proposals are based on recommendations by Wessex Archaeology's internal specialists and will be updated in line with any further comment by other stakeholders (museum, local authority). The selection strategy will be fully documented in the project archive.

9.3.3 Any material not selected for retention may be used for teaching or reference collections by Wessex Archaeology.

Finds

9.3.4 No finds were made during the evaluation.

Palaeoenvironmental, sedimentological and scientific dating samples

9.3.5 Samples shall be retained for the recommended palaeoenvironmental assessment. If assessment goes ahead, samples and residues shall be retained for the duration of the project.

Documentary records

9.3.6 Paper records comprise site registers (other pro-forma site records are digital), drawings and reports (Written Scheme of Investigation, client report). All will be retained and deposited with the project archive.

Digital data

9.3.7 The digital data comprise site records (tablet-recorded on site) in spreadsheet format; finds records in spreadsheet format; survey data; photographs; reports. All will be deposited, although site photographs will be subject to selection to eliminate inferior quality and duplicated images, and any others not considered directly relevant to the archaeology of the site.

9.3.8 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.

9.4 Security copy

9.4.0 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.

9.5 OASIS

9.5.0 An OASIS (online access to the index of archaeological investigations) record (http://oasis.ac.uk) has been initiated, with key fields completed (**Appendix 3**). A .pdf version of the final report will be submitted following approval by the Historic Environment Consultant at Place Services on behalf of the LPA. 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 (ADS) ArchSearch catalogue.

10 COPYRIGHT

10.1 Archive and report copyright

10.1.1 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*.

10.1.2 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.

10.2 Third party data copyright

10.2.1 This document, the evaluation report 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.

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APPENDICES

Appendix 1 Test pit summaries

The stratigraphic succession encountered in each test pit are outlined below. Both heights and coordinates were taken at the centre of each trench. Depth bgl = below ground level

Site Code: 286900	**Site Name:** Little Clacton Road	**Test Pit ID:** WATP1
Coordinates (NGR) X: 620481.0124	**Coordinates (NGR) Y:** 219382.5084	**Level (top):** 22.60m OD
Length: 3.00 m	**Width:** 1.80 m	**Depth:** 2.60 m

Context Number	Description	Interpretation	Depth m bgl	Depth m OD	Samples
1001	Light grey gravelly sandy SILT. Sand is fine to medium. Gravel is fine to medium (2-16mm) angular to subrounded flint clasts. Unsorted and structureless. Sharp undulating and irregular lower boundary	Backfill	0.00-0.35	22.60-22.25	
1002	Light orangish brown slightly clayey slightly gravelly SAND. Sand is fine to coarse. Unsorted. Gravel is fine to coarse (2-22mm) subangular to subrounded flint clasts. Structureless. Inserted. Black iron clasts throughout. Sharp lower boundary	Upper Sands (Coversands)	0.35-0.65	22.25-21.95	200, 201
1003	Light orangish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse (2-24mm) subangular to subrounded flint clasts. Sub-horizontal structure and poorly sorted. Sharp lower boundary	Upper Sands and Gravels (Cooke Green Gravel)	0.65-1.30	21.95-21.30	202
1004	Light brown slightly gravelly fine to medium SAND with occasional beds of coarse SAND. Thin bed of bluish grey slightly clayey slightly silty fine to medium sand at 1.80m. Gravel is fine to coarse (2-34mm) subrounded to subangular flint clasts with occasional well-rounded flint and quartz clasts.	Lower Sands (Cooke Green Gravel)	1.30-2.60+	21.30-20.00+	203, 204, 205, 206, 207, 208

Site Code: 286900	**Site Name:** Little Clacton Road	**Test Pit ID:** WATP2
Coordinates (NGR) X: 620451.6047	**Coordinates (NGR) Y:** 219326.861	**Level (top):** 22.65m OD
Length: 3.00 m	**Width:** 2.00 m	**Depth:** 3.10 m

Context Number	Description	Interpretation	Depth m bgl	Depth m OD	Samples
2001	Light grey gravelly sandy SILT. Sand is fine to medium. Gravel is fine to medium (2-16mm) angular to subrounded flint clasts. Unsorted and structureless. Sharp undulating and irregular lower boundary	Backfill	0.00-0.35	22.65-22.30	
2002	Grey mottled orangish brown gravelly clayey fine to medium SAND. Gravel is fine to coarse (2-20mm) subangular to subrounded flint clasts. Structureless Sharp lower boundary	Gravelly Sands (Slope Deposits)	0.35-0.80	22.30-21.85	209
2003	Grey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to medium (2-14mm) subangular flint clasts. No visible structure. Not visible across entire section (see section drawing). Sharp lower boundary	Gravelly Sands (Slope Deposits)	0.80-0.90	21.85-21.75	210
2004	Mid orangish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse (2-28mm) subangular to subrounded flint clasts. Sub-horizontal bedding structure. Sharp lower boundary	Upper Sands and Gravels (Cooks Green Gravel)	0.90-1.20	21.75-21.45	211
2005	Bluish grey clayey fine to medium SAND with frequent pockets of fine to medium grey sand. Structureless. Occasional fine to coarse subangular to subrounded flint gravel clasts.	Lower Sands (Cooks Green Gravel)	1.20-3.10+	21.45-19.55+	212-215

Site Code: 286900	Site Name: Little Clacton Road	Test Pit ID: WATP3
Coordinates (NGR) X: 620424.7136	Coordinates (NGR) Y: 219267.9786	Level (top): 22.23m OD
Length: 3.00 m	Width: 2.00 m	Depth: 3.60m

Context Number	Description	Interpretation	Depth m bgl	Depth m OD	Samples
3001	Light grey gravelly silty SAND. Sand is fine to medium. Gravel is fine to medium (2-16mm) angular to subrounded flint clasts. Unsorted and structureless. Sharp irregular lower boundary	Backfill	0-0.34	22.23-21.89	
3002	Mid greyish brown gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse (2-30mm) subangular to subrounded flint and quartz clasts. Structureless and unsorted. Water veins dipping into lower contexts. Occasional black iron manganese clasts. Sharp slightly undulating lower boundary	Gravelly Sands (Slope Deposits)	0.34-0.70	21.89-21.53	221, 222
3003	Light orangish brown sandy GRAVEL. Sand is fine to coarse with beds of medium to coarse sand. Gravel is fine to coarse (2-24mm) subangular to subrounded (predominantly subrounded) flint and few quartz clasts. Sub-horizontal bedding structure. Sharp straight lower boundary	Upper Sands and Gravels (Cooks Green Gravel)	0.70-1.00	21.53-21.23	222, 223, 224
3004	Interbedded light bluish grey and light orangish brown clayey SAND. Sand is fine to medium. Sharp lower boundary	Lower Sands (Cooks Green Gravel)	1.00-2.90	21.23-19.33	225, 226, 227, 228
3005	Light grey mottled orangish brown very sandy GRAVEL. Sand is fine to very coarse. Gravel is fine to coarse (2-28mm) predominantly fine to medium (<16mm) subrounded to subangular flint with few quartz clasts. Sub-horizontal bedding structure. Upper layer of black manganese clasts. Sharp lower boundary	Lower Sands and Gravels (Cooks Green Gravel)	2.90-3.50	19.33-18.73	229, 230
3006	Stiff mid brownish grey CLAY	London Clay Bedrock	3.50-3.60	18.73-18.63	231

Site Code: 286900	Site Name: Little Clacton Road	Test Pit ID: WATP4
Coordinates (NGR) X: 620478.74	Coordinates (NGR) Y: 219089.8113	Level (top): 21.82m OD
Length: 3.00 m	Width: 2.00 m	Depth: 3.00 m

Context Number	Description	Interpretation	Depth m bgl	Depth m OD	Samples
4001	Mid brown slightly gravelly silty SAND. Sand is fine to medium Gravel is fine to medium (2-10mm) angular to subrounded flint and quartz clasts. Structureless and unsorted. Sharp irregular lower boundary	Backfill	0.00-0.36	21.82-21.46	
4002	Mid brownish grey mottled dark brown slightly gravelly slightly clayey silty SAND. Sand is fine to coarse. Gravel is fine to coarse (2-20mm) subangular to subrounded flint clasts. Structureless and unsorted. Occasional black horizons and pockets of black iron manganese clasts. Sharp irregular and undulating lower boundary	Upper Sands (Coversands)	0.36-0.64	21.46-21.18	
4003	Light orangish brown mottled light bluish grey sightly gravelly clayey SAND. Sand is fine to medium becoming coarse with depth. Gravel is fine to medium (2-15mm) subangular flint clasts. Structureless and unsorted.	Upper Sands (Coversands)	0.64-1.10	21.18-20.72	241, 242
4004	Light greyish brown gravelly SAND. Sand is fine to coarse with beds of medium sand. Gravel is fine to coarse (2-26mm) subrounded to subangular (predominantly subrounded) flint and occasional well rounded quartz clasts. Faint sub-horizontal bedding structure. Poorly to moderately sorted. Unclear lower boundary	Sands and Gravels (Cooks Green Gravel)	1.10-2.80	20.72-19.02	243, 244, 245, 246,
4005	Stiff grey CLAY	London Clay Bedrock	2.80+	19.02+	

Site Code: 286900	**Site Name:** Little Clacton Road	**Test Pit ID:** WATP5
Coordinates (NGR) X: 620513.4547	**Coordinates (NGR) Y:** 219214.1356	**Level (top):** 22.62m OD
Length: 3.00m	**Width:** 2.00m	**Depth:** 2.30m

Context Number	Description	Interpretation	Depth m bgl	Depth m OD	Samples
5001	Light grey gravelly silty SAND. Sand is fine to medium. Gravel is fine to medium (2-16mm) angular to subrounded flint clasts. Unsorted and structureless. Sharp irregular lower boundary	Backfill	0.00-0.35	22.62-22.27	
5002	Light greyish brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is fine to medium (2-12mm) subangular flint clasts. Structureless and unsorted. Frequent black iron clast throughout. Sharp straight lower boundary	Subsoil	0.35-0.55	22.27-22.07	
5003	Light orangish brown mottled bluish grey slightly gravelly becoming gravelly slightly clayey silty SAND. Sand is fine to medium. Gravel is fine to coarse (2-26mm) subangular to subrounded flint clasts. Structureless and unsorted. Sharp straight lower boundary	Gravelly Sands (Slope deposit)	0.55-0.90	22.07-21.72	216
5004	Light orangish brown mottled bluish grey silty fine to medium SAND. Sharp slightly undulating lower boundary	Upper Sands (Coversands)	0.90-2.10	21.72-20.52	217, 218, 219, 220
5005	Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse (2-45mm) subangular to subrounded (predominantly subrounded) flint clasts with occasional well rounded quartz clasts. Structure unclear due to rapid ingress of water.	Sands and gravels (Cooks Green Gravel)	2.10-2.30+	20.52-20.35+	

Site Code: 286900	Site Name: Little Clacton Road	Test Pit ID: WATP6
Coordinates (NGR) X: 620459.7108	Coordinates (NGR) Y: 219146.7237	Level (top): 21.58m OD
Length: 3.00 m	Width: 2.00 m	Depth: 3.80 m

Context Number	Description	Interpretation	Depth m bgl	Depth m OD	Samples
6001	Mid brown gravelly slightly clayey silty SAND. Sand is fine to medium. Gravel is fine to coarse (2-34mm) angular to subrounded flint clasts. Structureless and unsorted. Sharp irregular lower boundary	Backfill	0.00-0.36	21.58-21.22	
6002	Light greyish brown gravelly clayey SAND. Sand is fine to medium. Gravel is fine to coarse (2-28mm) angular to subrounded flint clasts. Structureless and unsorted. Sharp slightly undulating lower boundary	Gravelly Sands (Slope Deposits)	0.36-0.70	21.22-20.88	232
6003	Light greyish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse (2-38mm) subangular to subrounded flint clasts. Occasional fine to medium subrounded quartz clasts. Sub-horizontal bedding structure. Unclear lower boundary	Sands and Gravels (Cooks Green Gravel)	0.70-1.90	20.88-19.68	233, 234, 235, 236
6004	Light orangish brown mottled light bluish grey gravelly SAND. Sand is fine to very coarse. Gravel is fine to coarse (2-46mm) subangular to subrounded flint clasts. No clear structure. Poorly sorted. Sharp lower boundary	Sands and Gravels (Cooks Green Gravel)	1.90-3.30	19.68-18.28	237, 238, 239
6005	Light grey fine to coarse SAND with occasional fine to medium (<12mm) subangular to subrounded flint clasts. Structureless and unsorted. Sharp lower boundary	Sands and Gravels (Cooks Green Gravel)	3.30-3.60	18.28-17.98	240
6006	Stiff grey CLAY	London Clay Bedrock	3.60+	17.98-+	

Appendix 2 Data used in the deposit model

Name	Easting	Northing	Total depth (m)	Elevation (m OD)
BHLC-1	620464	218963	8.50	23.40
BHLC-3	620659	219066	12.0	24.92
BHR-N	619734	220458	14.50	22.97
BHR-S	619909	220374	10.50	15.66
BHSR-1	616209	224098	10.50	21.33
BHSR-4	616454	223967	7.50	27.21
TM22SW12	620200	220160	12.19	22.40
TM22SW13	620240	220210	6.10	22.90
TM22SW14	620320	220280	6.10	24.00
TM22SW15	620360	220320	6.10	24.00
TM22SW16	620390	220300	12.50	24.00
TM22SW17	620220	220140	6.10	22.50
TM22SW18	620300	220250	6.10	23.20
TM22SW19	620320	220240	6.10	23.20
TM22SW20	620310	220230	12.19	23.20
TM22SW21	620340	220200	3.05	23.60
WATP1	620481	219382	2.60	22.60
WATP2	620451	219326	3.10	22.65
WATP3	620424	219267	3.60	22.23
WATP4	620478	219089	3.00	21.83
WATP5	620513	219214	2.30	22.62
WATP6	620459	219146	3.80	21.58

Appendix 3 OASIS form

OASIS Summary for wessexar1-525618

OASIS ID (UID)	wessexar1-525618
Project Name	Little Clacton Road, Essex, Palaeolithic Geoarchaeological Evaluation
Sitename	Little Clacton Road
Sitecode	286900
Project Identifier(s)	286900
Activity type	Evaluation
Planning Id	FWLC24
Reason For Investigation	Planning: Pre application
Organisation Responsible for work	Wessex Archaeology
Project Dates	07-May-2024 - 10-May-2024
Location	Little Clacton Road NGR : TM 20506 19225 LL : 51.82809864236768, 1.198657999394559 12 Fig : 620506,219225
Administrative Areas	Country : England County/Local Authority : Essex Local Authority District : Tendring Parish : Frinton and Walton
Project Methodology	Wessex Archaeology was commissioned by Five Estuaries Offshore Windfarm Ltd and North Falls Offshore Windfarm Ltd to undertake a Palaeolithic geoarchaeological evaluation through a program of test pitting of a c. 3.52 hectares (ha) parcel of land located north of Little Clacton Road, Great Holland, Tendring, Essex. The Site is centred on National Grid Reference (NGR 620506 219225). The evaluation was carried out in advance of proposed development relating to the construction of the Five Estuaries and North Falls Offshore Wind Farm (OSWF) Projects. The OSWF Projects require onshore export cables linked to the offshore arrays. The Site includes the proposed routes for two options of the onshore export cable corridor. The aim of the evaluation was to provide information on the Palaeolithic geoarchaeological resource that may be impacted by the cable route and facilitate an informed decision with regard to the requirement further Palaeolithic geoarchaeological investigations. The evaluation comprised the excavation, investigation and recording of six machine-dug test pits. These were excavated under the supervision and instruction of a Palaeolithic geoarchaeological specialist. Sediment samples were taken at regular intervals through the Pleistocene stratigraphy in each test pit and assessed for artefacts and/or macro vertebrate faunal remains. The potential for deposits to preserve paleoenvironmental evidence and any requirements for sedimentological and dating sampling was assessed.

Project Results	The evaluation has successfully characterised the Pleistocene deposits present within the Site and has enabled the Palaeolithic geoarchaeological resource to be assessed. Broadly similar sequences of Pleistocene deposits were present across the Site. The earliest are Middle Pleistocene fluvial deposits of Cooks Green Gravel of the River Thames/Medway. In the Site these comprised fluvial sands and gravels, and a sand filled channel/point bar. The Cooks Green Gravel is dated to MIS 13–14 (563–478 Kya). Whilst the Cooks Green Gravel has potential to contain significant Lower Palaeolithic archaeology, no archaeology was identified by the evaluation and their potential within the Site may be limited. The evaluated sediments of the cooks Green Gravel generally have low palaeoenvironmental potential. A localised deposit of grey clayey silty sand was recorded in WATP1, which may have palaeoenvironmental potential. A bulk sample of this was taken, which is suitable for assessing this potential. The Cooks Green Gravel were overlain by wind-blown coversands. Deposited in cold dry periglacial environment, these are undated but could have been lain-down from the Anglian glaciation (MIS 12) onward. Such coversands can contain/bury stable surfaces/soils associated with periods of climatic improvement. These provide contexts for Palaeolithic activity, including lithic scatters, but no archaeology or such surfaces were identified in the Site. The Cooks Green Gravel and coversands are truncated by erosion and overlain by undated, but likely Pleistocene, slope deposits. As with the coversands, these slope deposits can bury/contain surfaces with Palaeolithic archaeology. They can also contain archaeology reworked within the slope deposits. No evidence for stable surfaces or archaeology within these slope deposits was identified and their potential for preserving palaeoenvironmental evidence is low. The evaluation indicates that there is low potential for development proposals to impact on a significant Palaeolithic geoarchaeological resource. Locally a unit within Cooks Green Gravel with palaeoenvironmental potential was identified and sampled. Palaeoenvironmental assessment of this sample is recommended.
Keywords	
Funder	Utilities and infrastructure Five Estuaries Offfshore Wind Farm LTD,Utilities and infrastructure North Falls Offshore Wind Farm LTD
HER	Essex HER - unRev - STANDARD
Person Responsible for work	Daniel Young
HER Identifiers	HER Event No - FWLC24
Archives	Documentary Archive, Digital Archive - to be deposited with Colchester & Ipswich Museum Sevice (Colchester Collection);

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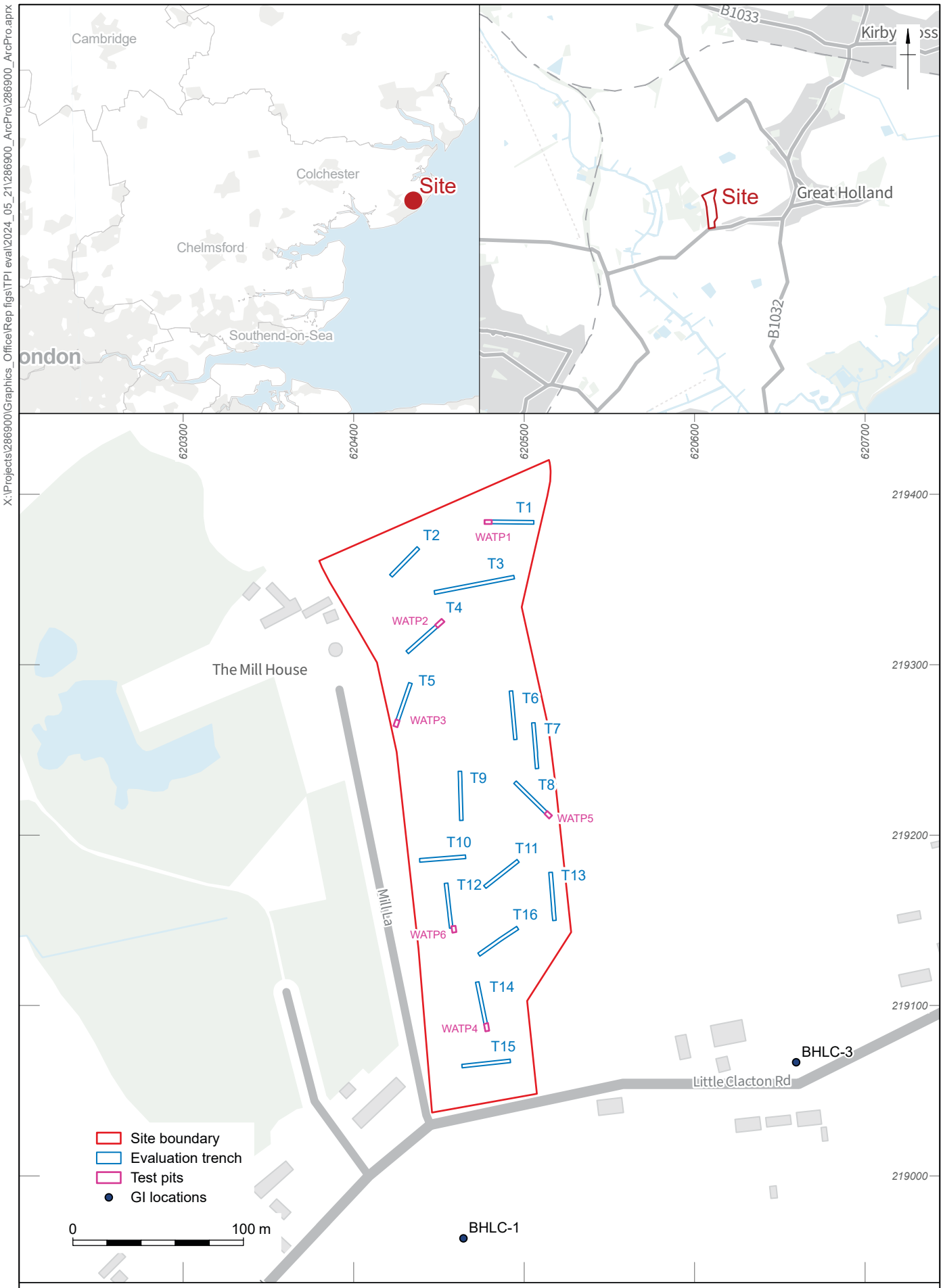

Coordinate system: OSGB 1936 British National Grid

Date: 22/05/2024	Created by: AW	Revision: 0	Scale: 1:3,000 at A4

Figure 1: Site location and plan

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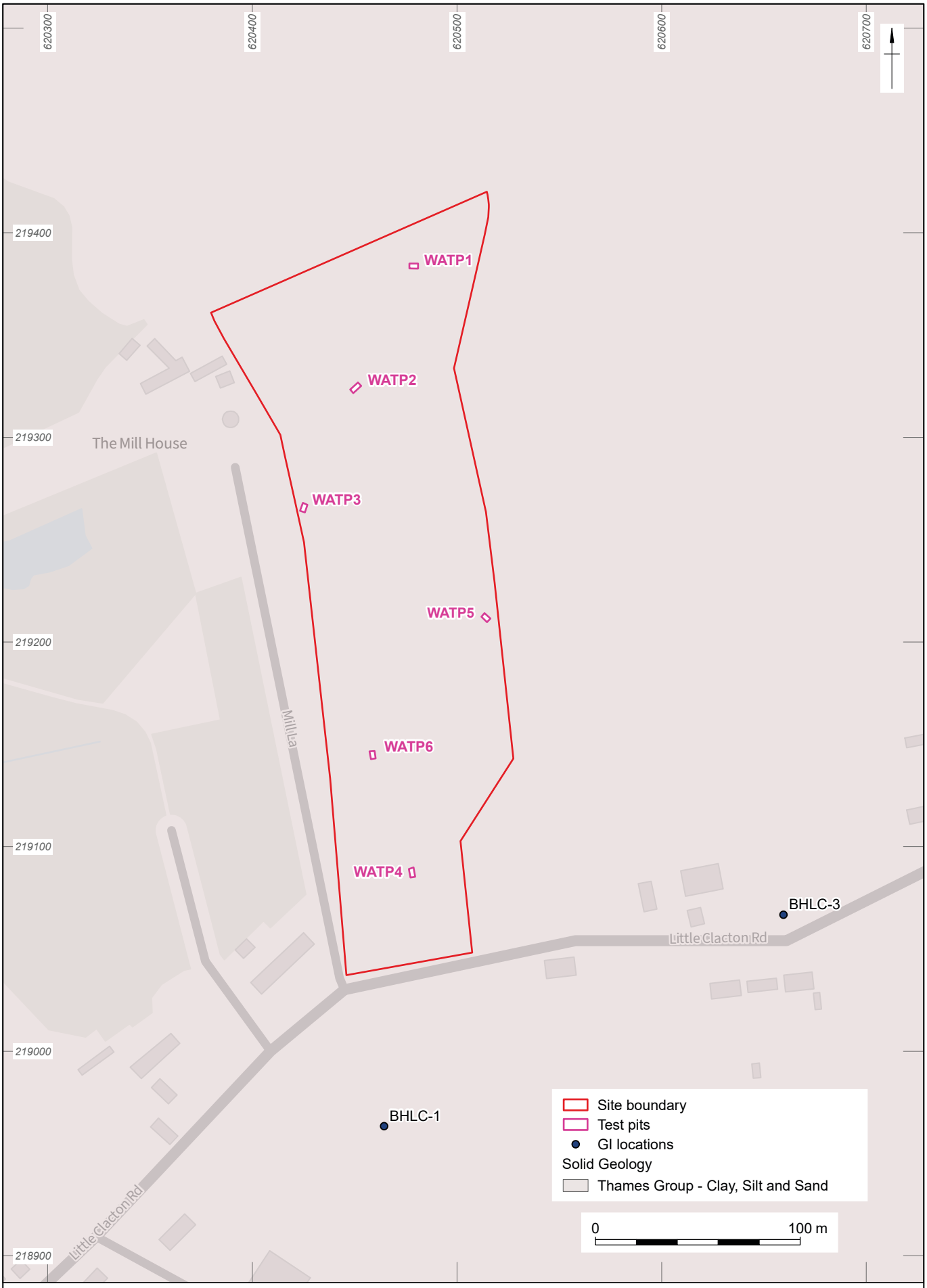

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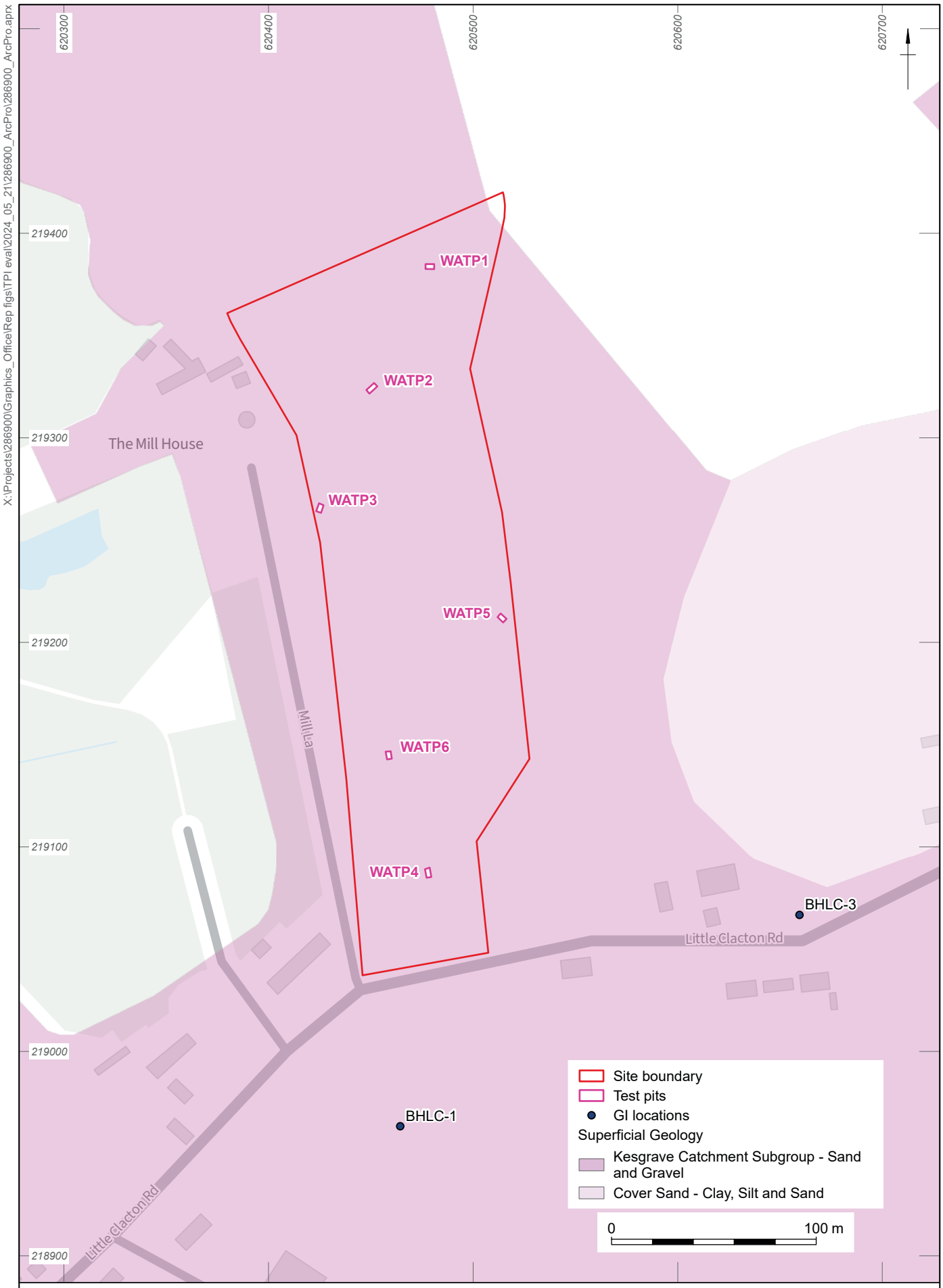
Figure 2: Solid geology



Coordinate system: OSGB 1936 British National Grid

Date: 22/05/2024	Created by: KJF	Revision: 0	Scale: 1:2,500 at A4

Figure 3: Superficial geology

619500
620000
620500
220500
220000
219500
219000
Birch Hoe Farm
Mayfields Farm
Pork La
Mill La
Little Clacton Rd
The Mill House
BHR-N
BHR-S
TM22SW15
TM22SW16
TM22SW14
TM22SW18
TM22SW20
TM22SW19
TM22SW13
TM22SW21
TM22SW12
TM22SW17
WATP1
WATP2
WATP3
WATP5
WATP6
WATP4
BHLC-3
BHLC-1
Site boundary
Transect 1
Transect 2
Test pits
GI locations
BGS borehole
Length
0 - 10m
11 - 30m
Superficial Geology
Kesgrave Catchment Subgroup - Sand and Gravel
Cover Sand - Clay, Silt and Sand
0
250 m
Coordinate system: OSGB 1936 British National Grid

Date: 22/05/2024 | Created by: KJF | Revision: 0 | Scale: 1:5,000 at A3
Figure 4: Transect locations
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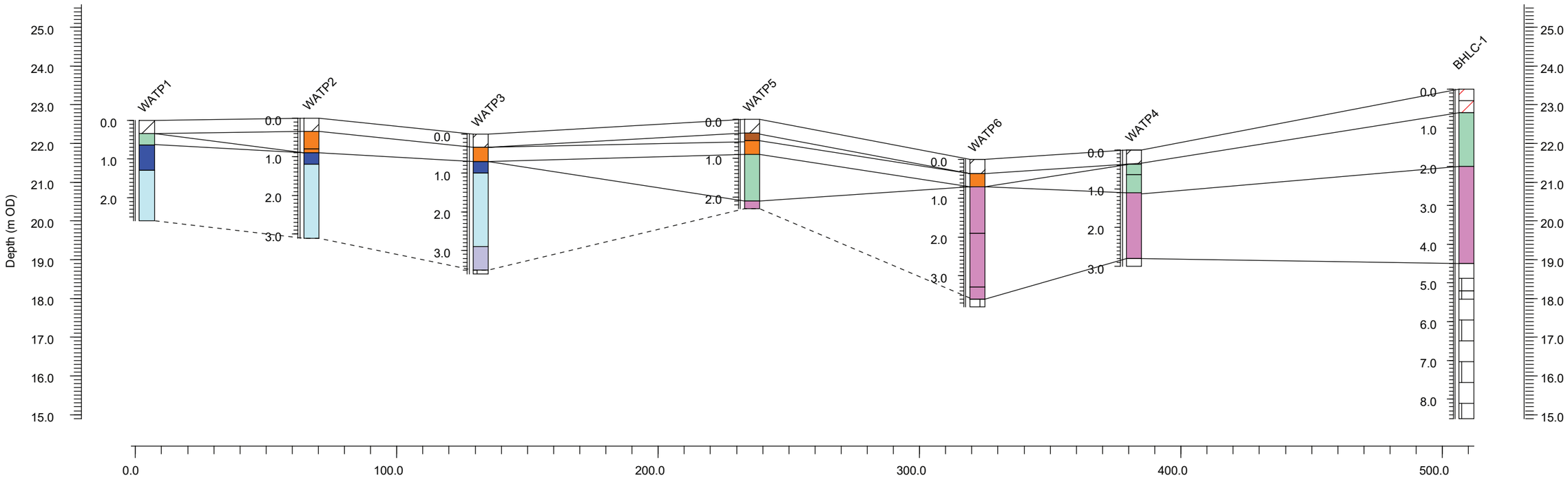
North

South

Site



Stratigraphy	
Made Ground	
Backfill	
Subsoil	
Gravelly Sands	Slope Deposits
Upper Sands	Coversands
Sands and Gravels	Cooks Green Gravel
Upper Sands and Gravels	
Lower Sands	
Lower Sands and Gravels	
Bedrock	

Coordinate system: OSGB 1936 British National Grid

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Figure 5: Transect 1

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North-West

South

Site

BHR-N

BHR-S

TM22SW15

TM22SW14

TM22SW18

TM22SW13

TM22SW12

TM22SW17

WATP1

WATP2

WATP3

WATP5

WATP6

WATP4

BHLC-1

Dry Valley Fill

Cooks Green Gravel

?? Cooks Green Gravel

Cooks Green Gravel

Depth (m OD)

Depth (m OD)

Distance (m)

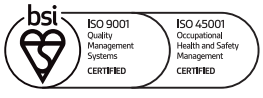
Stratigraphy	
Made Ground	
Backfill	
Topsoil	
Subsoil	
Clayey Sands	Aeolian / Slope Deposits
Sandy Clays	
Upper Sands	
Gravelly Sands	
Sands and Gravels	Kesgrave Group
Upper Sands and Gravels	
Lower Sands	
Lower Sands and Gravels	
Bedrock	

Coordinate system: OSGB 1936 British National Grid

Date: 22/05/2024	Created by: KJF	Revision: 0	Scale: Not to scale at A3

Figure 6: Transect 2

Figure 7: Test Pit 3; north-west facing section



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