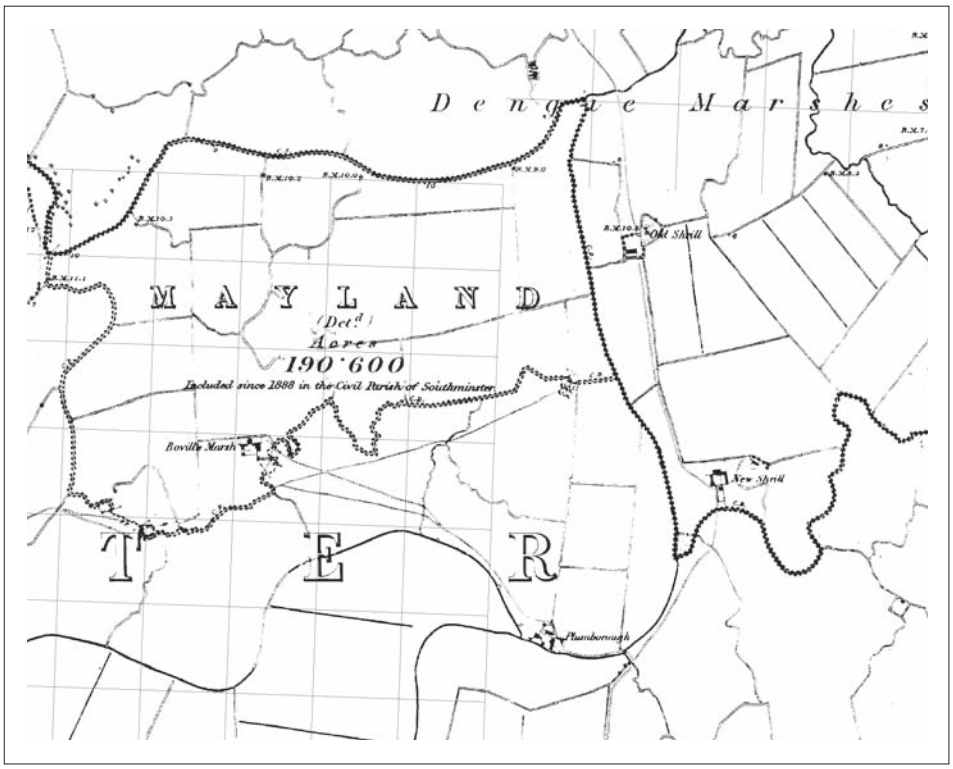
CAMBRIAN ARCHAEOLOGICAL PROJECTS

Middlewick Wind Farm Essex

Archaeological Field Evaluation



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Report No. 584

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REGISTERED IfA ORGANISATION

Middlewick Wind Farm
Essex

Archaeological Field Evaluation

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Non Technical Summary

This report results from work undertaken by Cambrian Archaeological Projects Ltd (CAP) for Engena Ltd on behalf of Ridge Wind Ltd at Middlewick on the Dengie Peninsula, Essex. An archaeological evaluation was undertaken prior to a planning application for a proposed wind farm being submitted. The evaluation is the third phase of archaeological investigations on the site of the proposed wind farm. Previous work included a desk based assessment and field walkover as well as a series of geophysical surveys. This report draws upon the results of the archaeological field evaluation.

Two nineteenth century ditches were observed in Trench 9 close to the site of an old windmill previously highlighted by the desk based assessment. No further archaeological features were noted in any of the trenches.

A geo-archaeological field investigation undertaken as part of the archaeological evaluation demonstrated that the area was characterised by tidal flats during the historic period, with relatively recent transformation to agricultural use. No organic sequences were identified.

No further archaeological , palaeo-environmental or geo-archaeological investigations are recommended.

1 Introduction

1.1 Location and scope of work

1.1.1 In August 2009 Cambrian Archaeological Projects (CAP) carried out an archaeological evaluation in advance of proposed construction of a wind farm at Middlewick on the Dengie Peninsula, Essex NGR TQ 99865 99493 (See Fig 1).

1.1.2 A total of nine evaluation trenches were excavated across the development area. Each trench measured 17m x 2m and was located on the site of a proposed wind turbine.

1.1.3 This work was undertaken for Engena Ltd on behalf of Ridge Wind Ltd.

1.1.4 The wind farm proposal includes the construction of nine wind turbines with associated hard-standings, a temporary construction compound, an electricity substation and a permanent meteorological mast. The installation of new access tracks and the upgrading of existing access tracks is also proposed.

1.1.5 A geo-archaeological field investigation was undertaken as part of the evaluation by Dr C. P. Green and Mr D. Young of Quaternary Scientific (QUEST), University of Reading.

1.2 Geology and topography

1.2.1 The topography of the area of proposed development is largely flat and un-wooded. The landscape is characterised by its flat topographical profile, drainage ditches and small nucleated village settlements.

1.2.2 The underlying solid geology of the Middlewick area is mainly composed of London Clay (British Geological Survey 1979).

1.3 Archaeological and historical background

1.3.1 This section provides a brief description of the archaeological and historical background to the area of proposed development. A more complete study of the areas archaeological and historical background is contained within the CAP desk based assessment carried out in November 2008 (Smith 2008).

1.3.2 The area of proposed development lies within a larger archaeological landscape dating back to the Neolithic, Bronze and Iron Ages. As part of the Maldon District Historic Environment Characterisation Project (Essex County Council 2008) the area of the proposed development was subject to assessment. The following are extracts from the aforementioned report:

1.3.3 *The Dengie Marshes are an extensive area of present and former salt and grazing marsh. During the Roman period the area was important for salt production. In the medieval and post medieval period the marshes were a valuable resource, providing pasture for sheep, salt making sites, fisheries and hunting grounds related to the settlements on the gravel ridge above the marshes. Finally during the Second World War defences were built into the sea wall to protect the area from German invasion.*

1.3.4 *Within the reclaimed marshland the remains of Late Iron Age and Roman salt working sites (Red Hills) are identified as burnt areas visible both from the ground and the air.*

1.3.5 *Exploitation of the wildfowl increased in the post medieval period with the construction and use of duck decoy ponds to catch wildfowl. Early examples of duck decoy ponds are thought to date from the 17th century.*

1.3.6 *During the Second World War a series of pill boxes were built into the sea wall. Two further WWII defences, a Minefield Control Tower and a Pill box on the southern edge of the area are protected as Scheduled Ancient Monuments.*

1.3.7 *The majority of the area originally formed part of the 'Dengie-form' type of coaxial, rectilinear field system, although it becomes increasingly less angular in the south due to the coastal influence. This field type is of considerable antiquity, and may have its origins in the mid-late Saxon period, if not before. However this pattern has largely been obliterated through modern farming techniques leading to boundary loss'.*

1.4 Aims and Objectives

The aims and objectives of the evaluation were:

1.4.1 To establish the presence/absence of archaeological remains within the area of proposed development.

1.4.2 To determine the extent, condition, nature, character, quality and date of any archaeological remains present.

1.4.3 To establish the ecofactual and environmental potential of archaeological deposits and features.

1.4.4 To appraise the likely impact of the development proposal on any surviving archaeological deposits and, if appropriate, to make suggestions for a mitigation

strategy or, where areas contain archaeology of national importance, for preservation *in situ.*

2 Evaluation Methodology

2.1 Scope of Fieldwork

2.1.1 An evaluation trench measuring 17m in length by 2m in width was excavated on the proposed site of each turbine. A total of nine trenches were excavated.

2.1.2 All excavation works were undertaken using a 13 ton 360° excavator under close archaeological supervision.

2.1.3 A suitably qualified geo-archaeologist from the University of Reading was present on site during the excavation of the trenches. Trenches were first cut to a depth of 1.2m. After consultation with the geo-archaeologist trenches were then cut to a full depth of 1.8m (the full foundation depth of the proposed wind turbines). A specialist report on the geo-archaeological findings is included as an appendix within this report.

2.1.4 Excavation ceased at a maximum depth of 1.8m All deposits within this depth were studied and, if suitable, sampled by the on site geo-archaeologist.

2.1.5 All works were undertaken in accordance with both the IFA's *Standards and Guidance: for an archaeological evaluation* and current Health and Safety legislation.

3 Evaluation Results

3.1 Soils and ground conditions

3.1.1 Generally the site and weather conditions were good with no rain during the ground works. Despite cutting trenches to a depth of 1.8m no ground water was encountered.

3.2 Distribution of deposits

3.2.1 Topsoil deposits were made up of a dark brown clay silt with infrequent small stone inclusions. These topsoil deposits were uniform across all the excavated trenches. Subsoil deposits were composed of clay with frequent and regular sand horizons throughout. A more detailed analysis of the distribution of deposits is available within the geo-archaeological report in Appendix III (Green & Young 2009).

3.3 Trench descriptions

3.3.1 The following are descriptions of each trench excavated during the archaeological evaluation. Images are not shown for every excavated area as they depict nothing other than a blank trench. Sample images are shown of trenches 1, 4, 6 and 8.

3.3.2 Trench 1 (Plate 1) measured 17m x 2m and was aligned north south. Removal of topsoil (101) and subsoil (102) within Trench 1 showed a clay natural at a depth of around 0.5m below the current ground surface. Excavation through the clay (103) revealed sandy lenses at a depth of 1.2m. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.3 Trench 2 measured 17m x 2m and was aligned north south. Removal of topsoil (201) and subsoil (202) within Trench 2 showed a clay natural at a depth of around 0.5m

below the current ground surface. Excavation through the clay (203) revealed sandy lenses at varying depths. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.4 Trench 3 measured 17m x 2m and was aligned north south. Removal of topsoil (301) and subsoil (302) within Trench 3 showed a clay natural at a depth of around 0.5m below the current ground surface. Excavation through the clay (303) revealed sandy lenses at varying depths. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.5 Trench 4 (Plate 2) measured 17m x 2m and was aligned north south. Removal of topsoil (401) and subsoil (402) within Trench 4 showed a clay natural at a depth of around 0.5m below the current ground surface. Excavation through the clay (403) revealed sandy lenses at varying depths. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.6 Trench 5 measured 17m x 2m and was aligned north south. Removal of topsoil (501) and subsoil (502) within Trench 5 showed a clay natural at a depth of around 0.5m below the current ground surface. Excavation through the clay (503) revealed sandy lenses at varying depths. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.7 Trench 6 (Plate 3) measured 17m x 2m and was aligned north south. Removal of topsoil (601) and subsoil (602) within Trench 6 showed a clay natural at a depth of around 0.5m below the current ground surface. Excavation through the clay (603) revealed sandy lenses at varying depths. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.8 Trench 7 measured 17m x 2m and was aligned north south. Removal of topsoil (701) and subsoil (702) within Trench 7 showed a clay natural at a depth of around 0.5m below the current ground surface. Excavation through the clay (703) revealed sandy lenses at varying depths. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.9 Trench 8 (Plate 4) measured 17m x 2m and was aligned north south. Removal of topsoil (801) and subsoil (802) within Trench 8 showed a clay natural at a depth of around 0.5m below the current ground surface. Excavation through the clay (803) revealed sandy lenses at varying depths. Excavation down to 1.8m showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.3.10 Trench 9 (Plates 5-8) measured 17m x 2m and was aligned north south. The desk based assessment had highlighted the fact that a Post medieval Windmill was located nearby. Removal of topsoil (901) and subsoil (902) within Trench 9 showed a sandy natural at a depth of around 0.5m below the current ground surface. Excavation through the sandy natural (903) revealed a ditch cut at 1.2m below the current ground surface. The ditch was running east west across the trench and was approximately 1.5m in width. Excavation of a section across the ditch showed it to be approximately 0.3m deep with a probable clay lining. The fill of the ditch was a largely organic black silt containing

pieces of wood, brick, glass and iron. Nineteenth century ceramics were also recovered from within the fill of the ditch. Later oxidation of the trench section showed a further ditch located above this one. This additional ditch also showed as a faint linear cropmark and ran on the same alignment as the earlier ditch. The additional ditch contained a dark brown silt fill with similar 19th century cultural items to those recovered from the first ditch. Excavation of a sondage down to 1.8m at the southern end of the trench showed further heavy clay deposits becoming darker in colour towards the base of the trench. No archaeological features were noted within this trench.

3.4 Evaluation Discussion

3.4.1 The evaluation showed that, after a depth of around 0.5m below the current ground surface, natural clay subsoils with occasional sandy lenses predominate. At a depth of around 1.2m these give way to mainly heavy clay deposits. At the greater depth of 1.8m dark brown/blue anaerobic silt clay deposits are also present on most areas subject to evaluation.

4 Finds

4.1 General Assemblage

4.1.1 All finds recovered during the course of the evaluation were modern, mainly nineteenth century in date. These came from the topsoil deposits of most trenches and were also located within the two ditches within trench nine.

4.1.2 The assemblage was made up of ceramic building material, ceramics, glass and iron objects. None of the finds were retained.

5 Samples

5.1 Palaeo-environmental Samples

5.1.1 Samples for further analysis by qualified geo-archaeologists were taken on site. The analysis of these samples is available in Appendix III (Green & Young 2009).

5.1.2 Column samples were taken from Trench 9 as well as bulk samples from Trench 6.

5.2 Radiocarbon Dating

5.2.1 No samples suitable for radiocarbon dating were located throughout the evaluation.

6 Discussion and Interpretation

6.1 Reliability of field investigation

6.1.1 Excavation of the trenches was unhampered. In four of the trenches ceramic land drains were encountered. These were all successfully removed undamaged and were reinstated during backfilling operations.

6.1.2 The overall findings of the evaluation are that very little is present in terms of archaeological features within the areas of proposed development and that heavy clay deposits extend to at least 2m below the current ground surface.

6.2 **Overall interpretation**

6.2.1 The evaluation work undertaken at Middlewick has shown that, at least in the areas under investigation, very little is present in terms of features of archaeological interest.

6.2.2 Excavation down to a full turbine foundation depth of 1.8m within each trench has shown no buried land surfaces or archaeological features of note.

7 Recommendations

7.1.1 Given the lack of archaeological finds or features located during the evaluation phase of work, combined with the relative lack of features located by both the desk based assessment (Smith 2008) and geophysical survey (Smith 2009), it is felt that no further archaeological work can be justifiably recommended.

7.1.2 The relative lack of anthropogenic material located by the on site geo-archaeologists (Appendix III) results in the recommendation that no further palaeo-environmental or geo-archaeological investigation work be carried out (Green & Young 2009).

8 Acknowledgements

8.1.1 Thanks to Essex County Council Historic Environment team for their assistance prior to and during the evaluation. To Daniel Young and Chris Green for their assistance with the geo-archaeology and to Maggie McDonald for her on site assistance.

9 Bibliography

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APPENDIX I:

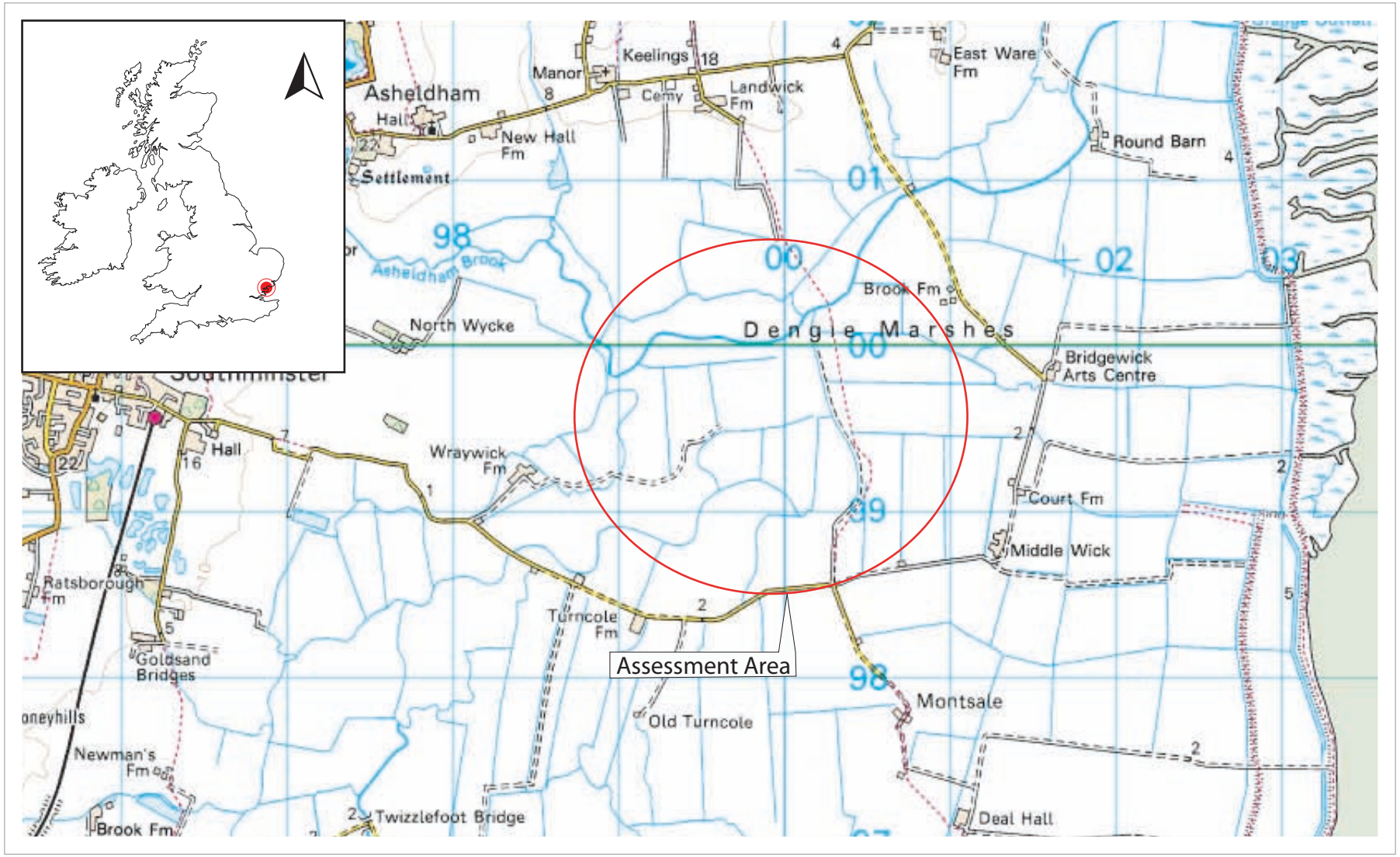

Fig 01: Map Showing Location of Assessment Area

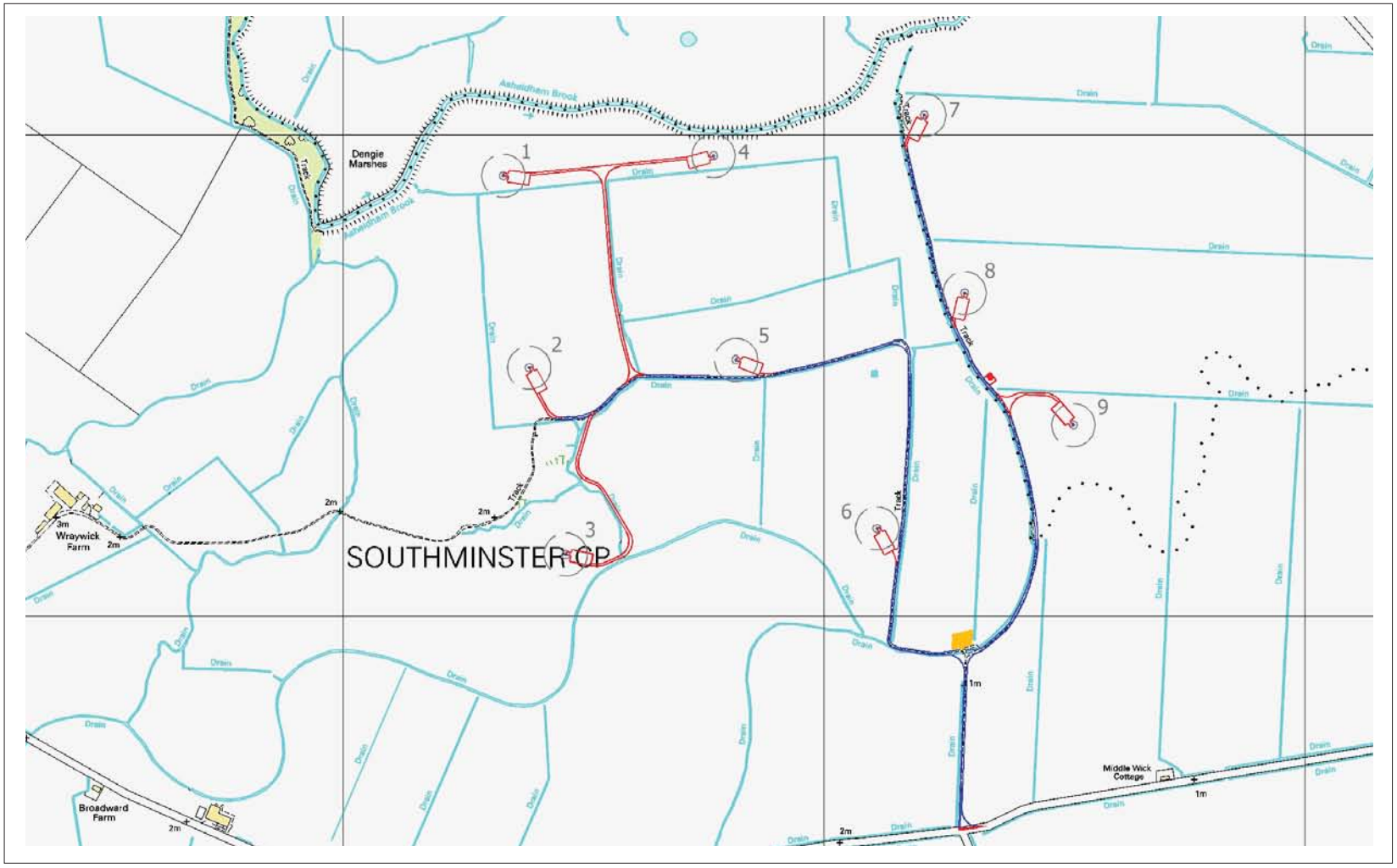

Fig 2: Map showing detailed locations of turbines/trenches

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APPENDIX II:

Plate 1: View along Trench 1, Looking north, Scale 1x2m

Plate 2: View along Trench 4, Looking north, Scale 1x2m

Plate 3: View along Trench 6, Looking north, Scale 1x2m

Plate 4: View along Trench 8, Looking north, Scale 1x2m

Plate 5: View along Trench 9, Looking north
Scales 1x1m & 1x2m

Plate 6: View of 1.8m deep section within Trench 9, Looking south east
Scale 1x2m

Plate 7: View of excavated ditch within Trench 9, Looking north west. Scale 1x1m

Plate 8: View of additional ditch noted within section, Looking west, Scale 1x1m

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APPENDIX III:

GEOARCHAEOLOGICAL FIELD INVESTIGATIONS: MIDDLE WICK, DENGIE MARSHES, ESSEX

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INTRODUCTION

This report summarises the findings arising out of the geoarchaeological field investigation undertaken by Quaternary Scientific (University of Reading) at Middle Wick, Dengie Marshes, Essex (National Grid Reference: TQ 998 994) in connection with investigations being undertaken by Cambrian Archaeological Projects. The fieldwork was undertaken to examine potential evidence for changes to the historic landscape such as marine incursion layers, buried sand-banks and cheniers across the site.

THE SITE

The site covers an area of *ca*. 1.0 km^2 in that part of Dengie Marshes known as Bovill's Marsh, about 3.0 km due east of Southminster in Essex. Dengie Marshes now form a substantial area of reclaimed salt marsh lying to the north of the estuarine River Crouch and mainly under arable cultivation. The ground surface in the area of investigation is very slightly undulating between 1.0m and 2.0m OD.

The bedrock beneath the site is the Lower Tertiary London Clay. Greensmith & Tucker (1971, Figure 3 Section 'A', Borehole 1) show the surface of the London Clay at a depth of just over 5.0m at a point just south of the present area of investigation. The sequence of deposits overlying the London Clay at this point is shown by Greensmith & Tucker as *ca*. 3.0m of 'Gravels with sand, silt or silt-clay matrix' succeeded upward by *ca*. 2.0m of 'silts & silty clays'.

RESULTS AND INTERPRETATION OF THE FIELD-BASED SEDIMENTARY DESCRIPTIONS

Nine trenches were opened forming an irregular grid at approximately 500m intervals across a roughly square area. The trenches were put down to 1.2m from the present ground surface with a deeper sondage to *ca*. 1.8m in each trench. When the trenching was undertaken arable crops had been recently harvested from the area. The soil was dry and deeply cracked. The field-based sedimentary descriptions for each trench are displayed in Tables 1 to 9.

Table 1: Lithostratigraphic descriptions of Trench T1, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00 to 0.60	10YR 4/3 brown; clayey silt; blocky and crumby; very common modern root remains; well-marked transition into:
0.60 to 1.80	10YR 4/3 brown with reddish brown mottling; clayey silt becoming more silty downward; massive; worm burrows.

Table 2: Lithostratigraphic descriptions of Trench T2, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00 to 0.30	10YR 4/2 dark greyish brown; clayey silt; blocky and crumby; very common modern root remains; well-marked transition into:
0.30 to 0.60	10YR 4/2 dark greyish brown; clayey silt; blocky; common modern root remains; worm burrows; gradual transition into:
0.60 to 1.80	10YR 4/3 brown; clayey silt; massive; modern root remains; worm burrows; mollusc remains below 1.30m including well-preserved shells of *Ostrea edulis* (oyster); sharp contact with:
1.80 to 1.90	Bluish grey; clayey silt; massive.

Table 3: Lithostratigraphic descriptions of Trench T3, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00 to 0.30	10YR 4/2 dark greyish brown; clayey silt; blocky and crumby; very common modern root remains; well-marked transition into:
0.30 to 0.60	10YR 4/2 dark greyish brown; clayey silt; blocky; common root remains; worm burrows; gradual transition into:
0.60 to 1.20	10YR 4/3 brown; clayey silt; massive; worm burrows; sharp contact with:
1.20 to 1.40	10YR 5/1 grey clayey fine sand with 2.5YR 2.5/1 black clay lenses; worm burrows; sharp contact with:
1.40 to 1.80+	10YR 4/3 brown; clayey silt with scattered sub-round and sub-angular clasts (20-40mm) becoming more common and larger (20-80mm) below 1.80m; massive.

Table 4: Lithostratigraphic descriptions of Trench T4, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00 to 0.30	10YR 4/2 dark greyish brown; clayey silt; blocky and crumby; very common modern root remains; well-marked transition into:
0.30 to 0.60	10YR4/2 dark greyish brown; clayey silt; blocky; common modern root remains; worm burrows; gradual transition into:
0.60 to 0.85	10YR 5/2 greyish brown; clayey silt with 10YR 5/1 grey fine sand lenses; worm burrows; sharp contact with:
0.85 to 1.20	Bluish grey clayey silt with a few fine sand lenses and partings; worm burrows; gradual transition into:
1.20 to 1.65	10YR 4/3 brown; clayey silt with beds of grey (10YR 5/1) fine sand - thicker beds of sand at 1.25-1.28m and 1.32-1.34m; worm burrows; gradual transition into:
1.65 to 1.70	2.5Y 4/3 olive brown; clayey silt; massive.

Table 5: Lithostratigraphic descriptions of Trench T5, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00-0.30	10YR 4/2 dark greyish brown; clayey silt with scattered clasts of flint; blocky and crumby; very common modern root remains; fragments of pottery and small pieces of chalk; well-marked transition into:
0.30-0.70	10YR 4/2 dark greyish brown; clayey silt; blocky; common root remains; worm burrows; gradual transition into:
0.70-1.60	10YR 4/3 brown; clayey silt with partings and thin beds of grey (10YR 5/1) fine sand at approximately 0.1m intervals, becoming more widely spaced downward; worm burrows; mollusc remains at 1.50m; sharp contact with:
1.60-1.80	Bluish grey; clayey silt; massive.

Table 6: Lithostratigraphic descriptions of Trench T6, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00-0.45	10YR 4/2 dark greyish brown; clayey silt; blocky and crumby; very common modern root remains; well-marked transition into:
0.45-0.80	10YR 4/2 very dark greyish brown; clayey silt; blocky; common modern root remains; mollusc remains common in lowest 100mm of unit; worm burrows; gradual transition into:
0.80-1.02	10YR 5/1 grey; clayey silt; with thin closely spaced grey (2.5Y 5/1) partings and thin beds of fine sand; worm burrows; mollusc remains very common, including *Hydrobia ulvae*, *Scrobicularia* (including conjoined valves) and *Ostrea*; small (up to 15mm) pieces of CBM; sharp contact with:
1.02-1.80	10YR 4/3 brown; clayey silt; with widely spaced grey (10YR 5/1) partings and thin beds of fine sand; worm burrows; mollusc remains common in upper 0.08m.

Table 7: Lithostratigraphic descriptions of Trench T7, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00-0.40	10YR 4/2 dark greyish brown; clayey silt; blocky and crumby; very common modern root remains, well-marked transition into:
0.40-1.00	10YR 5/6 yellowish brown; clayey silt; with closely spaced partings and thin beds of fine sand; worm burrows; gradual transition into:
1.00-1.75	10YR 5/4 yellowish brown; clayey silt with partings and thin beds of fine sand at regular 0.5-2.0mm intervals; worm burrows; mollusc remains at 1.0-1.2m (*Scrobicularia* including conjoined valves); sharp contact with:
1.75-1.80	Dark bluish grey; sandy silty clay; massive.

Table 8: Lithostratigraphic descriptions of Trench T8, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00-0.40	10YR 4/2 dark greyish brown; clayey silt, blocky and crumby; very common modern root remains; well-marked transition into:
0.40-0.75	10YR 4/2 dark greyish brown; clayey silt; blocky; common modern plant roots; worm burrows; gradual transition into:
0.75-1.20	10YR 5/6 yellowish brown; clayey silt with closely spaced partings and thin beds of fine sand; worm burrows; mollusc remains at 0.80-0.85m (*Scrobicularia* including conjoined valves); gradual transition into:
1.20-1.70	10YR 5/2 greyish brown; clayey silt with partings and thin beds of fine sand at regular 2.0mm-5.0mm intervals; worm burrows in upper part.

Table 9: Lithostratigraphic descriptions of Trench T9, Middle Wick, Dengie Marshes, Essex

Depth (m from surface)	Description
0.00-0.40	10YR 4/2 dark greyish brown; clayey silt, blocky and crumby; very common modern root remains; pieces of CBM, slate, glass and chalk; well-marked transition to:
0.40-1.10	10YR 4/2; clayey silt; blocky; common modern root remains; worm burrows; gradual transition to:
1.10-1.40*	10YR 5/6 yellowish brown; clayey silt with closely spaced partings and thin beds of grey (10YR5/1) fine sand, becoming increasingly closely spaced downward; worm burrows; gradual transition to:
1.40-1.63	2.5Y 4/3 olive brown; clayey silt with widely spaced partings and thin beds of grey (10YR 5/1) fine sand; worm burrows; sharp contact with:
1.63-1.90	Dark bluish grey clayey silt with thin widely spaced partings and thin beds of sand.
* Cut into this unit was a channel/ditch-like feature about 1.8m in width, extending across the trench, with fairly steeply sloping sides and occupied by a patchy mixture of silty and sandy sediment incorporating varying amounts of organic material - peaty in places. Pieces of brick and worked timber were also present.	

In all the trenches the sediment sequences comprise mainly silt and fine sand representing deposition on tidal flats. In all cases the upper part of the sequence has been affected by modern soil-forming processes, with numerous worm burrows penetrating the sediment to depths generally between 1.2m and 1.5m.

In all the trenches a dark greyish brown silty plough layer extended to a depth of at least 0.3m and more commonly 0.4m. Below this level, a clayey silt sub-soil horizon was present in which evidence of soil-forming processes was common and evidence of primary depositional structures was absent. In general, this horizon extended down to between 0.6m and 0.8m, but in Trench Tr9 it was deeper, down to 1.1m and in Trench Tr7 the plough layer rested directly on undisturbed intertidal sediments.

In most of the trenches (Tr4, Tr5, Tr6, Tr7, Tr8, Tr9) the soil passed down into brown clayey silts with horizontal partings and thin beds of fine grey sand. In the three trenches at the western end of the site (Tr1, Tr2, Tr3), the fine sand partings and beds were either absent (Tr1, Tr2) or only present in a thin (0.2m) unit towards the bottom of the recorded sequence (1.2-1.4m). The bulk of the sediment in these trenches was therefore undifferentiated clayey silt.

Shell beds were present in five of the trenches (Tr2, Tr5, Tr6, Tr7, Tr8). In trenches Tr5, Tr7 and Tr8 the only species noted was *Scrobicularia plana*, forming a single layer of scattered shells, but including complete individuals with the two valves articulated. In trench Tr2 several shell beds were present between 1.3m and 1.8m and included, in addition to *S. plana*, well-preserved specimens of *Ostrea edulis*. In trench TR6 between 0.7m and 0.9m a well-defined body of sediment, possibly a channel/ditch fill incorporated very large numbers of *Hydrobia ulvae* mixed with *S. plana* and a few *O. edulis.* This body of sediment also included pieces of CBM.

S. plana is a typical inhabitant of tidal flats or muddy estuaries; *Ostrea* is found living rather further off-shore, from the low water mark seaward; *Hydrobia ulvae* is commonest in the upper half of the intertidal zone.

In several of the trenches (Tr2, Tr5, Tr7, Tr8, Tr9) an abrupt colour change was noted at depths between 1.6m and 1.8m, from various shades of brown, representing oxidation of the sediment in the near-surface zone, to dark bluish grey, representing the colour of the unoxidised sediment at depth. Uniquely in trench Tr3 the silty and sandy sediment became increasingly gravelly below 1.4m.

Material of anthropogenic origin was absent in most of the sediments seen in the trenches. A few scattered pieces of CBM were commonly present in the plough layer and a rather more diverse assemblage of CBM, slate, glass, metal objects, etc. in the plough layer in trench TR9, close to the site of former buildings. Small pieces of chalk, no doubt originating as agricultural dressing, were present in several places in the plough layer. Anthropogenic material was also present in probable channel/ditch fills recorded in trench Tr9 at a depth of *ca*. 1.0m (CBM and wood) and in trench Tr6 at a depth of *ca*. 0.8m (CBM).

CONCLUSIONS

The sediments observed in the trenches put down at Middle Wick represent fine-grained deposition in the intertidal zone on tidal flats. In the upper part of all the recorded sediment sequences, primary depositional features have been obscured by soil development following reclamation and agricultural land-use in the recent historic past. The absence or limited development of a sandy facies in the western part of the area of investigation may indicate greater proximity to dryland areas on the higher ground further west around Southminster. In the same area, the presence of gravel towards the base of the sequence in trench Tr3 may indicate a thinning of the intertidal sediments in the same direction. The preservation of anthropogenic material in channel or ditch fills within the intertidal sequence probably relates to a phase or phases of occupation or land-use in the historic period prior to general reclamation of the area. However in neither of the features recorded (Tr6, Tr9) was there any indication of progressive accumulation of sediment over a sustained period of time. The mollusc fauna in the trench Tr6 feature appears to be consistent with natural accumulation in the upper part of the intertidal zone. The feature recorded in trench Tr9 might relate to a stage in the occupation of the buildings formerly present close to this site.

RECOMMENDATIONS

The recent environmental history of the site as an area of tidal flats is clearly reflected in the sedimentary sequences exposed in the trenches. There is no indication in these sequences of significant changes in the depositional environment apart from the evidence of relatively recent reclamation and transformation of the area to agricultural land-use. There are no organic sequences that might provide a more detailed insight into the palaeoenvironment of the area or its land-use history. There is no reason therefore to recommend further palaeoenvironmental or geoarchaeological investigation of the site.

REFERENCES

Greensmith, J.T. & Tucker, E.V. (1971) The effect of Late Pleistocene and Holocene sea-level changes in the vicinity of the River Crouch, East Essex. *Proceedings of the Geologists' Association*, **82**, 301-321.

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APPENDIX IV:

ARCHIVE COVER SHEET

Middlewick Wind Farm (MWF/09/EVA)

Site Name:	Middlewick Wind Farm, Essex
Site Code:	MWF/09/EVA
PRN:	N/A
NPRN:	N/A
SAM:	N/A
Other Ref No:	N/A
NGR:	TQ 99865 99493
Site Type:	Agricultural
Project Type:	Evaluation
Project Manager:	Chris E Smith
Project Dates:	August 2009
Categories Present:	Modern
Location of Original Archive:	CAP
Location of duplicate Archives:	N/A
Number of Finds Boxes:	-
Location of Finds:	-
Museum Reference:	-
Copyright:	CAPLtd
Restrictions to access:	None

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