Appendix E - Archaeological Impact Assessment

Fenndyke Solar Farm

2 April 2014
Produced for
Be renewables

Prepared by
Sally Hales

Export House
Cawsey Way
Woking
Surrey
GU21 6QX
UK

T +44 (0)1483 731000
F +44 (0)1483 731003

NOTE BY BE RENEWABLES LIMITED

This planning application is a resubmission of the documents for planning application ref: H20-0017-14 which was unanimously rejected at the South Holland District Council (SHDC) Planning Committee Meeting under Decision Notice dated 11th July 2014.

Following the rejection of the application – BE Renewables Limited (BERL) held a meeting with SHDC's Mr Richard Fidler and Mr Paul Jackson. BERL proposed an amended development boundary. It was agreed that rather than proceed to an appeal against the rejection of the previous planning application, BERL would prepare a revised scheme based upon the amended boundary for consideration by SHDC Planning Department and subsequent Planning Committee.

This report was prepared to accompany and assess the area of land associated within the development land boundary area for the previously submitted application. As this is a resubmission, with an amended development boundary (a reduced area from within the original boundary) it is appropriate to retain the use of this Archaeological Impact Assessment.

Please note: BERL has **not** changed or amended any of the survey assessments or conclusions.

The report is submitted simply to accompany the amended planning application as the overall findings are still relevant and applicable to the resubmission.

Document Control Sheet

Project Title Fenndyke Solar Farm

Report Title Archaeological Impact Assessment

Report ref no.

Version

0.2

Status Issue

Report Date 7 April 2014

Record of Issue

Version	Status	Author	Date	Checked by	Date	Approved by	Date
0.1	Draft	SH	02/04/14	AW	02/04/14	SH	02/04/14
0.2	Draft	SH	04/04/14	AW	07/04/14	SH	07/04/14

Distribution

Date	Organisation	Contact	Format	Copies
07/04/14	BE Renewables	B Ayres	E	1

TABLE OF CONTENTS

Document Control Sheet i

1 Introduction..... 1

2 Baseline Information 2

3 Assessment of Impacts 7

4 Proposed Mitigation 10

1 Introduction

BE Renewables have submitted a planning application (number H20-0017-14) to South Holland District Council for the construction of a solar farm in the parish of Sutton St James at Grid Reference TF3765 1721. The planning application boundary covers an area of approximately 33 hectares, with a development area of 25.3 hectares.

Lincolnshire County Council Historic Environment Team (LCC) has requested further information (prior to determination of the planning application) regarding the potential archaeological impact of development on the site. LCC has prepared a brief for the work in the form of geophysical survey to be followed by trial excavation.

This report provides more detail on the impact of the development on potential archaeological remains at the site and makes recommendations for archaeological mitigation.

2 Baseline Information

2.1 Geology and Topography

The following summary is taken from the Soil Resources and Agricultural Land Classification survey and report prepared by Rodney Burton in March 2014 (refer to Appendix A).

The solid geology of the site consists of Ampthill Clay mudstones. These are covered by Quaternary deposits from the Post-glacial period, which are variable thicknesses of marginal-marine and estuarine silts and clays deposited during a marine transgression. The silts and clays are here classed as 'Terrington Beds' saltmarsh and tidal creek deposits by the British Geological Survey. Very thin freshwater organic layers occur within some of the clays. These beds overlie the Fen Clay deposited by one or more earlier marine transgressions, commonly with a distinct band of freshwater peat separating them.

The site is divided into four rectangular fields and lies between +2.4 m OD on a low ridge in the east, and +0.7 m OD in the centre and west. A roddon ridge which forms the highest ground extends north–south at the north-eastern end of the site (refer to Appendix E (i) for the orientation and extent of the roddon ridge). The lowest land is between +0.5 and +1.0 metres, these low spots receive surface and sub-surface runoff from the surrounding higher areas.

Hand auger borings were made to depths of 1.20m to 1.90m at a total of 36 investigation sites arranged at the intersects of a 100-m grid. The results indicate;

- the roddon ridge has deep, calcareous light silty soils;
- apart from the roddon ridge, marsh clays form the lower subsoil across most of the site;
- medium silts tend to form the topsoil and sometimes the upper subsoil where influenced by roddon (originally marsh creek) conditions;
- even on the roddon ridge in the north east there are medium silty topsoils and upper subsoils;
- the plough layer at 30 of the 36 investigation sites is 35 cm or more thick;
- practically all soil layers away from the roddon ridges are non-calcareous, a state which does not promote soil structure in heavy soils;
- the slowly permeable layer usually occurs in the upper subsoil, sometimes immediately beneath the deep plough layer of with an intervening layer;
- upper subsoils even in Terrington Beds material tend to be grey and the traditional browner colours start in the lower subsoil or deeper;
- one or more thin peat and organic bands occur in the subsoils of clayey soils in low-lying areas, but do not seem to represent one continuous layer.

2.2 Archaeological Background

2.2.1 Lincolnshire Historic Environment Record

A search was made of the Lincolnshire Historic Environment Record for archaeological sites and findspots within a kilometre study area of the site. There is one entry; a historic building record was undertaken on Rose Cottage, Old Fendyke by APS in 2003.

2.2.2 Designated Heritage Assets

2.2.2.1 Scheduled Monuments

There is a Scheduled Monument near the south eastern boundary of the site Boundary Cross. The cross is located on a grass verge on the north west side of a crossroads. It is medieval in date and is constructed of limestone. The monument includes the base, comprising a socket stone, and part of the shaft. The cross is also Listed Grade II.

2.2.2.2 Listed Buildings

Sandy Gate Farmhouse is a late C18 Grade II listed building located to the south east of the site.

2.2.2.3 Conservation Areas

The site is not located within a Conservation Area. There are no Conservation Areas within the study area.

2.2.2.4 Registered Parks and Gardens

There are no Registered Parks and Gardens within the study area.

2.2.2.5 Registered Battlefields

There are no Registered Battlefields within the study area.

2.2.3 Previous Archaeological Work

No archaeological investigations have taken place within the proposed development site. One event is recorded within the 1km study area. In 2003, Archaeological Project Services (APS) carried out a Level 1 building survey of the Post-Medieval Rose Farm Cottage.

2.2.4 Historic Landscape Characterisation

The site lies within Character Zone FEN2, The Eastern Fens within The Fens Character Area (Lord and Mackintosh 2011, The Historic Character of The County of Lincolnshire). There are some nucleated settlements scattered throughout the character zone, located on ridges of slightly higher ground or roddons. There are also some linear settlements, which are formed by the infilling of several dispersed settlement types within the character zone. All other settlements in the character zone comprise a combination of isolated farmsteads and ragged linear settlements along the main roads. Although the overall settlement pattern is dispersed, the density of settlement is quite high by comparison to other areas of fen or marsh in the county as a whole.

Much of the planned enclosure landscape survives to this day, although this survival is probably due to the necessity of retaining field boundary drains to ensure the continued viability of the agricultural land. Throughout the character zone there is a strong feeling of openness, with few hedges demarcating fields. There are also some areas of surviving ancient enclosure which are focussed around the nucleated settlements in the north and south of the character zone and around the linear settlements in the centre of the character zone.

There is little evidence for occupation in this character zone during the prehistoric, but extensive evidence that the land within it was utilised at this time. There have been many artefact finds made throughout the zone from the prehistoric period.

Generally, there was probably very little or no settlement within the character zone during the early medieval period. It is not clear whether any of the Roman settlements continued into the early medieval period, although given the gradual inundation of the fens towards the end of the Roman period this seems unlikely.

Reclamation of the fenland landscape began in earnest during the eighteenth and nineteenth centuries. During this time many new drainage channels were cut and pumping stations constructed to overcome the challenge of draining land that was

below sea-level. The reclaimed land was divided into a pattern of rectilinear fields, separated from one another by drains rather than hedges.

The survival of the prehistoric and Roman landscape is relatively minimal, due in part to the inundations which have covered the landscape from this period. The survival of the medieval landscape is evident in the survival of the ridge and furrow open field system of agriculture visible in the survival of some field boundaries. The historic settlement cores still retain much of their historic character with most modern development being small scale. Across the rest of the character zone there is very little or no survival of the medieval landscape, due in the main to the drainage of the fens in the eighteenth and nineteenth centuries. The planned enclosure landscapes of the eighteenth and nineteenth centuries are the most readily identifiable historic landscapes in the character zone, due to their extensive survival.

2.2.5 Archaeological and Historical Overview

The time periods discussed can be broadly divided as follows:

- Prehistoric:
- Palaeolithic 250,000 – 10,000 BC
- Mesolithic 10,000 – 4,000 BC
- Neolithic 4,000 – 2,500 BC
- Bronze Age 2,500 – 700 BC
- Iron Age 800 BC – AD 43
- Roman AD 43 – 410
- Early Medieval AD 410 – 1066
- Medieval AD 1066 – 1540
- Post-Medieval AD 1540 – 1900
- Modern AD 1900 – present

2.2.5.1 Prehistoric

No archaeological finds or features from the prehistoric period have been found within the proposed development site or the study area.

2.2.5.2 Romano-British

No archaeological finds or features from the Romano-British period have been found within the proposed development site. Approximately 700m to the east of the site, east of Birds Drove, lie the remains of a Romano British settlement consisting of four dark patches with finds of late 2nd to 4th century pottery.

A small number of Romano-British settlements have also been identified from cropmarks in the wider vicinity of the site. North of Horsemoor Drove lie the remains of a Romano British settlement approximately 1.5km to the northeast of the site which was exposed by drain widening in 1953. An undulating ground surface was seen in section truncated by ditches. The ditches and former ground surfaces had been covered by clays and silts from later flooding events. The ditches contained finds of pottery dating from 1st to 2nd century and 2nd to 4th century. The site is visible on

aerial photographs as crop marks or soil discolouration indicating roddons and possible enclosures.

Another Roman settlement was discovered east of Taylors Drove approximately 1.5m east of the site. The site consisted of numerous sherds of Romano-British pottery including colour coated wares which were exposed by deep ploughing.

Extensive Romano-British remains are also present at Fleet Fen west of Sutton St James.

2.2.5.3 Saxon

No remains dating from the Saxon period have been found within the site boundary or the study area. Sutton St James derives its name from the Old English suth+tun, or "southern village". St James was added making reference to the parish church. Sutton St James was an ancient Chapelry of Long Sutton. The parish was in the ancient Elloe Wapentake in the South Holland district.

2.2.5.4 Medieval

A scheduled Medieval boundary cross marking the former boundary of the parish of Sutton St James is located on a grass verge on the south eastern boundary of the site. The monument includes the base, comprising a socket stone, and part of the shaft. The socket stone is constructed from a single limestone slab of square section. On the west side, where the ground slopes steeply towards the Old Fen Dike, it stands to a height of 0.35m above the ground surface, and is supported on a bed of modern concrete; on the south east side it is partially buried, the top of the stone lying approximately level with the ground surface of the roadside verge. The upper edge of the stone is chamfered. Set into the socket stone with lead is a shaft fragment, rectangular in section with crocketed angles and standing to a height of 0.9m.

Sutton St. James used to be a chapelry of Long Sutton before being formed into its own parish. The original church of St James was built in 1302 with the tower added in the 15th century.

2.2.5.5 Post Medieval

There have been no finds dating from the Post-Medieval period made within the site boundary. The Grade II listed Sandy Gate Farmhouse lies approximately 900m to the south east of the site. It dates from the late 18th century and is constructed of red brick with a pantile roof and two gable stacks. The farmhouse is two built of storeys plus a garret.

3 Assessment of Impacts

Baseline information indicates the site lies in an area with limited potential for the presence of archaeological remains. No archaeological sites or finds are recorded within the site boundary.

The roddon in the north eastern part of the site has the highest potential for the survival of archaeological remains due to the use of higher ground for historical settlements including Roman. There could be an impact to potential below ground archaeological remains by activities such as topsoil stripping for access roads, linear trenching for the cable runs and excavations for footings/foundations to proposed panels and substations (refer to Appendix E (i) for the extent of the roddon and approximate extent of proposed solar panels).

Within the area of the roddon (refer to Appendix E (i) – Soft Landscape Proposals), panels would be secured on concrete shoes thus avoiding the need to dig/auger any foundations (refer to Figure 3.1 and Figure 3.2).The proposed substation and string invertors will also be located beyond the area identified as a roddon, to reduce the potential for impacting upon archaeological remains.



Figure 3.1 *- Sketch showing the use of concrete foundations, to avoid the need for below ground foundations or ground screw fixings, to be used where there is an identified risk to below ground archaeology.*



Figure 3.2 *- Image showing how the transformers would be positioned on a concrete pad, reducing the need for significant below ground excavations.*

Property of BE Renewables Limited

Although the remainder of the site has more limited archaeological potential, construction design mitigation will be put in place to mitigate any adverse impacts, this will comprise:

- Construction operations are to be undertaken under the supervision of site based archaeologist.

- The use of string invertors to be co-located at the end of panels runs and mounted on standalone panels to reduce the need for additional ground fixings (Figure 3.3).



Figure 3.3 *- Image showing how the string inverters, these would located on stand alone panels, raised above ground level and would not require below ground foundations or significant ducting.*

Property of BE Renewables Limited

- The majority of the cabling will be slung from below the panels rather than buried (Figure 3.4)



Figure 3.4 *- Image showing the connections running along the panels to connect to the inverters, rather than being buried below ground - Property of BE Renewables Limited*

- Posts will be augured into the ground, the arisings from which can be inspected by a site based archaeologist.

- The substation consisting of cabinets located on a shallow concrete pad would be located beyond the extent of the existing roddon (refer to Appendix 2 – Site layout).

The Scheduled Monument adjacent to Old Fen Dike would be preserved in situ and the immediate area around the site managed as species rich grassland, forming part of the broader 50m wide buffer extending along the length of the road. Traditional wattle fencing along the boundary of the development site with associated hedgerow would screen the majority of views of the solar panels reducing the potential for significant impacts on the setting (refer to Appendix C (iii) and (iv) for details of the proposed soft landscaping and wattle fencing respectively).

Sandy Gate Farmhouse (II) located approx 500m to the south east would not be directly affected by the proposed development site; its setting within the broader fenland landscape would not be materially impacted upon either.

4 Proposed Archaeological Mitigation

The baseline study indicates there is a low archaeological potential within the proposed development site. Construction methodology has been designed to minimise any impacts to below ground deposits, as a result there will be reduced potential for impacts on remains associated with the roddon in the north eastern part of the site which has been identified as having greater archaeological potential.

It is therefore suggested that post-determination and in advance of any construction operations a geophysical survey and trial excavation is carried out to determine the extent and location of any potential archaeological remains and any construction activities for the substation and any other ground breaking works are monitored by a qualified archaeologist in accordance with a Written Scheme of Investigation for Archaeological Monitoring approved by LCC.