Lowestoft Northern Spine Road
Corton, Lowestoft and Oulton CPs

Desk-Based Assessment

SCCAS Report No. 2012/193

Client: Suffolk County Council (Transport Strategy)

Author: M. Sommers
January 2013

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Lowestoft Northern Spine Road
Corton, Lowestoft and Oulton CPs

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Author: M. Sommers
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Curatorial Officer: Dr J. Tipper

Project Officer: M. Sommers

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Client Reference: n/a

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Disclaimer

Any opinions expressed in this report about the need for further archaeological work are those of the Field Projects Team alone. Ultimately the need for further work will be determined by the Local Planning Authority and its Archaeological Advisors when a planning application is registered. Suffolk County Council's archaeological contracting services cannot accept responsibility for inconvenience caused to the clients should the Planning Authority take a different view to that expressed in the report.

Prepared By: *******************
Date: *******************
Approved By: *******************
Position: *******************
Date: *******************
Signed: *******************
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List of Abbreviations used in the text

CP County Parish
DBA Desk-Based Assessment
HER Historic Environment Record
OS Ordnance Survey
PAS Portable Antiquities Scheme
PDA Proposed Development Area
PPS 5 Planning Policy Statement 5
SM Scheduled Monument
SCCAS Suffolk County Council Archaeological Service
SSSI Site of Special Scientific Interest
Summary

This archaeological desk based assessment (DBA) has been undertaken to inform the planning process in advance of a proposed scheme to construct the Lowestoft Northern Spine Road. This DBA includes an examination of the Suffolk Historic Environment Record (HER) and a historic map and documentary search.

Other than an area of undated cropmarks close to the southern end of the PDA, the results of this DBA have revealed very little in existing records to suggest the PDA has any specific potential for encountering archaeological remains of any period. This is primarily due to the fact that little or no archaeological work has been undertaken in the vicinity of the PDA and consequently the potential for encountering archaeological features or deposits is unknown. It is therefore recommended that a trenched evaluation of the road line be undertaken to confirm the actual presence or absence of any significant archaeological sites.

It is the County Council Planning Archaeologist who will make any decisions regarding the need for, and the extent of, any archaeological works and consultation should be at the earliest possible opportunity, as archaeological investigations can have considerable time and cost implications.
1. Introduction

1.1 Project background

This archaeological Desk-Based Assessment (DBA) has been prepared by Mark Sommers of Suffolk County Council Archaeological Service’s Field Team for Suffolk County Council (Transport Strategy).

This DBA is the first stage of a possible programme of archaeological works to establish the archaeological potential of the Proposed Development Area (PDA).

The proposed development is for a new road running north to south in an area to the north of the Suffolk town of Lowestoft. Its purpose is to create a link from the roundabout at the northern end of Millennium Way (A1117) with the Yarmouth Road (A12) to the north of Lowestoft, as part of a route across Lowestoft for the A12 trunk road from London to Great Yarmouth.

1.2 Site description

The subject of this DBA comprises a linear PDA, some 1.1km in length, centred at TM 5314 9601, situated to the north of the Suffolk town of Lowestoft (Fig. 1. Location plan). It runs across parts of the county parishes of Corton, Lowestoft and Oulton.

The majority of the proposed route runs across arable and an area of grassland clearly retained between modern developments to enable the construction of the proposed road. It crosses a public road, Blundeston Road, and passes through a private house and garden plot (Oak Trees, Blundeston Road, see Fig. 8). The PDA also runs across a private trackway and a small stream.

A site visit was made on 11th January 2013, to determine the presence of any factors likely to impact on the overall assessment of the archaeological potential of the PDA (Section 3).
Figure 1. Location of the PDA
(marked in red, parish boundaries dashed black)
1.3 Topography and geology of the PDA

The PDA runs north to south across an east to west valley drained by a small stream. The valley sides slope very gently down from heights of c. 15m OD down to c. 5m OD at the valley bottom (Fig. 2). The stream drains a small lake situated to the east which is in turn fed by a natural spring. The stream flows to the west with the water eventually draining into the River Waveney, which is situated c. 3km to the west.

The landform in the area of the PDA consists of gently rolling or flat plateaus. The underlying geology comprises a mixture of glacial deposits, such as chalky clay tills, with occasional sandy drift deposits. There are also areas of with a variable covering of periglacial wind-blown material, with occasional patches of more clayey subsoils.

Figure 2. Contour map
1.4 Scope of this report

In order to set the PDA in its archaeological context a study area of 500m either side proposed route was selected for examination (Fig. 3).

In accordance with PPS 5, the Government’s guidance on planning for the historic environment (www.communities.gov.uk/publications/planningandbuilding/pps5), and a brief provided by Dr J. Tipper of the SCCAS (Appendix 1), this assessment examines the available archaeological sources. These include the Suffolk HER and all readily available cartographic and documentary sources.

1.5 Aims

To determine as far as reasonably practicable from the existing records, the previous landuse, the nature of the archaeological resource and the potential resource within the PDA and the surrounding study area.

1.6 Methods

The methodology involved interrogating the following sources of data to meet the aims of this DBA.

- A search of the Suffolk HER for any records within a minimum of 500m from the proposed route. A synthesis of these results are described and mapped in the main body of the report, Section 2.1.

- A search for all listed buildings within and adjacent to the PDA. A summary is presented in the main report, Section 2.2.

- An assessment of all cartographic sources relevant to the PDA to identify historic landuse, the siting of old boundaries and earlier buildings, Section 3.

- Aerial photographic evidence within a 500m radius of the site was analysed and, relevant archaeological and topographic features were plotted by a suitably qualified specialist with relevant experience, Section 4.
• A site visit was made to assess surviving structures and the potential for the survival of archaeological deposits, Section 5.

• Previously undertaken historical documentary searches relevant to the PDA were consulted.

• Ascertain whether there are any other constraints on the site (SSSI, etc.)

1.7 Legislative frameworks

PPS 5 (March 2010) provides guidance for planning authorities, developers and others on planning and the historic environment. This guidance advises developers to discuss their plans, preferably at a pre-planning stage, with the County Archaeological Planning Officer for any possible archaeological constraints on their development proposal. The planning guidance sets out to protect nationally and locally important monuments and their settings. There will be a presumption in favour of preservation in situ of important remains. In certain circumstances field evaluation will be carried out to enable an informed decision to be made. On sites where there is no overriding case for preservation in situ, provision will be made for their recording and excavation prior to development.

The Ancient Monuments and Archaeological Areas Act of 1979 statutorily protects Scheduled Monuments (SMs) and their settings as nationally important sites. There are no SMs located within the study area.

Listed buildings are protected under the Listed Buildings and Conservation Areas Act of 1990. This ensures that listed buildings are given statutory protection against unauthorised demolition, alteration and extension. Buildings are listed because they are of special architectural importance, due to their architectural design, decoration and craftsmanship; also because they are of historical interest. This includes buildings that illustrate important aspects of the nation's social, economic, cultural or military history or have a close association with nationally important persons or events. There are three Listed Buildings within the study area.
A Site of Special Scientific Interest (SSSI) is an area that has been notified as being of
special interest under the Wildlife and Countryside Act of 1981, due to its flora, fauna or
geological or geomorphological features. There are no SSSI within the PDA or the study
area.

2. Results

2.1 Suffolk HER search

The HER only represents the archaeological material that has been reported and only
represents the ‘known’ resource. It is not therefore, a complete reflection of the whole
archaeological resource of this area as other sites may remain undiscovered, this is
considered as the ‘potential’ resource.

There are six HER entries recorded within 500m of the PDA. These are summarised in
Table 1 below. The HER entry locations are marked in Figure 3. Discussion on the
significance of these entries appears below.

<table>
<thead>
<tr>
<th>HER No.</th>
<th>Description</th>
<th>Nature of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>COR 050</td>
<td>Findspot</td>
<td>Scatter of artefacts dating form the Late Saxon through to the post medieval period recovered during metal detecting. They consist of: a sherd of Late Saxon Thetford ware pottery, ten sherds of medieval to post medieval pottery, and two medieval to post medieval bronze thimbles.</td>
</tr>
<tr>
<td>LWT 028</td>
<td>Earthwork</td>
<td>Akethorp Manor Bank - a surviving medieval boundary ditch and part bank of the manor of Akethorp.</td>
</tr>
<tr>
<td>LWT 036</td>
<td>Ancient Woodland</td>
<td>Foxburrow Wood - a designated ancient woodland.</td>
</tr>
<tr>
<td>LWT 141</td>
<td>Documentary</td>
<td>Group of possible ditches marking possible trackway and enclosures visible as cropmarks on aerial photography.</td>
</tr>
</tbody>
</table>
OUL 006  Documentary  Lothingland Hospital (now Oulton Park Care Home) - built on the site of the Mutford and Lothingland Incorporated Hundred Workhouse erected in 1765. All original buildings were demolished during the 20th century. The last surviving building, a late 19th century chapel, was recently demolished.

OUL 009  Findspot  A large quantity of medieval glazed and part-glazed pottery exposed amongst the roots of a fallen tree, also a floor or wall tile with stamped decoration. Thought to be from a medieval kiln site although no wasters or kiln debris noted.

Table 1: Summary of HER data within c. 500m of the PDA

![Figure 3. HER entries (red) and Listed Buildings (black crosses) within the 500m study area (study area marked in blue, proposed road in black)](image)
Interrogation of the HER has revealed a small number of sites within the search area although none of these lie directly on the proposed route.

The only site recorded on the HER of any significance to the proposed road scheme is the area of cropmarks close to the southern end of the route. Although these are outside the PDA there is a potential that the archaeological features suggested by the cropmarks could extend to within the proposed road line.

2.2 Listed Buildings

A search was carried out on the Suffolk HER and on the Heritage Gateway web site http://www.heritagegateway.org.uk the results of which indicated that three Listed Buildings lie within the 500m search area. Their positions are plotted in Figure 3; descriptions follow below:

**LB1 - PARKHILL HOTEL**

List Entry Number: 1209784  
Location: Parkhill Hotel, Parkhill  
Grade: II  
Date first listed: 03-Oct-1977 (last amendment: 21-Jun-1993)  
Listing NGR: TM5295295877

House, now a hotel. Late 18th century. Brick, rendered to west, south and east. Slate roofs to west and south, otherwise red or black-glazed pantiles. Double-pile plan with a linking range across the south side. 2 storeys. Entrance to west side. 4 bays, the third bay (from left) elaborated into a full-height entrance bow. The ground floor of the bow is supported on a pair of fluted Greek Doric columns under a plain architrave, providing a porch for the 6-panelled door with its overlight and panelled reveals. One 8/8 sash either side of entrance with exposed boxes. The first floor of the west and south returns has 20th century tile-hanging. Four 8/8 sashes to first floor, that over the entrance bowed. Gabled roof, hipped to the south. Stack in valley between the two piles. The south front with 2 late 19th century canted ground-floor bays and one French window above the western bay. Hipped roof to this part with a central ridge stack.

INTERIOR. Stick baluster staircase with ramped and wreathed handrail.
LB2 - THE LODGE
List Entry Number: 1292467
Location: The Lodge, Parkhill
Grade: II
Date first listed: 03-Oct-1977 (no amendments)
Listing NGR: TM5274595422


LB 3 - THE HALL NORTH, THE HALL SOUTH
List Entry Number: 1207041
Location: The Hall North, Parkhill, The Hall South, Parkhill
Grade: II
Date first listed: 13-Dec-1949 (last amendment: 21-Jun-1993)
Listing NGR: TM5275095390

Formerly known as: The Hall GORLESTON ROAD. House, divided into 2 dwellings. c. 1760, enlarged and altered early 19th century. Rendered and colourwashed brick. Roofs of black-glazed pantiles. 2 storeys. West front entered through a late 20th century double-leaf panelled door set right of centre under a plain overlight. 19th century doorcase with engaged fluted Ionic columns supporting a flat hood. Right and left is one ogee-headed casement with margin lights and glazing bars. To the left are 2 more identical, but larger, casements. The first floor has a projecting canted bay in the centre, fixed oriel-fashion: casements with margin lights. Left of it are 2 ogee casements as before with a third to its right. One small horned sash without glazing bars to the extreme right. Overhanging eaves under a hipped roof. To the right is an additional wing under a hipped roof forming the south front: canted bay windows with sashes with margin lights; doorway. Modillion eaves cornice to west side. Stack to south roof slope. The north return of the house has a large 20th century outshut through which emerge 2 partly external wall stacks. Between the stacks at first-floor level are 2 sashes. The east
front has, to the north part, 2 later 19th century single-storey canted bays fitted with casements with margin lights. They have hipped slate roofs. 3 irregularly-placed ogee casements to the first floor. Arched staircase sash in recess to the left, with margin lights. 20th century extensions to east face of south part.

INTERIOR of South Hall. The south ground-floor bays have panelled reveals, as do the doorways with their 6-panelled doors. Stick baluster staircase with ramped and wreathed handrail. North-west room has a plaster cornice and an imported marble chimneypiece. 4-panel doors to the first-floor rooms.

INTERIOR of North Hall. The ogee casements have splayed reveals. Ground-floor east room with a plaster ceiling comprising a central rose orbited by an oval leaf trail breaking into bifurcating scrolls at regular intervals. Outside this is a continuous run of swags. Moulded cornice.
3. History of the PDA

The history of this site has been traced through surviving cartographic evidence. The historic maps consulted for this DBA are as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Date published</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hodskinson</td>
<td>1783</td>
<td>Fig. 4</td>
</tr>
<tr>
<td>Ordnance Survey (1st Edition)</td>
<td>1884</td>
<td>Fig. 5</td>
</tr>
<tr>
<td>Ordnance Survey (2nd Edition)</td>
<td>1905</td>
<td>Fig. 6</td>
</tr>
<tr>
<td>Ordnance Survey (3rd Edition)</td>
<td>1927</td>
<td>Fig. 7</td>
</tr>
</tbody>
</table>

N.B. The approximate location of the PDA is outlined in red in the historic map figures (where possible). All historic map figures depict only extracts of the original maps and all have been rescaled.

Hodskinson's map of Suffolk, published 1783 (Fig. 4) is primarily a road map showing towns, major buildings and other landmarks with some indication of topography, it is by no means a complete record of the county. This map shows the area of the PDA as open land with no obvious structures. Blundeston Road is marked as a roadway running within an area of heathland, named as Corton Heath. No buildings are depicted fronting onto this road. The east to west valley is shown with the stream, which is noticeably meandering, although the lake to the east is not present. What is clear from this map is that Oulton Road was formerly a main route to the north whereas the present line of the A12 was a turning off Oulton Road that led to the then small town Lowestoft.

The 1st, 2nd and 3rd Edition Ordnance Survey, 1:2500 scale, maps, published in 1884, 1905 and 1927 respectively, all show the area of the PDA (Figs 5, 6 and 7) as open fields. There are no significant alterations to the landscape recorded by the three separate surveys. Although not recorded on the Ordnance Survey maps Stamp’s Land Use map of 1937 indicates these were all arable fields.

These maps show that housing was being developed along the south side of Blundeston Road during the late 19th century. Three farms are indicated, Parkhill, which is now a hotel, Corton Farm on Blundeston Road, now housing, and Pleasurewood Farm, which is still extant (recorded as 'Bricklin Farm' on the Ordnance Survey First Series large scale topographical map).
Two brickworks were present in the vicinity of the PDA. The 1st edition Ordnance Survey map depicts a brickworks immediately to the north of Parkhill, and a second north of Pleasurewood Farm, adjacent to Yarmouth Road. Both appear to be situated in pit/quarries and each has a kiln marked although some of the other structures are also probably kilns. Both are works recorded as ‘Disused’. These brickworks are present on the 2nd edition map although they are no longer marked as disused indicating they have been brought back into use. The works adjacent Parkhill has had the on-site buildings/kilns reorganised and the quarry for the other works has been enlarged and also has additional buildings/kilns. Both works are still marked on the 3rd edition of the map although neither appears to be in operation. The works adjacent Parkhill is marked as disused and the kilns depicted as ‘old kilns’ whilst the other works is no longer recorded as a brickworks and the one remaining kiln is marked old kiln.

Apart from the modern residential developments either side of the southern end of the PDA there has been little alteration in the immediate area between the 3rd edition map and the modern Ordnance Survey map (Fig. 8). Some field boundaries have been removed to create larger plots and the two brickworks have disappeared, although the quarry north of Pleasurewood Farm is now filled with water.
Figure 4. Hodkinson’s Map of Suffolk, 1783
Figure 5. 1st Edition Ordnance Survey, 1:2500 scale sheet, pub. 1884
Figure 6. 2nd Edition Ordnance Survey, 1:2500 scale sheet, pub. 1905
Figure 7. 3rd Edition Ordnance Survey, 1:2500 scale sheet, pub. 1927
Figure 8. modern Ordnance Survey
(OS MasterMap series, updated 2012)
4. Aerial photography

An assessment of aerial photographic evidence within study area was undertaken by Rog Palmer of Air Photo Services, Cambridge. A number of modern and historical aerial photographs were examined with the aim of identifying archaeological, recent and natural features. The results of this analysis were then plotted onto a modern Ordnance Survey map. In summary; no conventional early archaeological features were identified although a number of Second World War features, such as anti-tank lines of concrete cubes and barbed wire along with their associated pill boxes plus a possible command post were identified (Fig. 9). All of which appear to have since been removed. The full report is reproduced as Appendix 2.

Figure 9. Air photographic survey results
5. Site visit

The PDA was visited on the 11th January 2013 to assess surviving structures, the potential for the survival of archaeological deposits and any potential constraints to archaeological survival. See figure 8 for a map of the land traversed by the proposed road.

The southern plot through which the proposed road runs is presently waste ground which forms a corridor that has presumably been set aside between two modern housing developments for the purpose of constructing a northern continuation of Millennium Way. A single concrete cube is situated towards the northern end of this plot (plate 1), which is undoubtedly a component of the Second World War anti-tank lines identified in the aerial photographic assessment (Section 4). It does not lie along an identified stop line and its attitude, at an angle to the ground, would suggest it is no longer *in-situ*.

The remainder of the PDA on the south side of the valley consists of arable fields containing stubble (plate 2). An unsurfaced trackway runs between Parkhill and Pleasurewood Farm.

The stream running across the bottom of the valley contained water which was flowing to the west. A modern concrete bridge wide enough for a single vehicle to cross was present immediately to the east of the PDA.

The northern slope of the valley comprised a narrow strip of undulating pasture (plate 3). It sloped up to the north and to the east before falling slightly further to the north and east forming a high promontory that overlooked the valley (plate 4).

An early 20th century house and garden, Oak Trees, lies on the line of the PDA to the north, fronting onto Blundeston Road (plate 5). A stone set in the front wall bears the house name and the years 1907 - 1932 (plate 6). This house will presumably be demolished as part of this road scheme.

To the north of Blundeston Road the final section of the PDA runs across an open, flat arable field.
Plate 1. concrete cube seen on the line of the PDA, view looking north

Plate 2. view down the southern valley slope
Plate 5. Oak Trees, Blundeston Road, view facing south-east

Plate 6. carved stone set into front wall of Oak Trees
No structures, other than the house, *Oak Trees*, and no extant earthworks of archaeological significance were identified on the line of the PDA.

### 6. Assessment of impacts and effects

#### 6.1 The archaeological potential of the PDA

The results of this desk-based assessment has not identified any obvious potential for archaeological remains of any period within the PDA. The only site of any significance is the group of cropmarks recorded on the HER (LWT 141) in an area to the south-west of the PDA. These appear to indicate the presence of trackways and enclosures that may be indicative of a settlement site. Although undated, there is no historical evidence for activity in this area which would suggest that the cropmarks are probably related to prehistoric activity on the slightly higher ground overlooking the valley. Such activity could extend into the area of the PDA. The slightly raised promontory noted on the northern slope of the valley could be seen as topographically favourable for early activity and consequently there is a low to medium potential for deposits and features of prehistoric date to be present within the PDA.

There is no recorded evidence for activity from the Roman through to the post-medieval periods in the area. The PDA therefore has a low potential for the recovery of remains from these periods.

The Second World War defence lines identified in the aerial photo assessment all lay to the south or east of the PDA. All are thought to have been removed and although there is a potential for buried remains to survive these would be away from the proposed roadway. That said, there is a low potential for some the buried remains of unidentified defences to occur within the PDA.

#### 6.2 Potential of preserved archaeological remains within the PDA

The area of the PDA is primarily arable farmland with no significant modern developments along the line of the proposed route. There is the potential for erosion through natural processes as well as from repeated ploughing although where the route
crosses the valley a masking deposit of hillwash is likely to have built up which would provide a degree of protection to any buried archaeological features.

6.3 Assessment of the impact of the development on the archaeological resource

The potential for encountering earlier remains depends on the extent of actual groundwork that is proposed and the methods that may be employed in any development of the PDA.

It is highly likely that ground reduction resulting in truncation of the natural subsoil will occur within the corridor of the proposed new roadway. This work will undoubtedly damage if not completely destroy any archaeological evidence that may be present.

7. Mitigation measures

Any mitigation strategies that may be required will be entirely dependant on the nature of the proposed works. Any mitigation strategies that may be required for the redevelopment of this site in regard to its archaeological potential will be the sole decision of the County Council Conservation Team.

The first stage is liable to involve a programme of trial trenching in order to fully understand the precise nature of the buried deposits and their significance at this site, and to determine the levels of survival and depths of occurrence to enable a greater understanding of the possible threat to the archaeological resource. This work would entail the mechanical excavation of a series of trial trenches to sample all areas of the site at risk from the development proposals. The results of the trenched evaluation would then inform any future mitigation strategies that may be deemed necessary, such as monitoring of groundwork, open area excavation or in certain cases, preservation in-situ. Until such work is undertaken, it is usually impossible to define the full extent of any archaeological work that may be required on a site.

With this in mind the sites developers are strongly advised to liaise with the County Conservation Team at the earliest opportunity to clarify the likely need for any archaeological work.
8. Conclusions / Recommendations

Through an examination of the Suffolk HER and a historic map search, this DBA has set the Application Site within its immediate archaeological landscape.

In conclusion, no specific archaeological potential has been positively identified although this primarily due to the fact that the PDA has seen little or no previous archeologically investigation, either by amateurs or professionals.

As previously stated, in order to fully access the actual levels of survival it will be necessary to undertake field evaluation, in the form of a trenched evaluation. The need and precise form of any further that may be deemed necessary will be at the discretion of the Suffolk County Council Conservation Team. Until such work is undertaken it will not be possible to define the full extent of any further archaeological works that may be required.

9. List of contributors and Acknowledgements

This project was funded and commissioned by Suffolk County Council (Transport Strategy). The desk based assessment was carried out by Mark Sommers, of SCCAS. The project was managed by Dr Rhodri Gardner, Contracts Manager, of SCCAS.

Disclaimer

Any opinions expressed in this report about the need for further archaeological work are those of the Field Projects Team alone. Ultimately the need for further work will be determined by the Local Planning Authority and its Archaeological Advisors when a planning application is registered. Suffolk County Council’s archaeological contracting services cannot accept responsibility for inconvenience caused to the clients should the Planning Authority take a different view to that expressed in the report.
Brief for a Desk-Based Assessment

AT

Lowestoft Northern Spine Road

PLANNING AUTHORITY: Suffolk County Council

PLANNING APPLICATION NUMBER: To be arranged

HER NO. FOR THIS PROJECT: To be arranged

GRID REFERENCE: TM 531 967 (N) to TM 530 955 (S)

DEVELOPMENT PROPOSAL: Proposed Relief Road

AREA: c.1.20 km

CURRENT LAND USE: Greenfield

THIS BRIEF ISSUED BY: Jess Tipper
Archaeological Officer
Conservation Team
Tel.: 01284 741225
E-mail: jess.tipper@suffolk.gov.uk

Date: 26 September 2012

Summary

1.1 SCC (Transport Strategy) has been advised that the location of the proposed development site could affect important below-ground heritage assets of archaeological importance.

1.2 The applicant is required to undertake an adequate heritage asset assessment prior to consideration of the allocation. In this case, a desk-based assessment is required to establish the baseline information about this proposed area.

1.3 It is anticipated that any proposed planning application/development plan (should the site be allocated) will need to be the subject of pre-determination archaeological evaluation in order for the LPA to be able to take into account the particular nature and the significance of any below-ground heritage assets at this location.

1.4 This WSI is not a sufficient basis for the discharge of the planning condition. The archaeological contractor must submit a copy of their WSI or Method Statement, based upon this brief of minimum requirements, to the Conservation
Team of Suffolk County Council’s Archaeological Service (SCCAS/CT) for scrutiny; SCCAS/CT is the advisory body to the Local Planning Authority (LPA) on archaeological issues.

1.4 The WSI should be approved before costs are agreed with the commissioning client, in line with Institute for Archaeologists’ guidance. Failure to do so could result in additional and unanticipated costs.

1.5 The WSI will provide the basis for measurable standards and will be used to establish whether the requirements of the brief will be adequately met. If the approved WSI is not carried through in its entirety (particularly in the instance of trenching being incomplete) the evaluation report may be rejected.

Requirements for Desk-Based Assessment

2.1 Collation and assessment of the Suffolk HER to identify known sites and to assess the potential of the application area.

2.2 Collation and assessment of all cartographic sources, held in the Suffolk Record Office (and other appropriate documentary repositories) relevant to the site to identify historic (and current) landuse, the siting of old boundaries and any earlier buildings, as well as topography and geology. Copies of early maps should be included in the report.

2.3 Assess the potential for historic documentation that would contribute to the archaeological investigation of the site.

2.4 Re-assessment of aerial photographic evidence within a 500m radius of the site and, where relevant, replotting of archaeological and topographic information by a suitably qualified specialist with relevant experience at a scale of 1:2500 (residual errors of less than ± 2m). Rectification of extant mapped features such as field boundaries and buildings shall be undertaken in order to give additional indication of accuracy of the transcription.

2.5 Examination of available geotechnical information to assess the condition and status of buried deposits and to identify local geological conditions. Relevant geotechnical data should be included as appendices to the report.

2.6 Ascertain whether there are other constraints on the site (e.g. SSSI, County Wildlife Site, AONB, etc).

2.7 A site visit to determine any constraints to archaeological survival.

Objectives for the Investigation

3.1 To collate and assess the existing information regarding archaeological and historical remains within and adjacent to the site. It is important that a sufficiently large area around the target area is studied in order to give adequate context and impact on the setting of any heritage assets; in this instance an area with boundaries 500m beyond the parcel boundaries will be the minimum appropriate.

3.2 To identify any known archaeological sites which are of sufficient potential importance to require an outright constraint on development (i.e. those that will need preservation in situ).
3.3 To assess the potential for unrecorded archaeological sites within the application area.

3.4 To assess the likely impact of past land uses (specifically, areas of quarrying) and the potential quality of preservation of below ground deposits, and where possible to model those deposits.

3.5 To assess the potential for the use of particular investigative techniques in order to aid the formulation of any mitigation strategy.

Reporting and Archival Requirements

4.1 A comprehensive list of all sources consulted (with specific references) should be included in the report.

4.2 An opinion as to the necessity for further evaluation and its scope may be given, although the final decision lies with SCCAS/CT. No site work should be embarked upon until the need for further work is established and until a Written Scheme of Investigation has been approved in writing.

4.3 Following approval of the report by SCCAS/CT, a single copy of the report should be presented to the Suffolk HER as well as a digital copy of the approved report.

4.4 All parts of the OASIS online form [http://ads.ahds.ac.uk/project/oasis/] must be completed and a copy must be included in the final report and also with the site archive. A digital copy of the report should be uploaded to the OASIS website.

4.5 This brief remains valid for 12 months. If work is not carried out in full within that time this document will lapse; the brief may need to be revised and re-issued to take account of new discoveries, changes in policy and techniques.

Standards and Guidance

Standards, information and advice to supplement this brief are to be found in Standards for Field Archaeology in the East of England, East Anglian Archaeology Occasional Papers 14, 2003.

The Institute for Archaeologists’ Standards and Guidance for Archaeological Desk-Based Assessments (1999) should be used for additional guidance in the execution of the project and in drawing up the report.

Notes

The Institute for Archaeologists maintains a list of registered archaeological contractors ([www.archaeologists.net](http://www.archaeologists.net) or 0118 378 6446). There are a number of archaeological contractors that regularly undertake work in the County and SCCAS will provide advice on request. SCCAS/CT does not give advice on the costs of archaeological projects.
LAND AT LOWESTOFT, AREA CENTRED TM531961, SUFFOLK:

AERIAL PHOTOGRAPHIC ASSESSMENT

REPORT No: 2012/12
DECEMBER 2012

Commissioned by:
Archaeological Service
Suffolk County Council
Endeavour House
8 Russell Road
Ipswich
Suffolk
IP1 2BX

ARCHAEOLOGICAL CONSULTANT FOR AERIAL PHOTOGRAPHIC INTERPRETATION AND ACCURATE MAPPING
LAND AT LOWESTOFT,
AREA CENTRED TM531961,
SUFFOLK:
AERIAL PHOTOGRAPHIC ASSESSMENT

SUMMARY

This assessment of aerial photographs examined a 190 hectare buffer zone around a proposed road construction (centred TM531961) in order to identify and accurately map archaeological, recent and natural features.

No conventional archaeological features were identified.

Military presence during the Second World War included construction of anti-tank lines of concrete cubes and barbed wire along with their associated pill boxes plus a possible command post. All of these appear to have been removed prior to construction of modern housing, other buildings and associated infrastructure.

One large quarry was identified and is now a lake.

Several small dewponds lie in or around the Study Area.

Original photo interpretation and mapping was at 1:2500 level.
LAND AT LOWESTOFT,
AREA CENTRED TM531961,
SUFFOLK:
AERIAL PHOTOGRAPHIC ASSESSMENT
Rog Palmer MA MIFA

INTRODUCTION

This assessment of aerial photographs was commissioned to examine an area of some 190 hectares that provided a buffer zone around a proposed road construction (centred TM531961) in order to identify and accurately map archaeological, recent and natural features and thus provide a guide for field evaluation. The level of interpretation and mapping was to be at 1:2500.

ARCHAEOLOGICAL AND NATURAL FEATURES FROM AERIAL PHOTOGRAPHS

In suitable cultivated soils, sub-surface features – including archaeological ditches, banks, pits, walls or foundations – may be recorded from the air in different ways in different seasons. In spring and summer these may show through their effect on crops growing above them. Such indications tend to be at their most visible in ripening cereal crops, in June or July in this part of Britain, although their appearance cannot accurately be predicted and their absence cannot be taken to imply evidence of archaeological absence. In winter months, when the soil is bare or crop cover is thin (when viewed from above), features may show by virtue of their different soils. Upstanding remains, which may survive in unploughed grassland, are also best recorded in winter months when vegetation is sparse and the low angle of the sun helps pick out slight differences of height and slope.

Grass sometimes shows sub-surface features through the withering of the plants above them. This may occur towards the end of very dry summers and usually indicates the presence of buried walls or foundations. Such dry summers occurred in Britain in 1949, 1959, 1975, 1976, 1984, 1989 and 1990 (Bewley 1994, 25) and more recently in 1995, 1996, 2006, 2010 and 2011. This does not imply that every grass field will reveal its buried remains on these dates as local variations in weather and field management will affect parching. However, it does provide a list of years in which photographs taken from, say, mid July to the end of August may prove informative.

Such effects are not confined only to archaeological features as almost any disturbance of soil and bedrock can produce its own range of shadow, crop and soil differences and it is hoped that a photo interpreter, especially one familiar with local soils, is able to distinguish archaeological from other features. There may, however, remain some features of unknown origin that cannot be classified without specialist knowledge or input from field investigation.
PHOTO INTERPRETATION AND MAPPING

Photographs examined

The most immediately informative aerial photographs of archaeological subjects tend to be those resulting from observer-directed flights. This activity is usually undertaken by an experienced archaeological observer who will fly at seasons and times of day when optimum results are expected. Oblique photographs, taken using a hand-held camera, are the usual products of such investigation. Although oblique photographs are able to provide a very detailed view, they are biased in providing a record that is mainly of features noticed by the observer, understood, and thought to be of archaeological relevance. To be able to map accurately from these photographs it is necessary that they have been taken from a sufficient height to include surrounding control information. No photographs of this kind were identified within the Study Area.

Vertical photographs cover the whole of Britain and can provide scenes on a series of dates between (usually) 1946-7 and the present. Many of these vertical surveys were not flown at times of year that are best to record the archaeological features sought for this Assessment and may have been taken at inappropriate dates to record crop and soil responses that may be seen above sub-surface features. Vertical photographs are taken by a camera fixed inside an aircraft and with its exposures timed to take a series of overlapping views that can be examined stereoscopically. They are often of relatively small scale and their interpretation requires higher perceptive powers and a more cautious approach than that necessary for examination of obliques. Use of these small-scale images can also lead to errors of location and size when they are rectified or re-scaled to match a larger map scale.

Because of its proximity to the coast, the Study Area was also recorded by the Luftwaffe in 1940. Copies of the relevant photographs were lent to me by Robin Standring.

Images in that are viewable in Google Earth and other similar internet sites comprise, for Britain, a mixture of mosaiced vertical aerial photographs and georectified image tiles from high-resolution satellites. For the purposes of photo interpretation, satellite images of this kind are no different from vertical aerial photographs except that they have a slightly lower degree of resolution. Both are perfectly adequate for recording crop variations and soil differences over many types of levelled archaeological feature and both record the complete landscape rather than those objects noticed by an airborne observer.

Cover searches were obtained from the Cambridge University Collection of Aerial Photographs (CUCAP) and the National Monuments Record: Air Photographs (NMRAP), Swindon. Photographs were all from routine vertical surveys. Images current on Google Earth and Flashearth at the time of this work (December 2012) were also examined.

Photographs consulted are listed in the Appendix to this report.
**Base maps**

A copy of the OS 1:10000 quarter sheet (1981) was made at NMRC and then scaled and aligned to the OS grid using AirPhoto. This provided control points for transformation of the 1940s aerial photographs and serves as the background to the figure in this report.

**Photo interpretation and mapping**

All photographs were examined by eye and under slight (2x) magnification, viewing them as stereoscopic pairs when possible. Digital copies of the most informative were transformed to match the 1:10000 map using the specialist program AirPhoto (Scollar 2002; 2012). Transformed files were set as background layers in AutoCAD Map, where features were overdrawn, making reference to the original prints, using standard conventions. Layers from this final drawing have been used to prepare the figure in this report and have been supplied to the client in digital form.

Images in Google Earth were initially viewed and selected from within AirPhoto which automatically geo-references saved files (Scollar and Palmer 2008). These were then imported into AutoCAD and examined.

**Accuracy**

AirPhoto computes values for mismatches of control points on the photograph and map. In all transformations prepared for this assessment the mean mismatches were less than ±1.50m. These mismatches can be less than the survey accuracy of the base maps themselves and users should be aware of the published figures for the accuracy of large scale maps and thus the need to relate these mismatches to the accuracy of the Ordnance Survey maps from which control information was taken (OS 2006, 15). Mapping originally undertaken using OS 1:10000 data does not have the inherent accuracy to be used to locate features on the ground with precision.

**COMMENTARY**

**Soils**

The Soil Survey of England and Wales (SSEW 1983) shows the area to lie on Glaciofluvial and aeolian drift (soil association 541t: WICK 3) upon which are localised deposits of Aeolian drift and till (soil association 711v: GRESHAM) at the north and south ends of the Study Area. The Wick 3 deposit is well drained and the soils show patterns (SSEW 1983, Legend) and it was thought that archaeological features may similarly affect crop growth.

**Archaeological features**

No conventional archaeological features were identified on the photographs examined.
Military features

Lines of concrete cubes acting as anti-tank defences have been identified and mapped. These lines were constructed after May 1940 and were first recorded on a Luftwaffe photograph of September 1940. The lines of cubes and newly-placed pillboxes are highlighted on that photograph by the tracks leading to them and by associated ‘working areas’ perhaps where cubes were cast. Running parallel to the blocks on the seaward side is a line of barbed wire that is just discernable on the Luftwaffe photographs but much clearer in 1944 when it also served to divide cultivation.

Photographs show the cubes to be placed side by side – a practice noted as ‘pre-1941’ by Lowry (1995, 84) – and by 1944 some cubes had been moved to allow access of farm vehicles. There is no anti-tank ditch accompanying the rows of cubes. On these and later photographs (1944-1947), the defensive features can be clearly seen and the removal of the cube lines seems to have begun in or before 1951 and continued erratically. The last remaining cubes were visible in 1999 on photographs in Google Earth when there was a 20m line of cubes following the remains of a hedgerow inside a curve of a new road. These were later removed prior to construction of houses. The locations of the pillboxes are also now under new houses or other constructions.

The pillboxes were of hexagonal form – Type 22 (Lowry 1995, 82-3) – and some were placed against hedgerows, others near a field centre. There is a single structure that I have called a ‘command post’ that is larger than the standard pillboxes and situated close to one of them. Its real function is unknown and, as command posts to not seem to be a standard component of anti-invasion defences (Lowry 1995, 78-92), it could be a larger variant of pillbox.

These defensive features were part of a network of stop lines along the East coast (Thurlow 2012) of which some at Carlton Coleville, south of Lowestoft, were recently mapped and described (Palmer and Standring 2009). The Carlton Coleville defences were of two phases – a line of cubes that was cut by a later anti-tank ditch (ibid, 5-6). No evidence of a ditch was found north of Lowestoft on the photographs examined that showed the current Study Area and its close environs.

Non-archaeological features

One former quarry was identified on the early aerial photographs. This was out of use by 1940 and is now a water-filled feature.

Within and around the Study Area are a number of small quarries or ponds that are labelled as ‘dewpond’ on the figure as their location, near the centre of modern fields or cut by field boundaries, suggests they are, or were, used for watering stock.

Land use

Most fields in the Study Area were in arable use on some dates of photography thus providing opportunities to search for evidence of sub-surface archaeological features. There has been some rotation with grass and some of the smallest fields have been permanently in pasture.
Acknowledgement

Thanks to Robin Standring for loan of the Luftwaffe photos and for discussion about WW2 defensive systems.

REFERENCES


APPENDIX

Aerial photographs examined

Source: Cambridge University Collection of Aerial Photographs (searched 30 November 2012)

Vertical photographs
Z-knRZ 199-200 21 September 2006 1:10000

Source: Google Earth

Vertical photographs
Geoinformation 1945
Infoterra 1999
Getmapping 2006
Getmapping 200708

Source: Bing (via Flashearth)

Vertical photographs
Unknown source possibly 2008

Source: Luftwaffe (via Robin Standring)

Vertical photographs
GX10427 SG 28-29 25 May 1940 c.1:30000
GX10445 SG310 4 September 1940 c.1:27500

Source: National Monuments Record: Air Photographs (cover search 74623)

Vertical collection

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Contact:

Rhodri Gardner
Tel: 01473 265879
rhodri.gardner@suffolk.gov.uk
www.suffolk.gov.uk/Environment/Archaeology/