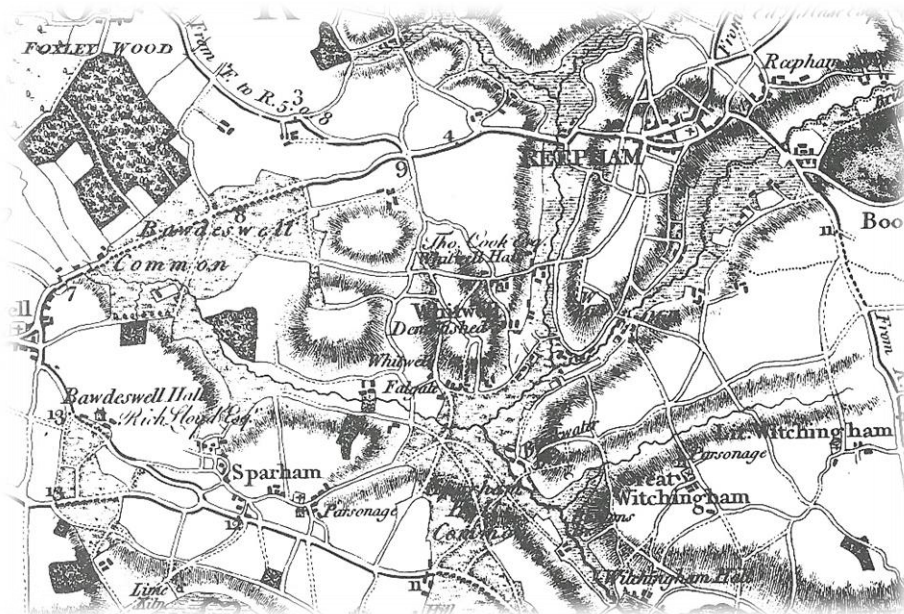


2015/1090

**Salle Zone Additional Supply Water Main
from Fakenham Road, Sparham
to Reepham, Norfolk**

Archaeological Monitoring



**Prepared for:
Anglian Water (Norwich)**

Planning Ref: N/A

HER: ENF135320

September 2015

QUALITY ASSURANCE		
Job Number	01-04-15-2-1090	
Overview	Jayne Bown	
Draft	Steve Hickling	02-07-2015
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Edit	Andrew Crowson	01-09-2015
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<i>Issue 1</i>		

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Client:	Anglian Water (Norwich)
Location:	Sparham–Reepham, Norfolk
District:	Breckland Council and Broadland District Council
Planning Reference:	n/a
Grid Reference:	TG 07846 19115–TG 09930 22866
HER No.:	ENF135320
OASIS ID:	norfolka1-205553
Dates of Fieldwork:	28 October 2014–13 March 2015

Summary

NPS Archaeology was commissioned by Anglian Water (Norwich) to carry out archaeological monitoring of groundworks associated with installation of a new water main between Fakenham Road, Sparham, and Reepham town centre (TG 07846 19115–TG 09930 22866).

The 5km-long water main required archaeological monitoring along its entire length—apart from stretches of the route in the road/highway and parts opened by mechanical trencher—because of find spots of historical artefacts in surrounding fields, the presence of cropmarks of potential archaeological features, and a possible Roman road.

The monitoring recorded no archaeological remains and did not retrieve any artefacts. The negative results were primarily because of the small proportion of the pipe route that it was possible to monitor effectively due to the mechanical trenching; only small stretches of open-cut trench and a number of directional-drill pits were observed.

INTRODUCTION

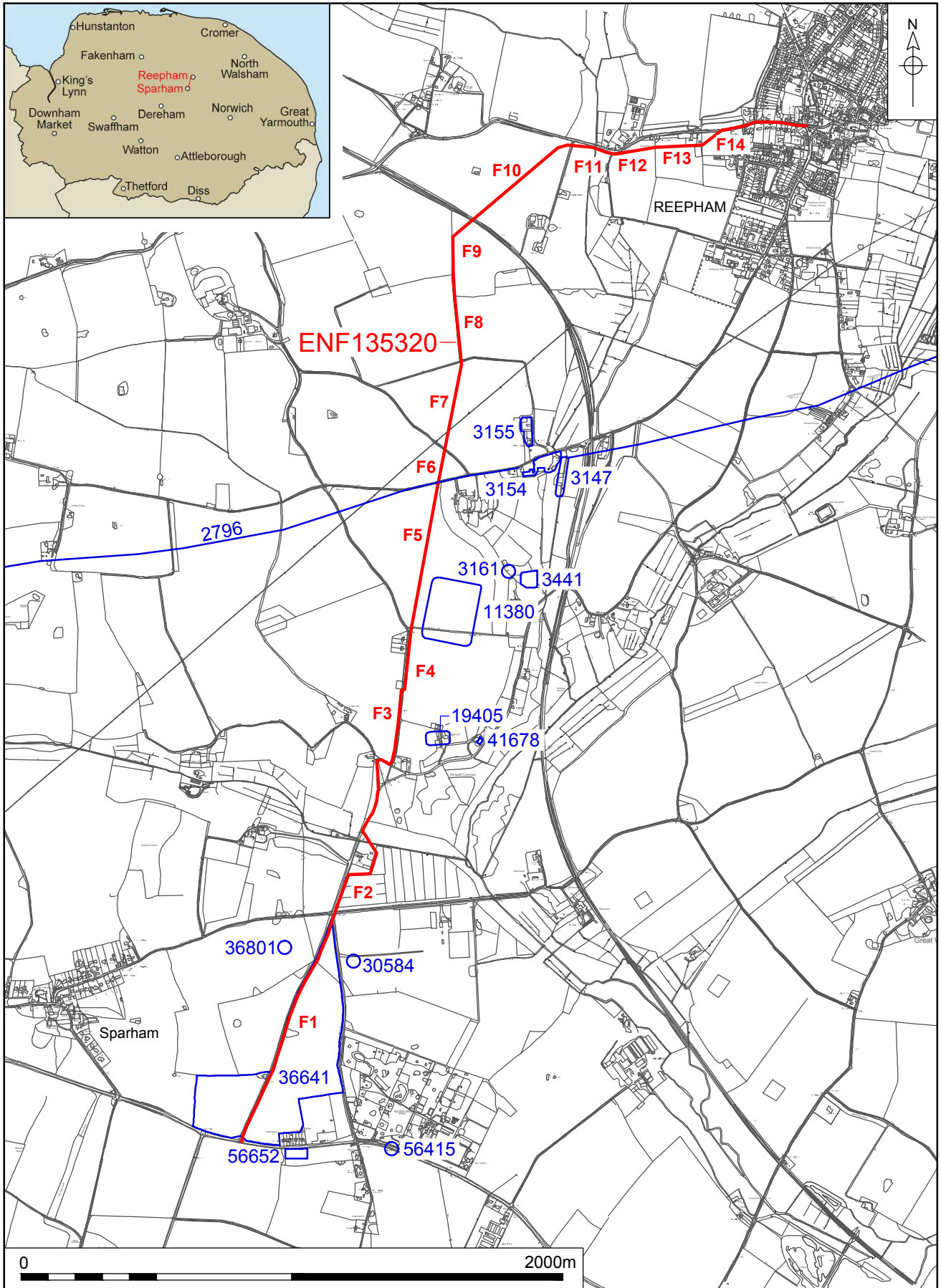
Project Background

Figure 1

- 1 NPS Archaeology was commissioned and funded by Anglian Water (Norwich) to carry out archaeological monitoring of groundworks associated with the Salle Zone Additional Supply Pipeline from Fakenham Road, Sparham to Reepham, Norfolk.
- 2 The installation of a new water main over a distance of 5.075km required archaeological monitoring because of historical objects of different periods found in fields southwest of Reepham and fields east of Sparham, the presence of undated cropmarks of potential archaeological features, and a possible Roman road, which was to be crossed by the pipeline.

Planning Background

- 3 The current work was undertaken to fulfil planning requirements set by Anglian Water and a Brief issued by Norfolk County Council Historic Environment Service (NCCHES) (CNF45473/Hamilton 2012). The work was conducted in accordance with a Written Scheme of Investigation prepared by NPS Archaeology (01-04-15-2-1090/Oakey 2015).
- 4 The programme of work was designed to assist in defining the character and extent of any archaeological remains in the pipe route, following principles set out in *National Planning Policy Framework* (Department for Communities and Local Government 2012).
- 5 The recipients of this report will be Anglian Water (Norwich) and Norfolk County Council Historic Environment Service.



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Figure 1. Site location with HER data showing the route of the pipeline and field numbers. Scale 1:20,000

GEOLOGY AND TOPOGRAPHY

Geology

- 6 The pipeline route passes over Mid Pleistocene Tills and glaciofluvial deposits composed of sand and gravel, while the river valleys it traverses cut through Quaternary period brickearth deposits of clay, silt and sand, with Quaternary period alluvial clays, silts, sands and gravels at the base. These all overlie Cretaceous chalk (British Geological Society 2015).
- 7 Topsoil varied along the route of the pipeline depending on the topography and the nature of the underlying natural geology. It measured 0.35–1.00m deep, dark brown in colour, and varied from sandy to clayey.

Topography

- 8 The pipeline ran for 5.075km from the junction of the A1067 Fakenham Road with Grove Lane at Sparham, to the junction of the B1145 with School Road and Market Place in the centre of Reepham.
- 9 The pipeline route ran across gently rolling countryside, crossing two small streams, both tributaries of the river Wensum. Typically, land use is arable on the hill tops and pasture in the valley bottoms, and heights varied from 47.50m OD at Fakenham Road to 17.70m OD at the river crossing at Nowhere Farm.

METHODOLOGY

General

- 10 Methodology for the monitoring followed the agreed Written Scheme of Investigation (01-04-15-2-1090/Oakey 2015), where the mitigation strategy for the works is presented in full (Appendix 3).
- 11 Archaeological procedures conformed to guidelines issued by the Chartered Institute for Archaeologists (CIfA 2014a) and the monitoring was conducted within the context of the relevant regional archaeological framework (Medlycott 2011).
- 12 NPS Archaeology met Balfour Beatty's Site Agent on 3 December 2014 to discuss the excavation methodology and establish which parts of the pipe route would be monitored. It was confirmed that for the most part the pipe trench would be excavated by mechanical trencher.
- 13 In consultation with NCCHEs it was determined that stretches excavated by mechanical trencher would not be monitored. As the NCCHEs Brief did not require any monitoring of works within the highway, only directional-drill pits and open-cut trenches were to be monitored. Balfour Beatty's Site Agent was instructed of these requirements and agreed to inform NPS Archaeology when such works took place.

Objectives

- 14 The objective of the monitoring was to determine as far as reasonably possible the presence or absence, location, nature, extent, date, quality, condition and significance of any surviving archaeological deposits within the development area.
- 15 The archaeological project aimed to provide appropriate and adequate data and to make the results of the work accessible.

Methods

- 16 The Brief required that all areas of below ground excavation which were not located within the highway, be monitored. Further discussion with NCCHEs (see para. 13) regarding use of a mechanical trencher for most of the route restricted the monitored areas to directional-drill pits and open-cut trenches.
- 17 Machine excavation was carried out by mechanical trencher and elsewhere under archaeological supervision and control by hydraulic 360° excavator equipped with a toothless ditching bucket.
- 18 Spoil and exposed surfaces were scanned with a metal-detector. Provision for retention, processing and identification of metal-detected and hand-collected finds was made in line with relevant guidelines for archaeological finds (CIfA 2014b).
- 19 All areas of archaeological monitoring were recorded using NPS Archaeology pro forma. Trench locations and other drawings were recorded at appropriate scales. Monochrome 35mm negatives and digital photographs were taken of all relevant archaeological features and deposits where appropriate.
- 20 Site conditions were variable and the work took place in changeable weather.
- 21 All site work was undertaken with respect to Health and Safety provision. Hard hats, high-visibility vests and steel toe-capped boots were worn by all staff at all times.

Archive

- 22 The site archive is currently held at the offices of NPS Archaeology. Upon completion of the project, the documentary archive will be prepared and indexed following guidelines obtained from the relevant museum and relevant national guidelines (ClfA 2014c). The archive, consisting of all paper elements created during recording of the archaeological site along with digital material will be deposited with Norfolk Museums Service.
- 23 Subject to written consent and donation by the landowner, any archaeological finds recovered by the current work will be deposited with Norfolk Museums Service.
- 24 A summary form of the results of this project has been completed for Online AccesS to the Index of archaeological investigationS (OASIS) under the reference norfolka1-205553. (Appendix 2), and this report will uploaded to the OASIS database.
- 25 The contents of the site archive is summarised in Table 1.

Item	Number
Contexts	0
Paper record sheets	17
Plans	5
Photographs	23
Finds	None

Table 1. Site archive quantification

HISTORICAL BACKGROUND AND RESULTS

Figures 1, 2

- 26 Because of the length of the pipe route, the archaeological and historical background for each area examined has been considered in conjunction with the results and is tabulated below under individual field headings i.e. Fields 1, 4 and 5.
- 27 The primary source for archaeological evidence in the county of Norfolk is the Norfolk County Council Historic Environment Record (NHER), which details archaeological discoveries and sites of historical interest. In order to characterise the likely archaeological potential of the water main route, NHER record data was purchased from NCCHEs for a corridor 250m each side of the route from TG 07846 19115–TG 09930 22866. This exercise returned 84 individual records, including monuments, spot finds and buildings, containing evidence of historical activity spanning the prehistoric–post-medieval periods.
- 28 Although Faden’s Norfolk map of 1797 (Barringer 1989) was generally uninformative, other readily available historical maps for the area were consulted online to provide additional context for the monitoring work (Norfolk County Council 2015).
- 29 A reference table listing dates for historical periods described in this report is provided in Appendix 1.
- 30 The results for each numbered field are described below, accompanied (where information is available) by a table with historical background information obtained from the Norfolk Historic Environment Record.

Field 1

Background

NHER No.	Description
36641	Metal-detecting in 2001 recovered a medieval suspension bar for a harness pendant.
56652	Metal-detecting in 2011 and 2012 to the south of Fakenham Road recovered a post-medieval coin weight and copper-alloy crotal bells.
56415	A milestone from the former Norwich–Fakenham turnpike survives 280m southeast of the field. The turnpike was created in 1823 and distumpiked in 1880.
36801	Metal-detecting in 2001 recovered a medieval coin to the west of the north end of the field.
30584	A Roman coin was found by metal-detecting in 1994 to the east of the north end of the field.

Table 2. Field 1 NHER entries

- 31 The Tithe Award map (c. 1840) for the area indicates that Field 1 was once four fields, the boundaries of which should intersect the water main trench (Norfolk County Council 2015). The four fields had been amalgamated by the time of the Ordnance Survey first edition map (c. 1885) (Norfolk County Council 2015).

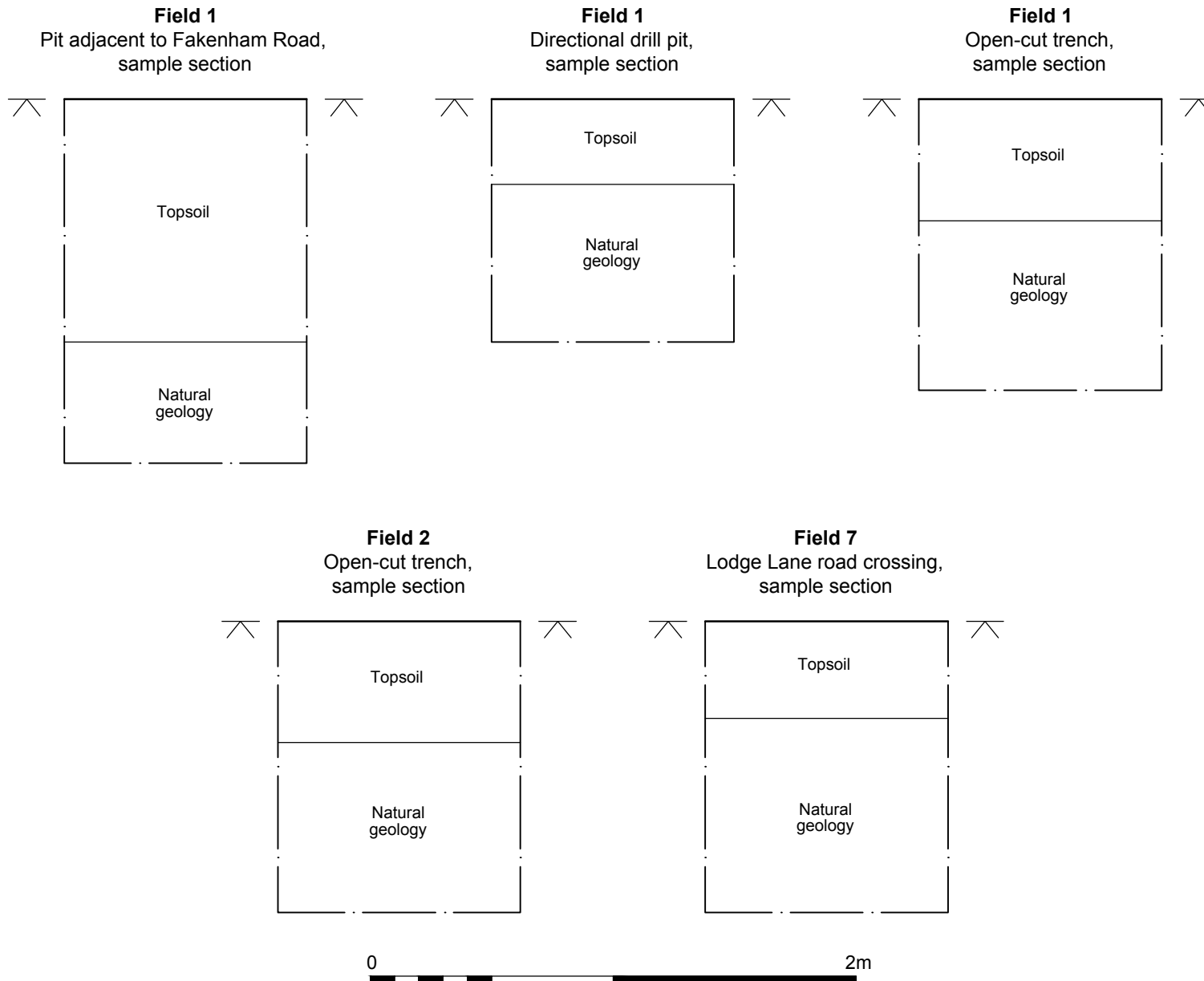


Figure 2. Drill pit and trench sections. Scale 1:25

Monitoring

- 32 Three interventions were monitored in Field 1.
- 33 A trench at the south end of the field and the verge of the A1067 Fakenham Road at TG 07857 19122 measuring 5.00m x 1.00m was viewed on 18 February 2015 (Plate 1). The stratigraphy observed consisted of 1.00m of dark brown sandy topsoil above yellow geological sand. No archaeological features or artefacts were present.



Plate 1. The Field 1/Fakenham Road trench, facing north

- 34 A directional-drill pit across Grove Lane at the north end of Field 1 (TG 08157 19928) was monitored on 5 March 2015 (Plate 2). The stratigraphy at this point consisted of 0.35m of dark brown clayey topsoil above orangey yellow geological clay. No archaeological features or artefacts were present.
- 35 An open-cut trench was observed at the north end of Field 1 (TG 08154 19855–TG 08162 19873) on 13 March 2015 (Plate 3). The stratigraphy observed in the trench consisted of 0.50m of dark brown clayey topsoil above yellow geological clay. There was no evidence of historical field boundaries in the trench sides and no other archaeological features or artefacts were present.



Plate 2. The Field 1 directional-drill pit, facing west



Plate 3. The open-cut trench in Field 1, facing south-southwest

Field 2

Background

- 36 There are no NHER entries for the area of Field 2.
- 37 The mid-19th-century Tithe Award map shows that Field 2 was divided into several smaller fields, of which perhaps three boundaries might intersect the water main trench (Norfolk County Council 2015).

Monitoring

- 38 An open-cut trench along the west edge of Field 2 (TG 08197 19971–TG 08251 20140) was monitored on 9–11 March 2015 (Plate 4). The open trench was 20.00m long and the stratigraphy recorded consisted of 0.50m of dark brown clayey topsoil above yellow geological clay. There was no evidence of historical field boundaries in the trench sides and no other archaeological features or artefacts were present.



Plate 4. The open-cut trench in Field 2, facing north-northeast

Field 3

Background

- 39 There are no NHER entries for the area of Field 3.
- 40 Field boundaries shown on the Tithe Award map suggest piecemeal enclosure of formerly open fields (Norfolk County Council 2015). The Ordnance Survey first edition map shows a track-way crossing the water main route from east–west (Norfolk County Council 2015).

Monitoring

- 41 No directional-drill pits were viewed in Field 3. The mechanical trencher was observed working in the field and unusually had left a c. 50m length of trench open.

The trench was only 0.20–0.25m wide and access to inspect the sides closely was not possible (Plate 5). No archaeological features or artefacts were present.



Plate 5. The mechanical trencher in Field 3, facing south

Field 4

Background

NHER No.	Description
19405	Leeds Tannery was founded by the Leeds family in 1836 and closed in 1908. Although its large courtyard has now gone, the buildings remain and are used for farm storage.
41678	The White House, Whitwell is an early 19th-century two-storey stucco and brick house with a façade of five window bays and a central columned porch.
11380	The cropmark of a rectangular enclosure is visible on a 1972 aerial photograph.

Table 3. Field 4 NHER entries

- 42 Tithe Award and Ordnance Survey first edition maps show Field 4 as it appears today (Norfolk County Council 2015). The track at its north boundary is labelled Fiddler's Alley on the Ordnance Survey map (Norfolk County Council 2015).

Monitoring

- 43 The trench cut by mechanical trencher in Field 4 had already been backfilled when it was viewed; its length was walked to check if any identifiable archaeological deposits or artefacts were present in the backfill, but none were seen.

Field 5**Background**

NHER No.	Description
11380	The cropmark of a rectangular enclosure is visible on a 1972 aerial photograph.
2796	Part of the Fen Causeway between Denver and Brampton, which survives variously as a landmark feature and as a cropmark on aerial photographs. The modern road at the north edge of the field is thought to be the Fen Causeway.
3161	The site of a post medieval hydraulic ram, marked on historical maps.
3441	A rectangular area surrounded by a ditch may be a medieval moated site where the predecessor of Whitwell Hall stood, though, there is no evidence of occupation and the ditches may be more recent drainage features.
3147	An area of medieval earthworks, including banks, ditches and house platforms surveyed in 1984. Previous excavations in 1954, 1970 and 1973 uncovered remains of flint walls and medieval bricks and pottery, possibly from a maltings or granary.
3154	The site of a 19th-century tannery with a later steam engine house of 1876. It closed in 1883. The buildings were ruinous from 1960, and demolished in 1999.

Table 4. Field 5 NHER entries

- 44 The earliest parts of Whitwell Hall are probably 17th-century, but with extensive 18th- and 19th-century additions.
- 45 The Tithe Award map shows Field 5 as five smaller enclosures, whilst the Ordnance Survey first edition shows four smaller fields but with more regular boundaries (Norfolk County Council 2015).

Monitoring

- 46 Field 5 was viewed on 4 December 2014 after the mechanical trencher had worked through it (Plate 6). The route was walked and the backfilled trench examined for artefacts and possible archaeological deposits. Nothing was observed.
- 47 The road crossing at the north end of Field 5 (a Roman road is supposed to underlie the modern road) was performed by directional-drilling, but NPS Archaeology was not informed of the work date and the drill pit was not seen. It is considered unlikely, however, that the position and depth of the drill pit would have impacted upon the potential ancient road or any attendant ditches should they occur beneath the modern road line.



Plate 6. Field 5 after backfilling, facing north

Field 6

Background

- 48 Other than the Roman road NHER 2796 at its south edge, there were no other NHER entries for Field 6.
- 49 The road forming the south boundary to Field 6 is appreciably straighter on the late 19th-century Ordnance Survey first edition map than that shown on the mid-19th-century Tithe Award map (Norfolk County Council 2015).

Monitoring

- 50 No groundworks were observed in Field 6.

Field 7

Background

- 51 Whitwell Hall Farm (NHER 3155) is a fine 19th-century building.
- 52 The Tithe Award map shows Field 7 as three smaller fields (Norfolk County Council 2015). By the time of the Ordnance Survey First Edition map, the individual land parcels had become amalgamated (Norfolk County Council 2015).

Monitoring

- 53 Works at the road crossing at the south end of Field 7 were monitored on 14 January 2015. The stratigraphy visible at this point consisted of 0.40m of dark brown sandy topsoil above yellow geological sand (Plate 7). No topsoil was present in the road carriageway, where tarmac was laid on a shallow layer of hoggin, which was immediately above the geological sand.



Plate 7. Lodge Lane crossing, facing southwest

Field 8

Background

- 54 There were no NHER entries for Field 8.
- 55 Four fields were shown in this area on the Tithe Award map, and two on the Ordnance Survey first edition (Norfolk County Council 2015).

Monitoring

- 56 No groundworks were monitored in Field 8.

Field 9

Background

- 57 There were no NHER entries for Field 9.
- 58 The Tithe Award map depicts three fields here, whereas the Ordnance Survey first edition map illustrates one field and a railway line (Norfolk County Council 2015).

Monitoring

- 59 No groundworks were monitored in Field 9.

Field 10

Background

- 60 There were no NHER entries for Field 10.
- 61 Five separate land parcels are shown on both the Tithe Award and Ordnance Survey first edition maps, whilst the latter also depicts a new railway line (Norfolk County Council 2015).

Monitoring

- 62 A directional-drill pit was monitored at the northeast end of Field 10 (TG 09047 22795) on 3 March 2015. No stratigraphy was observed as the pit filled immediately with groundwater (Plate 8).



Plate 8. Directional-drill pit in Field 10, facing southwest

Field 11

Background

- 63 There were no NHER entries for Field 11.
- 64 Field 11 was two fields, divided by a north–south stream, on both the Tithe Award and the Ordnance Survey first edition maps (Norfolk County Council 2015).

Monitoring

- 65 A directional-drill pit was monitored at the northeast end of Field 11 (TG 09206 22764) on 3 March 2015. It was not possible to accurately record the stratigraphy as the pit filled with groundwater (Plate 9).

Field 12

Background

- 66 There were no NHER entries for Field 12.
- 67 Both the Tithe Award and the Ordnance Survey first edition maps show Field 12 as a single field, much as it is today (Norfolk County Council 2015).

Monitoring

- 68 No groundworks were monitored in Field 12.



Plate 9. Directional-drill pit in Field 11, facing north

Field 13

Background

- 69 There were no NHER entries for Field 13.
- 70 Both the Tithe Award and the Ordnance Survey first edition maps show Field 13 as two fields (Norfolk County Council 2015).

Monitoring

- 71 No groundworks were monitored in Field 13.

Field 14

Background

- 72 There were no NHER entries for Field 14.
- 73 Both the Tithe Award and the Ordnance Survey first edition maps show Field 14 as one field, but today the east part is occupied housing (Norfolk County Council 2015).

Monitoring

- 74 No groundworks were monitored in Field 14.

DISCUSSION

- 75 The monitoring carried out by NPS Archaeology for Anglian Water (Norwich) on groundworks for the Salle Zone Replacement Scheme recorded no archaeological remains or materials. Largely, the negative results are considered to be due to the small proportion of the pipe-route that it was possible to monitor effectively.
- 76 Opportunities for monitoring were restricted to directional-drill pits—where these did not fill immediately with groundwater in low-lying locations—and to short lengths of open-cut trench. Elsewhere, across open fields the water main was laid by mechanical trencher, a technique that produces a very narrow trench and deposits a pipe directly into the trench, or was otherwise laid within the highway. In these instances the trenching was not monitored by agreement with NCCHES (para. 13, this report).
- 77 The portions of the water main trench that it was possible to observe did not intersect with cropmark features or the possible positions of field boundaries identified on historical maps. Previous finds of historical objects from the areas directly affected by the works are low in number and the results of the monitoring are therefore broadly in-keeping with this.

Acknowledgements

NPS Archaeology would like to thank Anglian Water for commissioning and funding the archaeological work. Thanks go to the staff of Balfour Beatty for their help and cooperation on site.

The staff of the Norfolk County Council Historic Environment Record are thanked for providing HER data, and Kelly Powell of NCCHEs is thanked for monitoring the project works.

The monitoring project was managed for NPS Archaeology by Niall Oakey.

This report was illustrated by David Dobson and edited by Andrew Crowson.

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Appendix 1: Historical Periods

Period	Date From	Date To
Prehistoric	-500,000	42
Early Prehistoric	-500,000	-4,001
Palaeolithic	-500,000	-10,001
Lower Palaeolithic	-500,000	-150,001
Middle Palaeolithic	-150,001	-40,001
Upper Palaeolithic	-40,000	-10,001
Mesolithic	-10,000	-4,001
Early Mesolithic	-10,000	-7,001
Late Mesolithic	-7,000	-4,001
Late Prehistoric	-4,000	42
Neolithic	-4,000	-2,351
Early Neolithic	-4,000	-3,001
Middle Neolithic	-3,500	-2,701
Late Neolithic	-3,000	-2,351
Bronze Age	-2,350	-701
Early Bronze Age	-2,350	-1,501
Beaker	-2,300	-1,700
Middle Bronze Age	-1,600	-1,001
Late Bronze Age	-1,000	-701
Iron Age	-800	42
Early Iron Age	-800	-401
Middle Iron Age	-400	-101
Late Iron Age	-100	42
Roman	42	409
Post Roman	410	1900
Saxon	410	1065
Early Saxon	410	650
Middle Saxon	651	850
Late Saxon	851	1065
Medieval	1066	1539
Post-medieval	1540	1900
Modern	1900	2050
World War One	1914	1918
World War Two	1939	1945
Cold War	1945	1992
Unknown	--	--

after *English Heritage Periods List*, recommended by *Forum on Information Standards in Heritage* available at: <http://www.fish-forum.info/inscript.htm>

Appendix 2: OASIS Report Summary

OASIS DATA COLLECTION FORM: England

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Printable version

OASIS ID: norfolka1-205553

Project details

Project name	Fakenham Road, Sparham to Reepham Pipeline (Salle Zone Additional Supply)
Short description of the project	NPS Archaeology was commissioned by Anglian Water (Norwich) to carry out archaeological monitoring of groundworks associated with installation of a new water main between Fakenham Road, Sparham, and Reepham town centre (TG 07846 19115-TG 09930 22866). The 5km-long water main required archaeological monitoring along its entire length-apart from stretches of the route in the road/highway and parts opened by mechanical trencher-because of find spots of historical artefacts in surrounding fields, the presence of cropmarks of potential archaeological features, and a possible Roman road. The monitoring recorded no archaeological remains and did not retrieve any artefacts. The negative results were primarily because of the small proportion of the pipe route that it was possible to monitor effectively due to the mechanical trenching, and only small stretches of open-cut trench and a number of directional-drill pits were observed.
Project dates	Start: 28-10-2014 End: 13-03-2015
Previous/future work	Not known / Not known
Any associated project reference codes	135320 - HER event no.
Type of project	Recording project
Site status	None
Current Land use	Other 11 - Thoroughfare
Current Land use	Cultivated Land 4 - Character Undetermined
Current Land use	Grassland Heathland 5 - Character undetermined
Monument type	NONE None
Significant Finds	NONE None
Investigation type	"Watching Brief"
Prompt	National Planning Policy Framework - NPPF

Project location

Country	England
Site location	

NORFOLK BRECKLAND SPARHAM Salle Zone Additional Supply Water
Main: Sparham to Reepham

Study area 5.08 Kilometres

Site coordinates TG 07846 19115 52.729217745238 1.078556122313 52 43 45 N 001 04 42 E
Point

Site coordinates TG 09930 22866 52.762082129722 1.111774731073 52 45 43 N 001 06 42 E
Point

Project creators

Name of Organisation NPS Archaeology

Project brief originator Norfolk Historic Environment Service

Project design originator NPS Archaeology

Project director/manager Steve Hickling

Project supervisor NPS Archaeology

Project archives

Physical Archive Exists? No

Digital Archive recipient NPS Archaeology

Digital Contents "other"

Digital Media available "Images raster / digital photography","Images vector","Spreadsheets","Text"

Paper Archive recipient Norfolk Museums Service

Paper Contents "other"

Paper Media available "Drawing","Miscellaneous Material","Report"

Project bibliography 1

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Appendix 3: Archaeological Specification

01-04-15-2-1090



nps archaeology

**Archaeological monitoring
Salle Zone Pipeline Replacement (Sparham to
Reepham), Norfolk**

Written Scheme of Investigation



Prepared for
Anglian Water



NPS Archaeology

February 2015



www.nps.co.uk

Location	Salle Zone Pipeline Replacement (Sparham to Reepham), Norfolk
District	Broadland
Client	Anglian Water
NHES Ref	CNF45473

DOCUMENT CHECKLIST		
Completed by	Niall Oakey	03.02.2015
Reviewed by	Jayne Bown	06.02.2015
<i>Issue 1</i>		

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Archaeological monitoring

Written Scheme of Investigation

1. Introduction

- 1.1 A proposal to boost water supplies to Reepham, Norfolk via a new reinforcement pipeline (TG 0784 1912 to TG 0994 2284) requires archaeological monitoring of the open cut pipeline where it is not located within a road. Information from the Norfolk Historic Environment Record shows that the route passes through an area of numerous multi-period finds to the south and west of Reepham. The pipeline crosses the road north of Whitwell Hall where the modern road is thought to overlie a Roman road. South of the road it passes through an area of undated cropmarks visible on aerial photographs.
- 1.2 Norfolk Historic Environment Service has recommended that a programme of archaeological monitoring be carried out (K. Powell 7.02.14, CNF45473) during construction of the scheme to identify and record any archaeological remains affected by groundworks which are not located within the road in specific locations (see attached plan), in accordance with the principles set out in the *National Planning Policy Framework* (Department for Communities and Local Government 2012).
- 1.3 In order to comply with that requirement Anglian Water has requested that NPS Archaeology prepare a Written Scheme of Investigation detailing an appropriate programme of archaeological works to fulfil the requirements of a *Brief for the Monitoring of Works Under Archaeological Supervision and Control* issued by Norfolk Historic Environment Service.

2. Mitigation Strategy

- 2.1 The programme of archaeological works presented in this document has been designed to mitigate the impacts of the proposed construction works in line with the requirements of Norfolk Historic Environment Service.
- 2.2 Where archaeological remains are identified, and these cannot be preserved *in situ*, the potential impact of the scheme will be minimised by appropriate levels of archaeological excavation and recording.
- 2.3 The mitigation strategy will include a watching brief to record any archaeological remains exposed during the construction works and reporting. The different elements to be employed are presented below in the anticipated order that they will take place.
- 2.4 The stages of the mitigation strategy may be summarised as follows:
- i. Watching Brief Monitoring.* Due to the potential for previously unidentified archaeological remains to exist, all ground disturbance works related to the construction works. If archaeological features and deposits are encountered and these are deemed to be of significance appropriate levels of excavation and recording will be required.
 - ii. Post-fieldwork Processing.* The drawn and written, photographic, stratigraphic and structural record will be cross-referenced and entered onto spreadsheets to provide a consistent and compatible record of the results of the various elements of fieldwork. Artefactual and ecofactual material recovered during the fieldwork will be cleaned, marked and packaged in accordance with the archive requirements of the Norfolk Museums Service. A spreadsheet of these materials will be compiled.
 - iii. Analysis, Reporting and Archive.* The results of the fieldwork will be presented as a client report or series of client reports. If appropriate, a synthesis of the results will be published in an appropriate archaeological journal. The archive will be prepared for deposition with the Norfolk Museums Service.

2.5 The procedures and methodology for each of the stages outlined above are described in detail below.

2.6 Watching Brief Monitoring

2.6.1 All ground disturbance works related to the excavation required for the new construction will be monitored by an experienced archaeologist. The monitoring will be carried out in accordance with the *Standard and Guidance for an Archaeological Watching Brief* (Chartered Institute for Archaeologists 2008) and guidelines set out in the document *Standards for Field Archaeology in the East of England* (Gurney 2003).

2.6.2 If areas of significant archaeological remains are encountered that cannot be recorded safely or to the appropriate standard within the watching brief, consultation will take place with Anglian Water and Norfolk Historic Environment Service and more detailed archaeological excavation may be required.

2.6.3 All archaeological deposits, features and layers will be assigned individual context numbers and recorded on standardised forms employing a pro forma recording system approved by Norfolk Historic Environment Service. The records will include full written, graphic and photographic elements with site and context numbering compatible with the Norfolk Historic Environment Record numbering system. Plans will be made at a scale of 1:50, with provision for 1:20 and 1:10 drawings. Sections will be recorded at scales of 1:10 and 1:20 depending on the detail considered necessary. A 35mm black and white and digital photographic record will be maintained of all archaeological deposits, layers and features to record their characteristic and relationships. Photographs will also be taken to record the progress of the work.

2.6.4 If palaeo-environmental deposits of potential interest are encountered the Client and Norfolk Historic Environment Service will be immediately informed and the palaeo-environmental remains will be assessed by an appropriate specialist and a mitigation strategy will be agreed. Where appropriate this strategy will include suitable levels of scientific analysis (palynology, soil micromorphology etc) and the use of scientific dating techniques (radiocarbon dating).

2.6.5 If any human remains or burials are encountered during the monitoring, which because of their location or vulnerability must be removed, an application for a Licence for the Removal of Human Remains will be made in compliance with Section 25 of the Burial Act, 1857, if appropriate. No human remains will be removed until permission has been granted in writing from all the relevant parties. All human remains removed will be left in the care of the church for reburial. Human remains will be screened from public view during the course of the monitoring. Backfilling of any graves, or areas of the site containing burials that are not excavated will be done manually to ensure that the remains are appropriately protected from any damage or disturbance.

2.7 Post-Fieldwork Processing

2.7.1 The drawn, photographic and written stratigraphic and structural records will be cross-referenced and, if appropriate, information will be recorded on an archaeological spreadsheet.

2.7.2 The cleaning and cataloguing of any artefactual materials recovered will be undertaken on completion of the excavation. All retained materials will be cleaned, marked and packaged in accordance with the requirements of the Norfolk Museums Service. Finds data will be stored on a spreadsheet to allow summary listings of artefacts by category and context to provide basic quantification.

2.7.3 An archive structured in accordance with guidelines laid out in *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (Brown 2007) will be created.

2.8 Report and Archive

- 2.8.1 A report will be produced that will present the stratigraphic, structural, artefactual and photographic evidence and an analyses of that evidence. If construction work is phased over a considerable period of time, reports will be produced at the completion of each phase of construction.
- 2.8.2 The report will present data in written, tabular, graphic and appendix form. A list of archive components generated by the work will also be included in the report. Copyright of the reports will be retained by NPS Archaeology.
- 2.8.3 A synthesis of the report may be submitted for publication in an appropriate archaeological journal within twelve months of the completion of the fieldwork.
- 2.8.4 Multiple copies of the report will be produced as appropriate and presented to the Client and three copies to Norfolk Historic Environment Service. One copy of the report will also be sent to the English Heritage Regional Advisor for Archaeological Science, if considered appropriate. A Norfolk Historic Environment Record form will accompany the report and will include a reference to the archive and the intended place of archive deposition. The report will be submitted within eight weeks of the completion of the fieldwork.
- 2.8.5 An online OASIS record will be initiated immediately prior to the start of fieldwork and completed when the final report is submitted to Norfolk Historic Environment Service. This will include a pdf version of the final report.
- 2.8.6 A single integrated archive for all elements of the work will be prepared according to the recommendations set out in *Environmental standards for the permanent storage of excavated material from archaeological sites* (UKIC, Conservation Guidelines 3, 1984) and *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (Brown 2007), and in accordance with the Norfolk Museums Service's own requirements for archive preparation, storage and conservation.
- 2.8.7 The archive will be fully indexed and cross-referenced. It will also be integrated with the Norfolk Museums Service's Project accession number and the Norfolk Historic Environment Record numbering system. A full listing of archive contents and finds boxes will accompany the deposition of the archive and finds.
- 2.8.8 All archaeological materials, excepting those covered by the *Treasure Act, 1996*, will remain the property of the landowners. NPS Archaeology will seek to reach a formal agreement with the landowners for the donation of the finds to the Norfolk Museums Service.

3. Timetable and Resources

- 31 The different stages of archaeological work have different time and staff requirements. The timetable for fieldwork assumes that there are no major delays to the work programme caused by factors outside of NPS Archaeology's reasonable control. Such circumstances would include without limitation; long periods of adverse weather conditions, flooding, repeated vandalism, ground contamination, delays in the development programme, unsafe buildings, conflicts between the archaeological recording methods and the protection of flora and fauna on the site, disease restrictions, and unexploded ordnance.

4. Project Staff

- 4.1 The project will be co-ordinated on a day-to-day basis by the Project Officer who will be dedicated to the project throughout its duration. The Archaeology Manager will assume overall responsibility for the delivery of the project.

4.2 The Project Officer will have experience in watching brief monitoring and excavation and experience with NPS Archaeology's *pro forma* or similar recording systems. The Project Officer will be an experienced metal detector user.

4.3 NPS Archaeology staff associated with the project is as follows:

Project Management	
Archaeology Manager Project Manager	Jayne Bown BA, MCIfA Niall Oakey BA, MA

Project Staff	
Project Officer	Steve Hickling MA, ACIfA
Finds Officer	Rebecca Sillwood ACIfA

4.4 NPS Archaeology reserves the right to change its nominated personnel at any time should project programmes change.

4.5 The analysis of artefactual and ecofactual materials will be undertaken by NPS Archaeology staff or nominated external specialists. Nominated NPS Archaeology and external specialists and their areas of expertise are as follows:

Specialist	Research Field
Andy Barnett	Metal-detectorist, Numismatic Items
Sarah Bates	Worked Flint
Fran Green	Palaeo-environmental Analysis
Julie Curl	Faunal Remains
Sue Anderson	Post-Roman Pottery, Ceramic Building Material
Debbie Forkes	Conservation
Val Fryer	Macrofossil analysis
Andrew Peachey	Prehistoric and Roman Pottery, worked flint

5. Quality Standards

5.1 NPS Archaeology fully endorses the *Code of Practice for the Regulation of Contractual Arrangements in Field Archaeology* of the Chartered Institute for Archaeologists. All staff employed or subcontracted by NPS Archaeology will be employed in line with the Chartered Institute for Archaeologists *Code of Practice*.

5.2 NPS Archaeology operates under a recognised Quality Management System and is accredited with BS EN ISO 9001:2008, the International Standard Model for Quality Assurance.

5.3 The guidelines set out in the document *Standards for Field Archaeology in the East of England* (Gurney 2003) will be adhered to. Provision will be made for monitoring the work by Norfolk Historic Environment Service in accordance with the procedures outlined in the document *Management of Research Projects in the Historic Environment* (MoRPHE) (English Heritage 2006). Monitoring opportunities for each phase of the project are suggested as follows:

- during watching brief monitoring
- during post-fieldwork analysis
- upon completion of the archive
- upon receipt of the final report

5.4 A further monitoring opportunity will be provided at the end of the work upon deposition of the integrated archive and finds with the Norfolk Museums Service.

5.5 NPS Archaeology operates a Project Management System. Most aspects of this project will be co-ordinated by a Project Officer who has the day-to-day responsibility for the successful completion of the project. Overall responsibility for the successful delivery of the project lies with the Archaeology Manager who has responsibility for all of NPS

Archaeology's work and ensures the maintenance of quality standards within the organisation.

6. Health and Safety

- 6.1 NPS Archaeology will ensure that all work is carried out in accordance with NPS Property Consultants Limited's Health and Safety Policy, to standards defined in *the Health and Safety at Work, etc Act, 1974* and *The Management of Health and Safety Regulations, 1992*, and in accordance with the health and safety manual *Health and Safety in Field Archaeology* (SCAUM 2007).
- 6.2 A risk assessment will be prepared for the fieldwork. All staff will be briefed on the contents of the risk assessment and required to read it. Protective clothing and equipment will be issued and used as required.
- 6.3 NPS Archaeology will provide copies of NPS Property Consultants Limited's Health and Safety policy on request.

7. Insurance

- 7.1 NPS Archaeology's Insurance Cover is:

Employers Liability	£5,000,000
Public Liability	£50,000,000
Professional Indemnity	£5,000,000

- 7.2 Full details of NPS Archaeology's Insurance cover will be supplied on request.

Plan showing areas to be monitored