



Northamptonshire Archaeology

An archaeological desk-based assessment
and construction impact assessment of land along
Andrews Lane Rising Main Replacement
South Ferriby, North Lincolnshire



Northamptonshire Archaeology

2 Bolton House
Wootton Hall Park
Northampton NN4 8BE
t. 01604 700493 f. 01604 702822
e. sparry@northamptonshire.gov.uk
w. www.northantsarchaeology.co.uk



Northamptonshire
County Council

Pat Chapman

Report 11/173

November 2011



STAFF

Project Manager Jim Brown BSc PGDip, MfA
Text and research Pat Chapman BA CMS AlfA
Illustrations Amir Bassir BSc
 Charlotte Walker BSc AlfA
 Andy Chapman BSc MfA FSA

QUALITY CONTROL

	Print name	Signed	Date
Checked and Approved by	Andy Chapman		
Verified by	Jim Brown		

OASIS REPORT FORM

PROJECT DETAILS	
Project title	An archaeological desk-based assessment and construction impact assessment of land along Andrews Lane Rising Main Replacement, South Ferriby, North Lincolnshire
Short description	The pipeline runs along the northern boundary of the Scheduled Monument of the Roman Settlement of Old Winteringham, and there is a possibility that part of Ermine Street Roman Road as well as other features and artefacts of the adjacent settlement could be disturbed. There is also a slight possibility of disturbing a Roman trackway near Ferriby Sluice. Works start immediately adjacent to Ferriby Sluice, which is a Scheduled Monument, but should not impact upon the monument. The proposed methodology of pipe bursting entails working almost entirely within the limits of the existing pipe trench, reducing the likelihood of disturbing archaeological deposits. As a result, it is suggested that maintenance of a watching brief during all groundworks will provide sufficient mitigation. It will be necessary to obtain Scheduled Monument Consent for the works adjacent to Old Winteringham Roman settlement.
Project type	Desk-based assessment and construction impact assessment
Previous work	Yes
Future work	Unknown
Monument type and period	Ferriby Sluice, post-medieval (SM No 1005244) Roman settlement (SM No 1005243)
Significant finds	N/A
PROJECT LOCATION	
County	North Lincolnshire
Site address	Andrews Lane, South Ferriby
Easting /Northing	SE 97483 21066 to SE 94482 21756
Area	3.29km
Height OD	
PROJECT CREATORS	
Organisation	Northamptonshire Archaeology
Project brief originator	Alison Williams, North Lincolnshire Council, Historic Environment Record Team
Project Design originator	NA
Director/Supervisor	Pat Chapman
Project Manager	Jim Brown
Sponsor or funding body	Anglian Water Services Ltd
PROJECT DATE	
Start date	August 2011
End date	November 2011

Contents

- 1 INTRODUCTION**

- 2 LOCATION, TOPOGRAPHY AND GEOLOGY**

- 3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**
 - 3.1 Historic Environment Record (HER) data**
 - 3.2 Archaeological background**
 - 3.3 Historic maps**

- 4 HISTORICAL IMPACT ASSESSMENT**
 - 4.1 Historical assessment criteria**
 - 4.2 The historical assessment**

- 5 CONSTRUCTION IMPACT ASSESSMENT**
 - 5.1 Pipe replacement methodology**
 - 5.2 The pipeline excavation areas**
 - 5.3 The impact on the archaeology**

- 6 CONCLUSIONS AND RECOMMENDATIONS**

BIBLIOGRAPHY

APPENDICES

- Appendix 1 Technical data, Hammerhead Hydroburst Static Pipe Bursting Systems
- Appendix 2 Method Statement Work Sheet, Barhale BAR/HSE/F/31
- Appendix 3
 - Fig A3.1 Pipeline, general layout plan
 - Fig A3.2 Pipeline, showing pit and trench locations
 - Fig A3.3 Pipeline in vicinity of scheduled area, showing vehicle access (in green)
 - Fig A3.4 Pipeline, pipe bursting detail
 - Fig A3.5 Pipeline, showing locations of hazards, underground services and old pipe repairs
- Appendix 4 English Heritage, Old Winteringham List Entry
- Appendix 5 English Heritage, Ferriby Sluice List Entry

Tables

Table 1: Extrapolated borehole data, South Ferriby to Eastfield

Table 2: Historic Environment Record (HER) data

Table 3: Criteria for assessing the relative importance of cultural heritage sites

Table 4: Criteria used to determine the magnitude of impact

Table 5: Matrix for establishing significance

Table 6: Pipeline excavation area dimensions

Figures

Cover: Old Winteringham, 2007 (Google © 2010, Image © 2011 Get mapping plc)

Fig 1 Site location

Fig 2 Route of the pipeline and Historic Environment Record (HER) data, and borehole locations

Fig 3 Recorded archaeology of Old Winteringham prior to 1995 (© Pre-Construct Archaeology (Lincoln))

Fig 4 Ordnance Survey map 1956, South Ferriby to Old Winteringham, showing pipeline route, 1:10,560 (Landmark Historic Map)

Fig 5 Ferriby Sluice, 2007 (Google © 2010, Image © 2011 Get mapping plc)

Fig 6 Old Winteringham, 2007(Google © 2010, Image © 2011 Get mapping plc)

**AN ARCHAEOLOGICAL DESK-BASED ASSESSMENT
AND CONSTRUCTION IMPACT ASSESSMENT
OF LAND ALONG ANDREWS LANE RISING MAIN REPLACEMENT
SOUTH FERRIBY, NORTH LINCOLNSHIRE**

Abstract

Northamptonshire Archaeology was commissioned by Anglian Water Services Ltd to carry out a desk-based assessment and construction impact assessment of land along the 3.29km of Andrews Lane Rising Main Replacement Pipeline near South Ferriby, North Lincolnshire. The pipeline runs along the northern boundary of the Scheduled Monument of the Roman Settlement of Old Winteringham, and there is a possibility that part of Ermine Street Roman Road as well as other features and artefacts of the adjacent settlement could be disturbed. There is also a slight possibility of disturbing a Roman trackway near Ferriby Sluice. Works start immediately adjacent to Ferriby Sluice, which is a Scheduled Monument, but should not impact upon the monument. The proposed methodology of pipe bursting entails working almost entirely within the limits of the existing pipe trench, reducing the likelihood of disturbing archaeological deposits. As a result, it is suggested that maintenance of a watching brief during all groundworks will provide sufficient mitigation. It will be necessary to obtain Scheduled Monument Consent for the works adjacent to Old Winteringham Roman settlement.

1 INTRODUCTION

Northamptonshire Archaeology was commissioned by Anglian Water Services Ltd to carry out a desk-based assessment and construction impact assessment of land along the Andrew Lane Rising Main Replacement Pipeline, running from Ferriby Sluice, by South Ferriby, North Lincolnshire, westwards for 3.29km (NGR SE 97483 21066 to SE 94482 21756; Fig 1).

Anglian Water is replacing 3290m of 300mm rising main with a new 355mm diameter pipe, by pipe bursting. This entails pipe bursting pits being excavated at approximately every 200m along the entire length of the pipeline and some lengths of open trench. The eastern end of the pipeline lies adjacent to Ferriby Sluice, a Scheduled Monument (SM No 1005244), and the western end of the pipeline runs alongside the northern boundary of the Scheduled Monument of Old Winteringham Roman settlement (SM No 10055243) for c 690m.

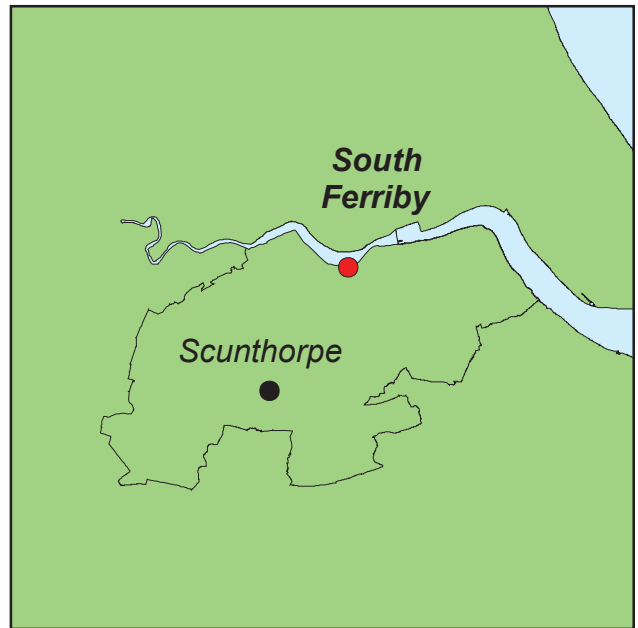
The aim of the desk-based assessment was to collate information about the known or potential archaeological resource within the development area; including its presence or absence, character and extent, date, integrity, state of preservation and relative quality. The work has been undertaken in accordance with the Institute for Archaeologists' *Standard and Guidance for Archaeological Desk-Based Assessment* (IfA 2008) and the *Code of Conduct* (IfA 2010). The internet resource utilised included the archaeological data service (ads), heritage gateway and pastscape. In addition, the potential impact of the construction methodology for the pipe replacement and the associated logistics are outlined, supported by appropriate documentation. Proposals for an appropriate mitigation strategy are also provided.

2 LOCATION, TOPOGRAPHY AND GEOLOGY

The pipeline runs close to the foreshore of the South Channel of the Humber Estuary with Read's Island to the north (Figs 1 and 2). For c 2.2km the pipeline runs westwards from Ferriby Sluice alongside the A1077 Sluice Road. It then turns north-west from the road to run north-west to north and then westwards again, to pass poultry houses on their eastern and northern sides. The pipeline continues westwards past the northern boundary of Old Winteringham Roman settlement, south of the chicken farm, to the waste water plant.

In the east, the works begin immediately west of Ferriby Sluice. The pipeline is bounded to the south by the Cemex industrial plant and fields to the north. The central part of the pipeline is bounded by the foreshore of the River Humber South Channel to the north and flat agricultural land to the south. To the west, fields lie to the north and south of the pipeline except when passing the poultry houses. The land lies below 10m aOD, but rising to c 15m aOD in the west.

The bedrock geological boundaries run north to south, and it changes from the Oolite series in the east by South Ferriby, through the Great Oolite series to Lias mudstones and siltstones by Old Winteringham, all overlain by glacial clay, silt and sand (bgs.ac.uk). Old Winteringham lies mainly on a gravel ridge with areas to the north and south overlain by alluvium, formed from the late Roman period onwards. The borehole data (Table 1) demonstrates the predominance and depth of the clays and silts at South Ferriby and along the South Humber foreshore to Low Farm. Further inland, at Eastfield, there is a change to glacial sands and gravels overlying the boulder clay (Fig 2).



Scale 1:50,000 (A4)

Pipeline location Fig 1

Table 1: Extrapolated borehole data, South Ferriby to Eastfield

Borehole	Eastfield SE92SE33	Low Farm SE92SE19	Humber bank SE92SE15/A	South Ferriby SE92SE23	South Ferriby SE92SE34	South Ferriby SE 9761 2104
NGR	SE 9511 2132	SE 9597 2128	SE 9620 2120	c SE 9600 21460	SE 9756 2104	SE 9761 2104
a OD	4.6m	3.7m	4.72m	none given	none given	Starting 50m below
Depth (m)	41.1m	21.50m	18.29m	5.96m	23.5m	sea level 93.5m
Geology	Loam	Clay, soft grey-brown	Soil	Silt layers	Brown sandy clay	
Thickness depth	0.6m thick	3.32m thick	0.30m thick	3.85m thick	2.0m thick	
		Clay, soft blue-grey, peaty bottom	Clay	Silt layers, with sand	Silty clay	
		5.02m thick	1.83m thick	2.11m thick	2.5m thick	
		8.36m deep	2.13m deep	5.96 deep	4.5m deep	
	Glacial sand and gravel	Silt sandy red-brown	Warp-alluvial clay		Silt	Clays of the Ancholme Group
	13.4m thick	0.25m thick	5.79m thick		6.5m thick	
	14m deep	8.61m deep	7.92m deep		14m deep	51m thick
	Boulder clay	Clay variable grey-brown to red-brown, alternating chalk frags and silt	Peat		Black silt, fine sand	Kellaway Beds and Cornbrash
	5.2m thick	9.14m thick	0.92m thick		6.5m thick	7m thick
	19.2m deep	17.85m deep	8.84m deep		21m deep	58m deep
	Limestone with clay layers	Sand	Sand		Boulder clay	Glentham Formation of clays and slate
	16.7m thick	3.07m thick,	0.2m thick		1.5m thick	19m thick
	38.7m deep	20.92m deep	10.06m deep		23.5m deep	Upper Estuarine from 69m 77m deep
	Shale	Gravel	Clay, soft and hard			Hibaldstow Oolite limestone
	8.0m thick	0.58m thick	5.48m thick			11m thick
	41.1m deep	21.50m deep	15.54m deep			88m deep
		Clay with sand	Clay with sand			Kirton and Raventhorpe Beds
		2.95m thick	18.29m thick			6m thick recovered 93.5m deep

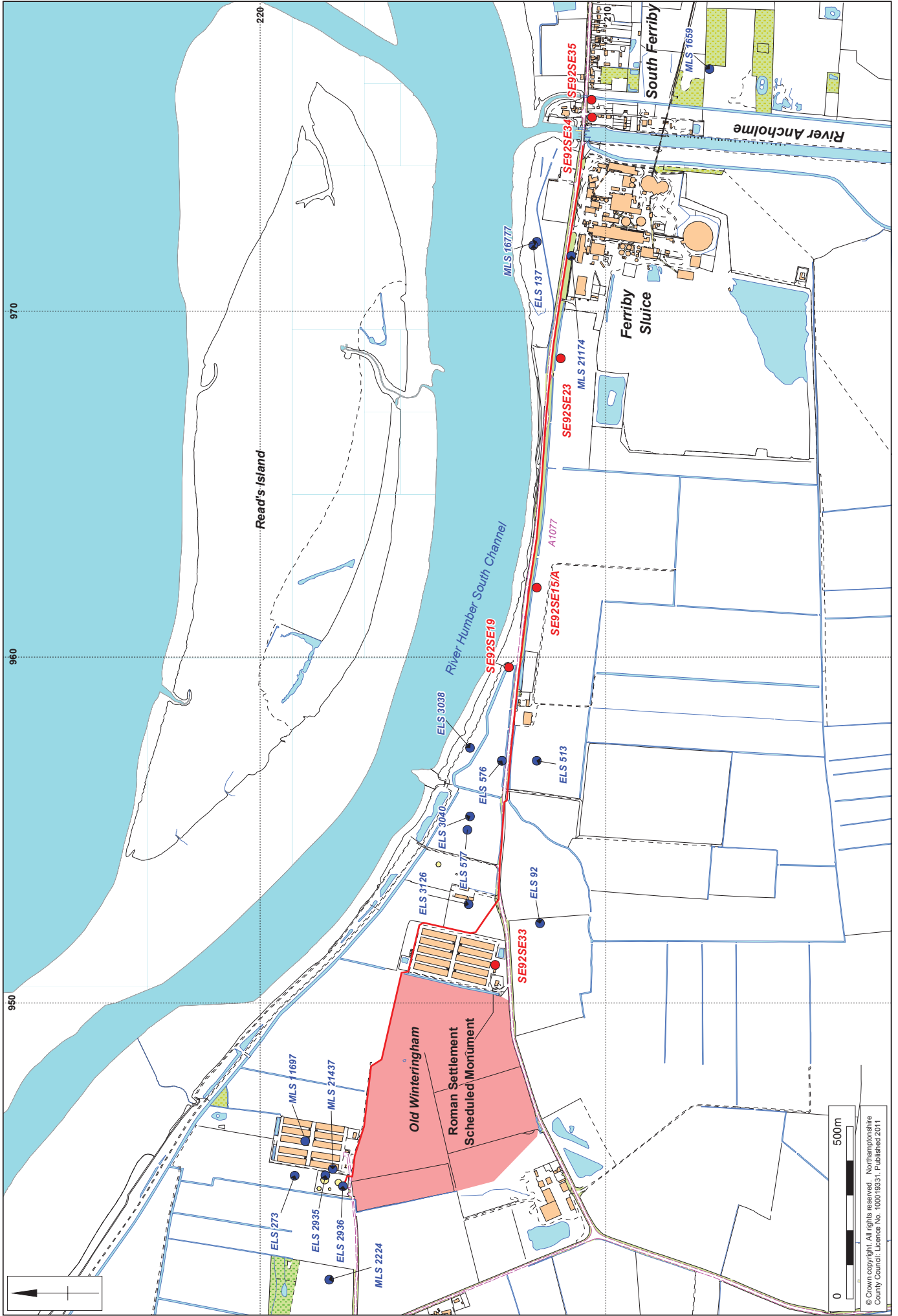
3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Historic Environment Record (HER) data

A visit was made to the North Lincolnshire Historic Environment Record Office for a search of the HER records. The help received there was much appreciated and a copy of the Lindsey Archaeological Services excavation report (LAS 2007) was made available (Table 2; Fig 2). Information relating to South Winteringham and Ferriby Sluice has also been obtained from The National Heritage List for England (<http://www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england/>).

Table 2: Historic Environment Record (HER) data

HER ref	NGR SE	description
ELS 92	9523 2119	Road widening, no features or finds
ELS 3040	95539 21393	Tidal defences, no features or finds
ELS 3038	95737 21334	Enclosures, Geophysical survey at Winteringham Ings 2001
ELS 576	957 213	Fieldwalking, no finds
ELS 577	955 214	Fieldwalking, no finds
ELS 513	957 212	Fieldwalking, no finds
ELS 3126	95285 21397	Watching brief for groundworks for new buildings, no features or finds
ELS 2936		Old Winteringham Roman settlement (Scheduled Monument No. 1005243)
ELS 2935	94501 21811	Evaluation and excavation at Winteringham Waste Water Treatment Works, features and finds Late Iron Age to Roman 2nd century
ELS 273	945 219	Fieldwalking, no finds
MLS 11697	946 218	Monument, part of Old Winteringham, destroyed 1988; pottery and finds recovered of 1st and 2nd century AD date
MLS 1659	977 207	Settlement and kilns found in 1926, 1st to 2nd centuries, not seen in excavations 1982
MLS 16777 ELS 137	9720 2120 9719 2121	Roman road/trackway running east to west excavated 1996, dated by pottery to 1st and 2nd centuries
MLS 21437	9452 2179	Late Iron Age ditches and pottery; early Roman field system and corn drier, abandoned by flooding 2nd century
MLS 2224	942 218	Geophysics and excavation found features and pottery dated from the Late Iron Age to Roman 2nd century
MLS 21174	9716 2110	World War Two pillbox disguised as garden feature north of Cemex cement works



Route of the pipeline and Historic Environment Record (HER) data, and borehole locations Fig 2

Scale 1:10,000 (A3)

© Crown copyright. All rights reserved. Northamptonshire County Council. Licence No. 100018331. Published 2011

It is notable that despite the density of archaeological features within the Scheduled Monument of Old Winteringham, programmes of fieldwalking have failed to find any artefacts in the fields to the east and south-east (ELS576, 577, 513) nor have any archaeological watching briefs and evaluations in the same area (ELS92, 3126). Fieldwalking to the north (ELS273) also drew a blank despite the material found during the construction of the chicken farm and the excavations of 2003 by Lindsey Archaeological Services (LAS2007; ELS2935). This could be an indication of the depth of flood deposits since the 2nd century AD when coastline settlement appeared to have been abandoned.

3.2 Archaeological background

Early prehistoric

A flint tool from the Upper Palaeolithic period was recorded to the west of Old Winteringham. A Neolithic stone axe and flint knife, Bronze Age pottery and a flint barbed and tanged arrowhead have also been found in the same area.

Iron Age

There does not appear to be an early or middle Iron Age presence, although this may have been masked by the widespread late Iron Age settlements in the area. The Corieltavi, previously known as the Coritani, were the major tribal group in what is now North Lincolnshire and the East Midlands. Only late Iron Age features, pottery and coins have been found in excavations in and around Old Winteringham when the sea level may have dropped to allow the land to be brought into pasture (LAS 2007, 12; Figs 2 and 3; ELS2935, MLS21437, MLS 2224).

A gold and silver coin hoard of the late Iron Age, 1st century BC date, found in 1906 in South Ferriby, brooches and other finds of the same period found around the town and along the foreshore east of the River Ancholme, indicate their presence in the area (www.pastscape.org.uk).

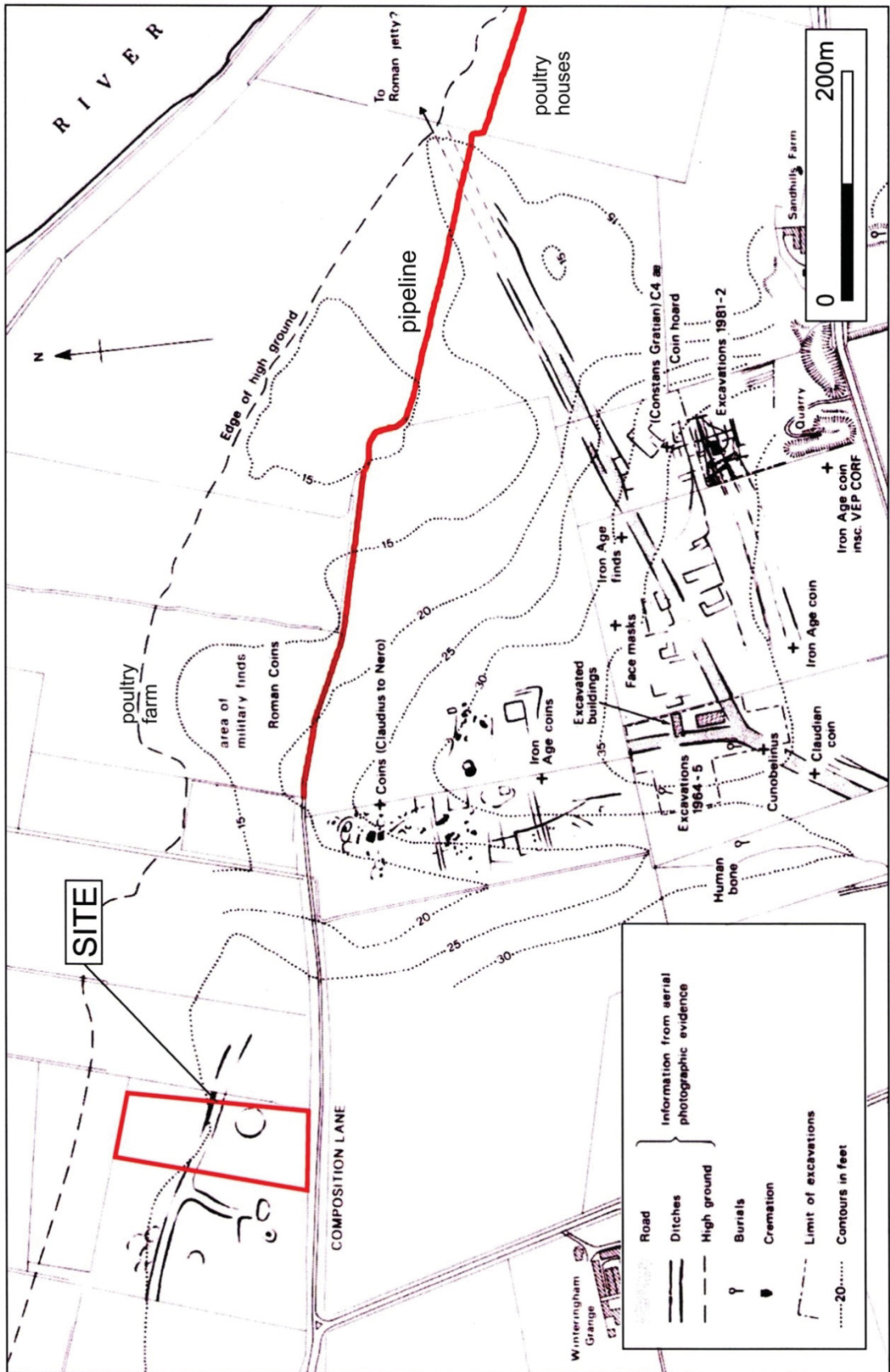
Roman

Settlement around South Ferriby continued following the Roman occupation (MLS1659). Remains including pottery kilns dated to the 1st and 2nd centuries AD were found in 1926 to the east of the River Ancholme (MLS 1659), although they were not seen during excavations in 1982. Finds of the same period have been found around the town and along the foreshore.

Old Winteringham

The Roman settlement of Old Winteringham lies at the northern end of Ermine Street where the road divided into two. This major settlement has been known since at least the 18th century, where building remains and other finds were noted by the antiquarian William Stukeley. It is a Scheduled Monument (SM No 1005243).

A trackway (MLS 16777, ELS 137, Fig 2) running east to west, constructed of brushwood with a surface of flint and quartz pebbles, and dated to the 1st and 2nd centuries AD was discovered in 1995 just west of the River Ancholme, and possibly continuing westward to join Ermine Street, linking South Ferriby with Old Winteringham. The present A1077 may lie on part of its course (www2.hull.ac.uk, www.heritagegateway.org.uk).



Recorded archaeology of Old Winterringham prior to 1995
 (© Pre-Construct Archaeology, Lincoln)

Fig 3

A few pottery sherds were found in 1960 when the sewage outfall pipe was laid north of the Composition Lane trackway to the Humber Bank. Two further sherds were found by Lindsey Archaeological Services during a watching brief in 1984 during the installation of a new pipe parallel to the first, adjacent to the poultry farm (LAS 2007, SLS3495).

Excavations carried out by Ian Stead in 1964-5 at the Ermine Street road junction and to the east in 1981-2 by Humberside Archaeology Unit revealed an extensive multi-period settlement (Fig 3). The boundaries of the settlement have yet to be defined, although the waste water site adjacent to the poultry farm probably lay on the edge (Rowlandson 2010, 19, SLS4023). Aerial photographs indicate the possibility that the right fork of Ermine Street was directed towards the Humber, crossing the boundary of the scheduled monument area just to the north-west of the chicken houses (Figs 2 and 3).

During the construction of the chicken farm in 1988, to the north of the scheduled area, a metal detecting and pottery collection was carried out and comprised material dating to the 1st century AD, such as Claudian, Neronian, Vespasian and Domitian coins (AD 41-96) and La Tene III, Hod Hill and Colchester derivative brooches of the same date (SMR 11697 report). Excavation was carried out in 2003-4 by Lindsey Archaeological Services adjacent to the chicken farm ahead of the northern extension of the waste water treatment works. Ditches defining field systems were dated to the 1st and 2nd centuries were recorded as well as a corn drier and the pottery assemblage included high status imported wares (LAS 2007; ELS2935). Further west an evaluation by Pre-Construct Archaeology (Lincoln) recorded five ditches, one ditch containing fragments of late Iron Age pottery and another ditch containing sherds of Romano-British pottery dating to the 1st and 2nd centuries AD (Rowe 2008).

A recent study of the available material suggests that Old Winteringham was an important settlement of the 1st century AD, where agricultural goods were collected and processed, rather than the earlier interpretation of this being a site of military occupation (Rowlandson 2010, 19, SLS4023)).

Saxon and medieval

The town of South Ferriby has Saxon origins, but there is little indication of settlement west of the River Ancholme. There is no indication of medieval activity in the vicinity of the pipeline or across Old Winteringham.

Post-medieval

Enclosure and cultivation on the higher ground removed all above ground traces of Ermine Street and any associated buildings, as described by Archdeacon Trollope,

*The Ermine Street can no longer be traced in Winteringham, its bank having been destroyed through the enclosure of that parish and subsequent cultivation; but there is no doubt as to its line, and the spot where it reached the Humber; for, continuing its former straight course northwards, it would at length reach the summit of a small promontory on that great river, half a mile northeast of the village of Winteringham, which formerly protected a little haven called Flashmire, now silted up. This terminal was marked by a Station, probably that of Ad Album, which Stukeley states was ploughed up a few years before he wrote his *Itinerarium Curiosum*. (Trollope 1868).*

Modern

At the eastern end of the pipeline is Ferriby Sluice (Scheduled Monument No. 10055244), which was completed in 1844 by Sir John Rennie. Here the river runs in two channels known as the *Old River Ancholme* and the *New River Ancholme*, the later being the result of a local landowner cutting a straight drainage channel in 1635 to help take the waters of numerous becks out to the River Humber whilst the old "Old River Ancholme" follows its natural course (internet: <http://www.flickr.com/photos/lincolnian/1126820515/>. Accessed 16/11/11).

The eastern end of the pipeline runs past the Cemex cement works. The original cement factory was built in 1938 by Eastwoods Humber Cement. The first chalk was dug by hand and transported by bucket conveyor to the works and the clay was excavated from behind the works and transported on a narrow gauge railway system. The works was commissioned by three German engineers, who were called home due to the outbreak of World War II before their work was completed. Rugby Portland Cement Co Ltd bought out Eastwoods Humber Cement in 1962 and installed a new kiln and conveyor (cemex.co.uk).

There is a pill box of the Second World War disguised as a garden feature (MLS 21174) just to the west of the River Ancholme and to the north of Cemex (Fig 2).

The poultry farm, adjacent to the water treatment works at the western end of the pipeline, was built in 1988 over part of an Iron Age and Romano-British settlement (see above).

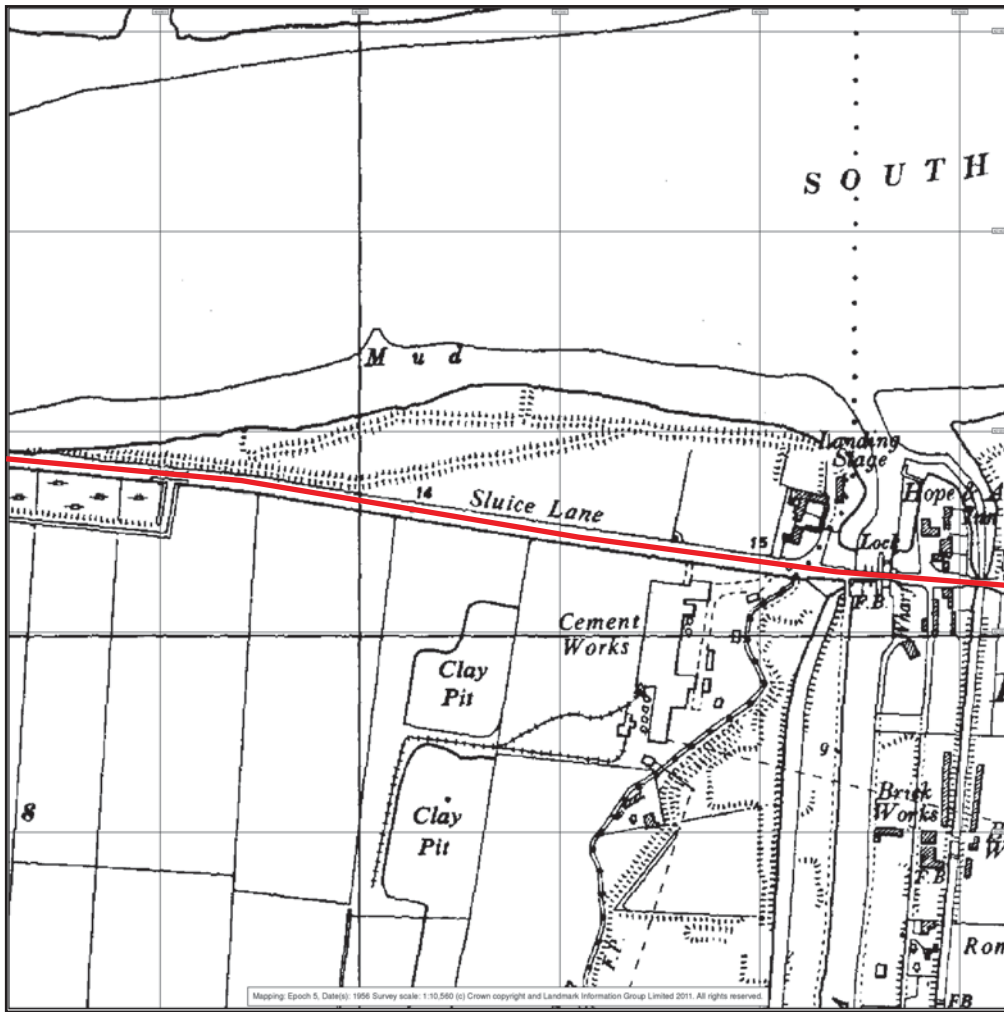
3.3 Historic maps

In a visit to the Lincolnshire Archives a view of the *Map of the manor of Wintringham in the County of Lincoln for the Earl of Castleton by Joseph Dickinson 1710* (MISC DEP 625/1) showed the area of Old Wintringham as fields but with no other information (not illustrated).

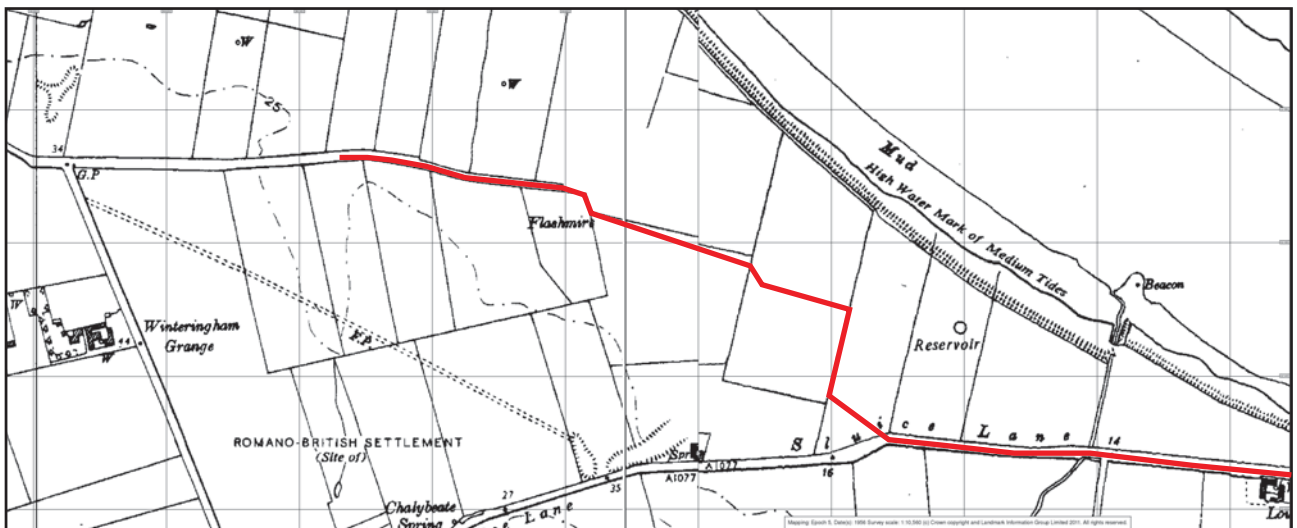
A map showing the auction of farmland by the Co-operative Society in 1958 (DIXON 20/1/125) labelled the area as Roman settlement (not illustrated).

Ordnance Survey map 1956, South Ferriby to Old Wintringham, with pipeline, 1:10,560 (Fig 4)

This map, without the length along the central foreshore, illustrates the industrial area by Ferriby Sluice and the agricultural use of land over Old Wintringham with minimal building damage at this time.



East end of pipeline, Ferriby sluice



West end of pipeline, Old Wiveringham

Ordnance Survey map 1956, South Ferriby to Old Wiveringham, showing pipeline route Fig 4
1:10,560 (Landmark Historic Map)

4 HISTORICAL ASSESSMENT

4.1 Historical assessment criteria

For the purposes of the assessment, the heritage interest and the significance of the site has been associated with designation status and the following categories have been utilised in Table 3.

Table 3: Criteria for assessing the relative importance of cultural heritage sites

Level of sensitivity	Definition
Very high - high	Sites of international importance: World Heritage Sites Sites of national importance include those that are designated as Scheduled Ancient Monuments or those that are considered to be suitable for scheduling, Grade I and Grade II* Listed Buildings, Registered Battlefields, Registered Historic Gardens
Medium	Sites of regional importance include Grade II Listed Buildings, Conservation Areas and those sites which are considered to be significant regional examples with well-preserved evidence of occupation, industry etc
Low	Sites which are of less-defined extent, nature and date or which are in a poor or fragmentary state, but which are considered to be significant examples in a local context
Negligible	Areas in which investigative techniques have produced negative or minimal evidence of antiquity, or where large-scale destruction of the archaeological resource has taken place (eg by mineral extraction)

The magnitude of impact is a measure of the effect of development on known heritage and cultural features. Any proposed development could potentially have a direct or indirect impact on the archaeological resource. The most severe direct impact would be the total loss of a Scheduled Monument. Direct impacts on the archaeological resource are usually permanent. Any indirect impact can be assessed in terms of changes to setting and utility and may include the construction of visually intrusive structures within a historic landscape.

Impacts on the archaeological resource generally arise as a result of construction activities and are largely permanent and adverse.

Table 4: Criteria used to determine the magnitude of impact

Level of magnitude	Definition
Very high - high	Total or large-scale destruction or a major impact on the archaeological resource which fundamentally alters the nature or setting of the feature. Significant visual intrusion on the character or setting of a site
Medium	Significant damage to the archaeological resource or moderate visual intrusion that has some effect on the character or setting of the site
Very low - low	Minor damage to the archaeological resource or minor visual intrusion
Minimal	Very minor changes to elements or setting.
No Change	No change

The significance of the impact on the Historic Environment is therefore assessed by combining the importance, or sensitivity, of the archaeological monument and historic landscape with the predicted magnitude of the impact as shown below.

Table 5: Matrix for establishing significance

		Sensitivity of receptor		
		Low	Medium	High - very high
Magnitude of impact	No change	insignificant	insignificant	insignificant
	Minimal change	negligible -minor	minor	minor - moderate
	Very low - low	minor	minor - moderate	moderate
	Medium	minor - moderate	moderate	moderate - major
	High – very high	moderate	moderate - major	major extreme

Positive impacts may also be observed, for example when the historic landscape of an area is restored or enhanced. A potentially significant effect on a cultural heritage feature is considered to occur when a major or moderate-major impact is predicted.

4.2 The historical assessment

As the pipeline is an underground replacement there is no impact on the landscape or any buildings (Figs 5 and 6).

However, there is a minor to moderate level of impact on the below ground archaeology.

The moderate impact is seen in the west where the pipeline runs alongside the northern edge of the Scheduled Monument of Old Winteringham Roman settlement. Ermine Street may cross that boundary, and other features might also be present, along with associated artefacts. This part of the area has not been subject to previous archaeological intervention to establish the extent of the settlement.

The minor impact lies to the east where there is a possibility that the pipeline may cross a Roman trackway (MLS 16777).



Ferriby Sluice, 2007 (Google © 2010, Image © 2011 Get mapping plc) Fig 5



Old Winteringham, 2007 (Google © 2010, Image © 2011 Get mapping plc) Fig 6

5 CONSTRUCTION IMPACT ASSESSMENT

The pipeline to be replaced is a length of 3920m (3.92km) from the New River Ancholme at South Ferriby in the east, along Sluice Road (the A1077), through agricultural land and alongside the border of the Old Winteringham Scheduled Monument to the AW STW (Anglian Water Sewage Treatment Works) located off Ermine Street (Appendix 3, Fig A3.1)

The following sections summarise the methodologies and the programme of works as detailed in the attached appendices provided by Anglian Water.

5.1 Pipe replacement methodology

The existing 300mm diameter pipe will be replaced with a 355mm diameter pipe by pipe bursting within the existing trench. This method entails following the existing utility path with minimal above ground disturbance, thus reducing open excavation by up to 95%.

Launch and reception pits will be excavated along the existing pipeline. A steel rod will be passed through the sewer between the launch and reception pits. The bursting cone and new pipe are attached to the rod at the launch pit and fixed to the bursting equipment already established at the reception pit. The bursting cone fixed to the steel rod will enter the existing pipe where it will be hydraulically pulled forward to fracture the existing pipe and force it into the compressible material, ie the surrounding soil, creating a ring-shaped space sufficient for the new continuous 355mm pipe to be pulled through directly behind (Appendix 1, *Method Statement Work Sheet*, Barhale nd; Appendix 2, Hammerhead nd *Static Pipe Bursting Systems*).

The location of the site compound has yet to be finalised, but it is most likely to be in the Winteringham Anglian Water Sewage Treatment Works (Xuan Li, pers com).

There will be two temporary routes for the construction machinery to access the pipeline alongside the Scheduled Monument, from the STW in the west and from the south-east corner of the poultry houses in the east (Fig A3.30, highlighted in green). Once the vehicles reach the pipeline they will follow the route of the pipe.

The excavated material from the pits in the highway will be removed to the site compound by dumper. Suitable material will be reused for backfill, otherwise the material will be removed from site. The excavated material from the pits in the farm land will be stored adjacent to the pit (topsoil and lower excavated material being stored separately) and used for backfilling the pits.

The whole process is expected to take 13 weeks.

5.2 The pipeline excavation areas

There will be 14 Launch/Insertion pits (IP) and nine Reception/Pulling pits (P) excavated at 200m intervals. Nineteen Lead trenches (LT) will be excavated at 400m intervals up to LT 8 and 9 at 1600m, thereafter at different intervals due to topographical or other exigencies. Four open cut trenches will be excavated with a total length of 108m; three trenches with a combined total of 98m will be on or near the boundary of Old Winteringham. The average dimensions of these interventions are given below in Table 6 and in Appendix 2 and Appendix 3, Figure A3.2.

The spread width along the field section will be 12m and, due to the construction method, this will not entail any topsoil stripping.

Table 6: Pipeline excavation areas

Excavation type	No	Length (m)	Width (m)	Depth (m) average
Pipe bursting rig reception/pulling pits P	9	2.5	1.5	2
Lead trenches	LT 19	10.0	0.60	1.25
Insertion pits	IP 14	2.5	1.5	2
Open cut trenches	OC 4	10 by IP6 to IP7 19 by IP10 to IP11 37 by IP12 to IP13 42 by IP14	0.65	2

5.3 The impact upon the archaeology

There is a potential impact upon the archaeology in the length of pipeline alongside the Scheduled Monument border of Old Winteringham Roman settlement (Fig 7). Damage to any potential features would have already been caused by the excavation of the original pipeline trench. However, it is possible that the excavation of the Launch and Reception pits, the Lead Trenches and the lengths of Open Cut trenches in the vicinity of Old Winteringham Scheduled Area may reveal features and/or artefacts pertaining to the site.

At the west end of the pipeline, by the poultry farm, there will 42m of open cut from pit IP14 and LT19 to the end of the pipe. This is close to the area from where significant finds were rescued in 1988, and adjacent to the area excavated by Lindsey Archaeological Services in 2003-4 (LAS 2007).

Along the remaining length of the pipeline, from reception/pulling pit P1 by the Cemex plant to P7 by the poultry houses, the only evidence found along the south bank has been the trackway (MLE 167777), which may cross the pipeline.

The start of the replacement pipe at IP1 and LT1 may impact upon historical remains associated with Ferriby Sluice (Scheduled Monument No. 1005244) and the River Ancholme, although the works lie beyond the Scheduled Area.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The groundworks for the pipe replacement are largely within the limits of the existing pipeline, however, there is clearly some potential for works to impinge on undisturbed ground immediately adjacent to the existing pipe trench and therefore to expose and disturb unknown archaeological remains along the general length of the works, and specifically so in the vicinity of Old Winteringham Roman settlement, at the western end of the works, and possibly a Roman trackway towards the eastern end of the works.

Aerial photography indicates that the north-east branch of Ermine Street could cross the boundary of the Old Winteringham Scheduled Monument, and the pipeline, just to the north of the poultry houses at c SE951216 (Fig 3). The actual extent of settlement at Old Winteringham is not precisely defined. Significant archaeological remains were destroyed during the building of the poultry farm to the west in 1988 and more was found in the adjacent archaeological excavations in 2003 (LAS 2007). Therefore, the laying of the original pipeline probably disturbed some settlement remains, and further remains are likely to survive adjacent to the pipeline between the poultry houses, to the east, and the poultry farm, to the west. Monitoring of the pipeline could therefore add to the existing knowledge of the extent and nature of the settlement.

Part of a Roman trackway (MLS 16777) running east to west, about 100m north of the pipeline, was found in 1995 near Ferriby Sluice. The course of the trackway is unknown, but it could be crossed by the pipeline as it follows the A1077 close to the Humber foreshore. Identifying the location of this trackway to the west of the previous discoveries would add to the understanding of this feature, and extend its known length.

Fieldwalking and archaeological events in the kilometre east of the poultry houses are blank. As this area is low lying, it is probably a reflection of the lack of settlement at any time in an area that has been liable to flooding for many centuries.

At the eastern end of the scheme, the works commence immediately west of the boundary of the Scheduled Monument of Ferriby Sluice (see Appendix 5). There is no apparent threat to the Scheduled Monument.

6.2 Recommendations

Given that the groundworks for the pipe replacement are largely within the limits of the existing pipeline, any pre-emptive trial trenching could only be carried out adjacent to the existing pipeline. Such works would therefore create a greater disturbance of any archaeological deposits than the pipe replacement groundworks themselves. It is recommended, therefore, that pre-emptive trial trenching is not necessary or desirable.

As the works run along the boundary of the Scheduled Monument of Old Winteringham, an application for Scheduled Monument Consent (SMC) will be made relating to the entire adjacent length of the pipeline, even though it is unclear how much of the pipeline actually lies within the Scheduled Monument boundary. Application will be made immediately following acceptance of the present report, which will inform the application.

If considered necessary by English Heritage, Scheduled Monument Consent will also be applied for in relation to the eastern end of the works, which lie adjacent to the Scheduled Monument of Ferriby Sluice.

The proposed mitigation is for an intensive archaeological watching brief to be maintained on all groundworks along the entire length of the scheme, to record all exposed deposits and to recover any archaeological finds. Excavation of all pipe bursting pits and open trenches should be done under archaeological supervision, and carried out with mechanical excavator using a toothless ditching bucket. All upcast spoil from the groundworks should be scanned both visually and by metal detector for maximum recovery of finds.

In addition, in all works adjacent to the Scheduled Monument of Old Winteringham, the archaeologist will also be responsible for monitoring traffic access to and from site where it impinges on or lies adjacent to the Scheduled Area in order to ensure that no damage is caused by vehicle traffic, and that vehicle access conforms to agreed proposals.

The required works will be further detailed in a Written Scheme of Investigation, to be prepared following acceptance of the current assessment and the issuing of a brief by North Lincolnshire Council, Historic Environment Record Team.

BIBLIOGRAPHY

IfA 2008 *Standard and Guidance for Archaeological Desk-Based Assessment*, Institute for Archaeologists

IfA 2010 *Code of Conduct*, Institute for Archaeologists

LAS 2007 *Winteringham Waste Water Treatment Works Extension, Archaeological Evaluation, Watching Brief and Excavation*, Lindsey Archaeological Services, report **947**

Malone, S, and Williams, M, (eds) 2010 *Rumours of Roman Finds, Recent work on Roman Lincolnshire: Proceedings of a conference at the University of Lincoln in 2005 including further articles revised and updated to 2010*, Heritage Trust of Lincoln

Rowe, M, 2008 *Archaeological evaluation on land at Composition Lane, Winteringham, North Lincolnshire*, Pre-Construct Archaeology (Lincoln), Job number **431**

Rowlandson, I, 2010 Looking North: Old Winteringham in the First Century AD, in S Malone and M Williams (eds), 15-29

Trollope, the Venerable Archdeacon, 1868 *The Ermine Street, or Old Roman Road*, A Paper read at the Lincoln Meeting, 17th June 1868

Websites

archaeologydataservice.ac.uk

www.heritagegateway.org.uk/Gateway/Results

maps.bgs.ac.uk/GeoIndex/default

www.pastscape.org.uk/

www2.hull.ac.uk/science/waerc/origins/ancholme_and_lower_trent_valle.aspx

www.cemex.co.uk/su/su_co_sf.asp



Northamptonshire County Council

Northamptonshire Archaeology

Northamptonshire Archaeology

2 Bolton House
Wootton Hall Park
Northampton NN4 8BE

t. 01604 700493 f. 01604 702822

e. sparry@northamptonshire.gov.uk

w. www.northantsarchaeology.co.uk



Northamptonshire
County Council