18 HISTORIC ENVIRONMENT

18.1 INTRODUCTION

18.1.1 This chapter provides a summary of information relating to the historic environment of that part of the Humber Estuary and its hinterland that will be affected by the development of the Marine Energy Park. The term "historic environment" has been defined in Planning Policy Statement 5 as

> *'All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora. Those elements of the historic environment that hold significance are called heritage assets'.*

18.1.2 In practice, the scope of the historic environment (heritage assets) includes archaeological sites, wrecks, buildings, battlefields, parks and gardens, hedgerows and palaeo-environmental deposits. Many of these sites (or groups of them) that are recognised as being of national (or international) importance are "designated"; such as World Heritage Sites, protected wrecks, military remains, scheduled monuments, listed buildings, conservation areas, registered parks and gardens and registered battlefields. Other heritage assets may have significance at a national level, but are not designated. Important hedgerows, as defined under the Hedgerow Regulations, are not considered to be designated heritage assets.

18.1.3 Designated assets, and other assets of high significance, are generally protected from development that would materially affect their physical survival or setting. Where there are overriding reasons why development may remove or affect heritage assets of significance then appropriate means of mitigating the adverse effects are required.

18.1.4 This chapter addresses the issue of terrestrial and marine archaeology and details the approach to assessing the impacts of the proposed development on terrestrial and marine archaeological resources.

18.2 LEGISLATION, POLICY AND GUIDANCE

18.2.1 National cultural heritage policies (described below as "Terrestrial Archaeology") apply only above Mean Low Water (MLW). Below this it is referred to as "Marine Archaeology" and their place is taken by the

following relevant pieces of legislation and two significant voluntary codes of practice.

Terrestrial Archaeology

Ancient Monuments and Archaeological Areas Act 1979

18.2.2 The Ancient Monuments and Archaeological Areas Act 1979 (as amended) requires the Secretary of state to maintain a schedule of sites of national importance which receive statutory protection. Where scheduled sites are affected by development proposals there is a presumption in favour of their physical preservation. There is also a presumption against developments which have a significant impact on the integrity of the setting of scheduled monuments. Any works, other than activities receiving class consent under The Ancient Monuments (Class Consents) Order 1981 (as amended) which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up a Scheduled Ancient Monument require consent from English Heritage, on behalf of the Secretary of State, Department for Culture, Media and Sport.

Planning (Listed Buildings and Conservation Areas 1990

18.2.3 Planning (Listed buildings and Conservation Areas) Act 1990 protects buildings of national, regional, or local historical and architectural importance. Buildings designated as "Listed" are afforded protection from physical alteration or effects on their historical setting.

The Hedgerow Regulations 1997

18.2.4 The Hedgerow Regulations 1997 affords protection to hedgerows of historic importance. The scheme came into effect on 1 June 1997 and any hedgerow, which is defined, at that date, as being of historical or ecological importance may require consent from the local planning authority prior to removal. Although afforded protection by statute, historically important hedgerows are not considered to be "designated" assets within the definition contained in PPS5.

National Policy Statements

National Policy Statement for Ports (NPS) 2011

18.2.5 The NPS for ports (2011) requires the applicant to consult relevant Historic Environment Record held by regulatory authorities. Where a development site includes heritage assets with an archaeological interest the NPS requires a desk based assessment of the assets to be

undertaken and, potentially, field based surveys. The decision maker is advised

'not (to) accept applications for consent where the extent of the impact of the proposed development on the significance of any heritage assets affected cannot be understood from the application and supporting documents'.

Planning Policy Guidance/Statements

Planning Policy Statement (PPS) 5: Planning for The Historic Environment 2010

18.2.6 PPS5 is the replacement for Planning Policy Guidance (PPG) Notes 15 (Planning and the Historic Environment, 1994) and 16 (Archaeology and Planning, 1990). A separate Guidance Note has also been published.

18.2.7 The principal objectives of the PPS5 are:

- to deliver sustainable development in the historic environment by recognising that heritage assets are a non-renewable resource.
- to conserve assets in a manner appropriate to their significance by ensuring that decisions are based on that significance as investigated to a proportionate degree.
- to put the assets, where possible, to an appropriate and viable use consistent with their conservation.
- to recognise the assets contribution to local character and sense of place and integrate the historic environment into planning policies.
- to contribute to an understanding of the past by ensuring that evidence is captured and made publicly available.

Local Plan Policies

North Lincolnshire Council Local Plan 2003

18.2.8 Local Plan Policy HE8 refers to Ancient Monuments, some of which are located within the village of East Halton. The policy states that,

'development proposals which would result in an adverse effect on Scheduled Ancient Monuments and other nationally important monuments, or their settings, will not be permitted'.

18.2.9 **Local Plan Policy HE9** refers to archaeological evaluation. The policy states that,

'sites of known archaeological importance will be protected. When development affecting such sites is acceptable in principle, mitigation of damage must be ensured and the preservation of the remains in situ is a preferred solution. When in situ preservation is not justified, the developer will be required to make adequate provision for excavation and recording before and during development.'

North Lincolnshire Core Strategy 2011

18.2.10 Policy CS6 HISTORIC ENVIRONMENT states that, the council will promote the effective management of North Lincolnshire's historic assets through:

- Safeguarding the nationally significant medieval landscapes of the Isle of Axholme (notably the open strip fields and turbaries) and supporting initiatives which seek to realise the potential of these areas as a tourist, educational and environmental resource.

- Preserving and enhancing the rich archaeological heritage of North Lincolnshire.

- Ensuring that development within Epworth (including schemes needed to exploit the economic potential of the Wesleys or manage visitors) safeguards and, where possible, improves the setting of buildings associated with its Methodist heritage.

- Ensuring that development within North Lincolnshire's Market Towns safeguards their distinctive character and landscape setting, especially Barton upon Humber, Crowle and Epworth.

- The council will seek to protect, conserve and enhance North Lincolnshire's historic environment, as well as the character and setting of areas of acknowledged importance including historic buildings, conservation areas, listed buildings (both statutory and locally listed), registered parks and gardens, scheduled ancient monuments and archaeological remains.

- All new development must respect and enhance the local character and distinctiveness of the area in which it would be situated, particularly in areas with high heritage value.

- Development proposals should provide archaeological assessments where appropriate.

Marine Archaeology

The Protection of Wrecks Act 1973

18.2.11 The Protection of Wrecks Act, 1973, enables the Secretary of State to make orders to protect certain wreck sites in United Kingdom waters from unauthorised interference on account of either their historic, archaeological or artistic importance or their potentially dangerous condition.

The Protection of Military Remains Act 1986

18.2.12 This Act makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft or designated vessel without a licence. All crashed military aircraft receive automatic protection, but the Ministry of Defence (MOD) must individually designate vessels.

The Merchant Shipping Act 1995

18.2.13 This Act states that any material brought to the surface must be declared to the Receiver of the Wreck. The Receiver aims to place all 'historical' finds (those over 100 years old) in museums or similar institutions.

UK High Level Marine Objectives (DEFRA 2009)

18.2.14 The UK government high level marine objectives (*Our Seas – A Shared Resource*) outline the government wide objectives to achieve sustainable development in the marine environment. The objectives state that the marine historic environment includes '*Individual sites and assets of historic, archaeological, architectural or artistic interest, whether or not they are afforded statutory protection by heritage protection legislation*'. The objectives also promote the use of spatial planning which '*recognises the protection and management needs of marine cultural heritage according to its significance*.'

Marine and Coastal Access Act 2009

18.2.15 This Act introduced a new system of marine planning across the UK, supported by a Marine Policy Statement adopted in March 2011 and Marine Plans, which are currently in development. The new system for marine planning dovetails with terrestrial Planning Policy Statements. The Marine Policy Statement requires the consideration of seascapes and the historic environment based on the following principles:

- The historic environment should be conserved in a manner appropriate and proportionate to its significance.

- Opportunities should be taken to contribute to our knowledge and understanding of our past from the historic environment and making this publicly available, particularly if a heritage asset is to be lost.

- The absence of designation for heritage assets does not necessarily indicate lower significance and non-designated assets should be considered subject to the same policy principles as designated heritage assets.

- Developments proposals should avoid or minimise conflict with the conservation of an asset's significance.

- Developments should adopt a general presumption in favour of the conservation of designated heritage assets within an appropriate setting proportionate to its significance.

- Substantial loss or harm to designated assets should be exceptional.

- Where the loss of the whole or a material part of a heritage asset's significance is justified, suitable mitigating actions should be required to record and advance understanding of the significance of the heritage asset before it is lost.

Other Guidance

18.2.16 In addition to the policy framework set out above, the preparation of the assessment also considers guidance set out in the following;

- (English Heritage 2006) Ports: the impact of development on the maritime historic environment. London.

- (English Heritage 2007) Wind Energy and the Historic Environment – Guidance for developers of wind energy projects. London.

- (English Heritage 2008) Conservation Principles, Policies and Guidance for the sustainable management of the historic environment. London.

- (English Heritage 2010) Planning Policy Statement (PPS) 5: Historic Environment Planning Practice Guide.

- (English Heritage 2011a) Seeing the History in the View: A method for assessing heritage significance within views.

- (English Heritage 2011b) The Setting of Heritage Assets: English Heritage Guidance.

- (BMAPA (British Marine Aggregates Producers Association) / English Heritage 2005) Protocol for Reporting Finds of Archaeological Interest. http://www.wessexarch.co.uk/files/projects/BMAPA-Protocol/protocol_text.pdf.

- (COWRIE (Collaborative Offshore Wind Research into the Environment) 2007) Historic Environment Guidance for the Offshore Renewable Energy Sector.;http://www.offshorewind.co.uk/Assets/archaeo_guidance.pdf.

- (COWRIE 2011) Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector. http://www.offshorewind.co.uk/Assets/final%20GEORARCH-09%20Offshore%20Geotech%20Guidance%20web.pdf.

- (The Crown Estate 2010) Model Clauses for Archaeological Written Schemes of Investigation. http://www.thecrownestate.co.uk/wsi_renewables.pdf.;

- (The Crown Estate 2010) Protocol for Archaeological Discoveries: Offshore Renewables Projects. http://www.thecrownestate.co.uk/pad_offshore_renewables.pdf ;

18.3 ASSESSMENT METHODOLOGY AND CRITERIA

Overview

Marine Historic Environment

18.3.1 The current data acquired for the assessment of marine heritage assets has comprised a desk-based assessment and is set out in the desk study undertaken by Humber Field Archaeology in 2010. This report is included as *Annex 18.1*. The study incorporates an assessment of existing literature and databases searches; results from a geophysical survey (Ferris 2010) undertaken in June 2010, which incorporated boomer survey, bathymetry and magnetometer survey; and results of a

vibrocore survey undertaken in July 2010. Further work incorporated into this chapter has included a re-assessment of existing literature and database searches, an assessment of historic charts held by the UKHO and the results of a walkover survey of the foreshore. It is anticipated that further work will be carried out to refine the details of mitigation following consent.

18.3.2 The extent of data searches undertaken for the marine historic environment has included all assets within the AMEP plus the closest relevant assets, up to 5km from the AMEP (*Figure 18.1*).

Terrestrial Historic Environment

18.3.3 The current data acquired for the assessment of terrestrial heritage assets has comprised a desk-based assessment of the proposed development on the south shore of the Humber Estuary (Cottam & Cox 2011a), followed by extensive geophysical survey of sample transects across 100 hectares of the AMEP site (GSB Prospection 2011), and an assessment of the setting, using public access, of designated assets within the broad study area (Cottam & Cox 2011b).

18.3.4 The desk study incorporates an assessment of existing literature and database searches and is included here as *Annex 18.2.* It includes a significant amount of information acquired from geophysical surveys, fieldwalking, trial trenching and archaeological excavation undertaken in previously–developed land in the north sector of the application area. The extent of the data searches undertaken for the terrestrial historic environment has generally included all assets within the application area plus up to 500 m around the site (*Figure 18.2*).

18.3.5 The more recent geophysical survey, by gradiometer, included approximately 100 hectares of previously undeveloped land, in the central and southern zones of the AMEP site, using an alternate, 10m-wide strip, recording approach. The report is included here as *Annex 18.3*.

18.3.6 To assess the setting of heritage assets, potentially sensitive receptors have been identified from an area up to 10 km from the AMEP site (the broad study area) as shown on *Figure. 18.2*. Those assets considered to lie within the Zone of Theoretical Visibility (ZTV) of the turbines, defined in *Chapter 20* of this Environment Statement (*Figure 20.3a),* have been visited, where access has allowed, and the contribution of the setting to the significance of the asset considered. The results of this assessment are set out in *Annex 18.4.* Marine assets below low water are not considered to have a setting for the purpose of this assessment.

Significance Criteria

18.3.7 PPS5 provides no terminology for ranking the relative significance of non-designated heritage assets. It is therefore necessary to define a method for the assessment of individual heritage features. In the absence of a nationally accepted means of ranking the importance of archaeological and cultural heritage assets (other than the Secretary of State's non-statutory criteria for the assessment of national importance – principally condition, period, rarity, group value and survival), a set of terms has been applied in order to provide a comparison of the relative importance of any cultural heritage features present on the site. The gradings are set out in *Table 18.1* and defined for each asset in *Annexes 18.1 – 18.3*. Most non-designated archaeological assets in the study areas are considered to be of local or county significance, based largely on their evidential or historical value.

18.3.8 In addition, where assets have been identified that are of high (generally national) significance then further assessment of the asset's setting has been undertaken using the guidance for the assessment of the value of heritage assets set out in PPS5, along with Conservation Principles (English Heritage, 2008) and the guidance on heritage significance within views (English Heritage 2011a) and the setting of heritage assets (English Heritage 2011b). The assessment concentrates on those nationally important heritage assets where it is considered that the visual setting contributes to the significance of the asset, and where intrusion into those views, either into or from of the asset, may have an effect on that aspect of the setting. The stages of assessment are shown in *Table 18.2.*

Table 18.1 Ranking of Significance of Heritage Assets

Grading	Grades of Significance	
A	National significance	Any designated or other asset considered to be of national significance due to its archaeological, architectural, artistic or historic interest. The asset would score high using the non-statutory criteria for assessing scheduled monuments.
B	Regional/County significance	Any asset considered to be of regional or county significance due to its archaeological, architectural, artistic or historic interest. The asset would score moderate using the non-statutory criteria for assessing scheduled monuments.
C	Local significance	Any asset considered to be of local significance due to its archaeological, architectural, artistic or historic interest. The asset would score low using the non-statutory criteria for assessing scheduled

Grading	Grades of Significance	
		monuments.
D	Not significant	Any asset that is not considered to be of archaeological, architectural, artistic or historic interest significance.

Table 18.2 Stages of assessment of the setting of Heritage Assets (after English Heritage 2011b)

Stage	Activity	Key factors considered
Step 1	Identify which heritage assets, and their settings, may be affected by the AMEP development.	Assets are included if they lie within the ZTV (turbines), are of high (generally national) significance and have settings that include features that may be affected by visual intrusion.
Step 2	Assess whether, how and to what degree these settings make a contribution to the significance of the heritage assets identified.	Undertake site visits to assets to individually consider and describe their current settings. Identify those aspects of setting that can be affected by visual intrusion.
Step 3	Assess the effects of the proposed development, whether beneficial or harmful, on the significance of the heritage assets.	Using photomontages (*Chapter 20; Figures 20.4a – f*), where relevant, and site inspection.
Step 4	Explore ways maximise enhancement to avoid or minimise harm.	Consider possible mitigation options.
Step 5	Make and document the decision and monitor outcome.	Assess the level of effect on setting and its overall significance, as set out in *Table 18.5*. Summary of effects in *Table 18.9*.

18.4 CONSULTATION

18.4.1 Consultation has been undertaken with the Archaeological Officer, Historic Environment Team, North Lincolnshire Council (NLC), and English Heritage officers (York office).

18.4.2 The results of consultation are set out in section Annex 2 2 of the Environmental Statement.

18.5 BASELINE ENVIRONMENT

Designated Heritage Assets within Broad Study Area

18.5.1 The locations of all designated assets within the broad study area are shown on *Figure 18.2* and summarised by type in *Table 18.3*. In total there are 29 Scheduled Monuments, one Registered park, 176 grade II Listed Buildings, 30 grade II* Listed Buildings, 27 Grade I Listed Buildings and two Conservation Areas within the 10 km radius. A full, summary gazetteer is included in the application document ref TR030001/APP/17.

Table 18.3 Designated Heritage Assets within the Broader Study Area

	Within 1 km	Within 5 km	Within 10 km	Totals
Scheduled Monuments	0	6	23	29
Registered Parks and garden	0	0	1	1
Grade II Listed Building	3	15	158	176
Grade II* Listed Building	0	16	14	30
Grade I Listed Building	0	5	22	27
Conservation Area	0	0	2	2
Other designation	0	0	0	0

Source: English Heritage ; East Riding of Yorkshire Local Plan; North Lincolnshire Local Plan; Northeast Lincolnshire Local Plan

18.5.2 There are no shipwrecks designated under the Protection of Wrecks Act 1973.

18.5.3 There are no shipwrecks protected under the Protection of Military Remains Act 1986.

18.5.4 There are no known aircraft remains protected under the Protection of Military Remains Act 1986, however there is one reported loss of a Halifax MKIII MZ576 bomber to the south of the AMEP which has not yet been located. As historical locations of aircraft wrecks are notoriously inaccurate (Wessex Archaeology 2008), it is possible that remains could lie within the AMEP.

18.5.5 All heritage assets within and adjacent to the AMEP site are summarised in *Table 18.4*.

Table 18.4 Heritage Assets within the Study Area

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
1	MLS19726	516840	417910	Findspot	A core and three flakes found near Killingholme Marshes during HWP fieldwalking. Two pieces are of till A flint and two of till B flint. The core is a late Mesolithic blade core with two plain striking platforms; one large platform has at least 18 blade-like removals and the second has at least seven flakes removed. The core retains a small patch of cortex at the distal end. One flake is blade-like and may be of a similar date to the core. One flake has a plain striking platform and one has a shattered platform. One has a pronounced bulb of percussion and one has a flat bulb. One flake is utilised. All three are secondary flakes. Two of the flakes are likely to be of a later date than the core and the blade-like flake, possibly dating to the Bronze Age.	Late Mesolithic – Bronze Age	None	C
2	MLS19797	515990	419280	Findspot	Part of a core of till A flint with at least eight blade-like flakes removed from a single plain striking platform. The worked edge also appears to have been used as a scraper.	Late Mesolithic to Late Neolithic	None	C
3	MLS19800	516360	418950	Findspot	Four flakes and a chunk of till A flint. Two are recorticated and patinated, one is complete and two have some post-depositional damage. One flake has a plain striking platform and a diffuse bulb of percussion. Three are secondary flakes and one is a tertiary removal.	Late Mesolithic to Late Neolithic	None	C
4	MLS19801	516490	418780	Findspot	Three secondary flakes of till A flint, two having some post-depositional damage.	Late Mesolithic	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
						to Late Neolithic		
5	MLS19802	516350	418700	Findspot	Five secondary flakes of recorticated till A flint. Three are patinated and three have some post-depositional damage. Most have been utilised and are worn along the edges.	Late Mesolithic to Late Neolithic	None	C
6	MLS19803	516380	418470	Findspot	A complete secondary flake of till B flint, with a plain striking platform, a pronounced bulb of percussion and some post-depositional damage. This site was listed in a desk-based assessment produced by AC Archaeology in 2006. No additional information.	Late Mesolithic to Late Neolithic	None	C
7	MLS 19805	516590	418970	Findspot	A tertiary flake of till A flint with a hinge termination.	Late Mesolithic to Late Neolithic	None	C
8	MLS 19808	517500	418590	Findspot	A tertiary flake of recorticated till A flint, with a large fault within the centre of the flint. It has been utilised along one edge.	Late Mesolithic to Late Neolithic	None	C
9	MLS 20198	515870	419130	Findspot	A rod microlith was found in Trench 6 context 106 (the fill of a Roman ditch) during an evaluation in advance of the Clough Road Realignment, 2004. Measuring 27.2 x 7 x 1.8mm, it is blunted down the left margin with fine sub-parallel retouch. Made on a blade blank, the base is hollow and the distal end forms a crescent. Residual chalk cortex	Late Mesolithic	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					suggests an east coast origin for the flint. Two other undiagnostic pieces of worked flint were found in the same context. One is a proximal primary flake made on speckled grey flint and is partially patinated. The other is also a proximal primary flake, made on olive grey flint, the distal end has evidence of platform preparation from an earlier removal. This site was listed in a desk-based assessment produced by AC Archaeology in 2006. No additional information.			
10	MLS 20440	516370	418810	Findspot	A small assemblage of 27 pieces of worked flint, found in 8 trial trenches during an evaluation carried out by Lindsey Archaeological Services for Able UK. The majority of the flint was found in Trenches 3 and 7, located on the slightly higher ground in the north-western corner of the application area. The assemblage comprised 2 scrapers, 1 scraper/knife, 11 flakes, 1 notched piece, 1 retouched piece, 2 retouched flakes, 1 blade, 2 blade-like flakes, 1 core and 5 pieces of debitage. The limited quantity of artefacts, and the absence of burnt flint, suggests that there was no sustained occupation in this area prior to the Iron Age, rather a series of transient visits for specific activities. It is possible that the gathering of flint from the boulder clay was one of these activities, as there are several reworked natural flakes from that source within this assemblage. The higher densities of lithic artefacts in the trenches on the higher ground imply that this was a favoured location, overlooking the landscape to	Early Mesolithic to Early Bronze Age	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					the north, east and south-east.			
11	MLS19727	516900	418200	Artefact Scatter	A scraper, two cores, nine flakes and a chunk were found to the west of Killingholme Marshes. Eight pieces are of till A flint and five of till B flint. Two are recorticated. Three pieces are complete and two have some post-depositional damage. The scraper is on an incomplete secondary flake that retains about 30% cortex. It has abrupt retouch along the distal section of the left edge. Both cores are incomplete, but still show evidence for rejuvenation. They both have one striking platform from which flakes have been removed. One has at least 13 flakes removed and the other at least 16. One of the flakes is a core rejuvenation piece, which has removed a large plain striking platform from a core. It has a cortical striking platform and a pronounced bulb of percussion. Two flakes have plain striking platforms and diffuse bulbs of percussion, and two have hinge terminations. Seven flakes are secondary removals and one is a tertiary flake. The only piece within this assemblage that is likely to be datable is a blade-like flake that could date from the Neolithic period. However, this piece is out of character amongst the rest of the assemblage, which is more likely to be of a later date.	Neolithic/ Bronze Age	None	C
12	-	517571	419443	Magnetometer anomaly	Apparently multiple objects, relative target size 11.41.	Unknown	None	C
13	MLS20140	516240	419160	Monument	A geophysical survey carried out in 2003 identified a cluster of ditch type anomalies, revealed one side of a rectangular enclosure, with a width of 27 metres.	Iron Age	None	B

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					Fragmentary anomalies were also detected inside the enclosure, which may have been sited on a low rise above wetter ground. An archaeological evaluation was carried in June 2004. Trenches targeted the enclosure and revealed archaeological deposits sealed beneath a thick layer of estuarine alluvium. The northern enclosure ditch was 2.42m wide, aligned east-west. 10.2 metres to the south was a larger, parallel ditch, measuring 3.55m wide. Six fill deposits were identified; the secondary fill contained frequent animal bone with occasional pottery and stone fragments. The upper fill contained heat affected stones, animal bone and frequent pottery, evidence for nearby domestic activity. A further parallel ditch was observed 26.5m to the south of the second, and was about the same width (4m). It was 1m deep. The primary fill of silty clay with stone fragments seemed to have been tipped into the ditch from the north, i.e. from within the enclosure. The secondary fill contained pottery; the upper fill contained stone fragments, animal bone and pottery. Within the area bounded by the enclosure ditches, a curvilinear feature was exposed which was interpreted as the drip gully of a roundhouse. It was between 0.65m and 2.25m wide, and may have been re-cut. The fill contained occasional bone and frequent pottery. Two post holes were located at the east of the circumference of the gully, suggesting an entrance. Other post or stake holes in the vicinity appeared to define two sides of a possible porch.			

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					The eastern edge of the gully was truncated by a north-south ditch, 1.25m wide and up to 0.75m deep. It may represent an internal division within the enclosure, created after the roundhouse had fallen out of use. The western arm of the main enclosure ditch contained five fills that contained animal bone, charcoal, fired clay and a small pottery group. Further east inside the enclosure, were pits and postholes. The eastern enclosure ditch had not been detected by geophysical survey due to the thick deposit of alluvium overlying it. Of the 277 sherds of hand-made Iron Age pottery, the majority were stone-tempered pottery, hard fired and reduced, with some exterior oxidation, the dominant form being the jar. Some examples paralleling those from Phase 2 at Weelsby Avenue, which have been dated to the Middle Iron Age. Bone fragments collected during the investigation included cattle, sheep/goat and horse. Butchery marks were recorded on only two bones, but it is thought that the assemblage represented butchery waste and/or domestic refuse. Some plant seeds were identified including a large number of cereal grains, the majority being bread/spelt wheat. Weed seeds indicative of arable fields were within the same samples, suggesting that the material was probably crop processing waste.			
14	MLS20441	516355	418823	Monument	A geophysical survey carried out in 2005 identified a probable Iron Age/Romano-British enclosure complex. It	Iron Age/ Romano-	None	B

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					was ovoid in shape measuring 65m by 45m with an internal ditch dividing the enclosure into two discrete areas. Other short linear ditches were detected both inside and outside the enclosure, and pits and/or areas of burnt material were also detected within the enclosure. Subsequently 46 evaluation trenches were excavated by LAS. In the north-western quarter of the enclosure, the main ditch was found to be 5m wide and in excess of 1.5m deep, having been re-cut on at least five occasions, moving progressively west. To the east of the main ditch was a sub-rectangular aligned ditch, cut by a wider and shallower ditch on a different alignment. A curvilinear ditch was also recorded, which may have been the drip gully of a circular building (roundhouse). The main ditch in the south-eastern part of the enclosure had be re-cut four times. The earliest ditch cut contained middle Iron Age pottery, while the first and third re-cuts both contained late Iron Age and Roman pottery. The single fill of the final re-cut contained middle Iron Age pottery. East of the main ditch, within the enclosure, was a length of curvilinear gully with part of a rectangular enclosure within the main enclosure. A trench located within the south eastern quarter of the enclosure recorded a series of intercutting ditches, whilst another positioned to investigate the terminal of a ditch on the east side of the enclosure also recorded curving ditch containing Romano-British pottery of 2nd Century AD. Further 2nd Century AD pottery was recovered from a ditch	British		

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					lying outside the enclosure and to the east of it. Subsequent open area excavation established that the archaeological remains consisted of two enclosures and three roundhouses but the full extent of the settlement was not established within the excavation area with activity extending both to the east and west beyond the limit of the excavation. All activity here has been dated to sometime within the late Iron Age (3rd to 1st century BC) representing settlement development of unknown duration within this period. Three sub-phases were identified of small scale changes within an essentially static farmstead. The Iron Age pottery ranges from the middle to late Iron Age, with erratic-tempered ware and slag-tempered ware the predominant types. Shell gritted wares, normally more abundant on Lincolnshire sites, take second place, and are mostly later in date. At least one type is known to occur in the 1st and 2nd centuries AD. The Roman pottery included a rusticated jar fragment of the late 1st to early/mid 2nd century, a curved rim jar of the early-mid 2nd century and a lid-seated jar of the same date. A single sherd of Samian ware was found from a mid 2nd century cup. There were no Roman sherds later than this date.			
15	MLS8618	517778	418443	Extant Structure	Killingholme North Low lighthouse. Lighthouse and adjacent lighthouse keepers house, now house. Built 1851 by William Foale for Trinity House, with later alterations and additions to rear. The lighthouse was used as a signal station for trawlers until 1920. Grade II listed.	Post-Medieval	Grade II Listed Building	A

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
16	-	517959	418268	Cartographic Evidence	1855 Ordnance Survey map shows a jetty north of 'Killingholme L^{t} Ho N^{o} 2'. The 1887 OS map shows the jetty to be immediately east of the Killingholme High lighthouse. The jetty continues to be marked on the OS maps until 1956 where no jetty is marked, but a number of piles are marked on the map in the foreshore where the jetty used to be.	Post-Medieval to Modern	None	B
17	-	517959	418238	Monument	One post was seen on the foreshore east of the Killingholme High lighthouse, thought to be possible remains of site 16.	Unknown	None	C
18	MLS20136	517000	419690	Cartographic evidence	Brick and tile yard to the south of North Killingholme Haven first appears on the OS maps in 1887. The brick and tile yard is served by a jetty on the foreshore and a footbridge. The brick and tile yard, and associated jetty, are recorded on OS maps through to 1910 but do not appear on the 1932 map.	Post-Medieval to Modern	None	C
19	-	517024	419701	Monument	Jetty remains located next to the reed bed extending towards the river at on a bearing of 60° for an estimated length of 7m. The spacing between the two closest timbers is 1.75m and the jetty seems to narrow slightly along its length. A total of 6 posts were visible above the mud upstanding to a height of around 0.25m. Possibly the remains of site 18.	Unknown	None	C
20	-	518357	417802	Cartographic evidence	Brick yard and jetty marked on the 1887 OS map to the north of South Killingholme Haven. A second jetty is added at the brick works by 1908 and by 1932 the site has been converted to a fish meal and fish oil works. The fish	Post-medieval to Modern	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					processing site has three jetties in 1932 but only one by 1951. The OS map for 1956 records no jetties at the site.			
21	-	518253	417911	Monument	Jetty remains extend approximately 40m from the sea wall on a bearing of 54°. A total of 12 pairs of piles remain upstanding, two pairs have their cross beams still intact, and a further six individual piles have lost their pair. The jetty timbers measure approximately 30cm by 30cm and stand around 1.2m high. The jetty is approximately 3.6m wide, with pile spacings of around 2.6m. Possibly remains of Site 20.	Unknown	None	C
22	MLS 20123 NMR 943015	517860	418560	Wreck	IVY, English Ketch, built 1874, recorded wrecked 1897 whilst on a fishing trip. Owner: J Munby, Master: E J Barth, Crew: 5. Vessel foundered and was lost following a collision with the Goole registered SS Corea. Location unknown.	Post-Medieval	None	C
23	NMR 943096	517860	418560	Wreck	WILLIAM, English Sloop Built 1883 recorded wrecked 1899. Owner: W Marshall & Sons, Grimsby, Master: J Ball, Crew: 2. Vessel foundered and was lost following collision with the Hull registered steam trawler ORINOCO. Location unknown.	Post-Medieval	None	C
24	NMR 907861 UKHO 8510	517858	418559	Wreck	SERGEI, Hull built screw steamer built 1899 wrecked after a collision, whilst en route from Malmo to Hull with pit props in 1923. The ship was raised and broken up 1923, however dispersal operations still on-going through to October 1924. UKHO provides alternative position 518697, 418548, which lies 40m outside of the MEP.	Modern	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
25	NMR 907862 UKHO 8511	518674	418595	Wreck	COOK S26, barge wrecked 11th February 1955. Salvage work undertaken in 1959, but still charted as a wreck on current charts. Remains of the barge have been confirmed as present on the seabed through geophysical survey, target size 12.62 (Emu 2).	Modern	None	C
27	-	518429	418869	Magnetometer anomaly	Apparent large single object, relative target size 8.83 (Emu 1).	Unknown	None	C
28	-	518238	418550	Magnetometer anomaly	Apparently multiple objects, relative target size 9.47 (Emu 3).	Unknown	None	C
29	-	517594	419145	Magnetometer anomaly	Strong singular signature, relative target size 12.58 (Emu 5). Possible wreck site.		None	C
30	-	517638	419593	Magnetometer anomaly	Strong singular signature, relative target size 11.55 (Emu 6(. Possible wreck site.	Unknown	None	C
31	MLS20144	515990	419420	Enclosure	A small Romano-British enclosure south of Haven road excavated in 2005	Romano-British	-	B
32	MLS19796	516020	419300	Findspot	A single greyware sherd found east of Haven Road during Humber Wetlands fieldwalking in 1999	Romano-British	-	C
33	MLS20138	516110	419300	Documentary evidence	Unnamed farm buildings east of Chase Hill Wood are recorded on early OS maps and were demolished by 1945. A geophysical survey undertaken in advance of development recorded anomalies possibly associated with their demolition	Post-medieval to modern	-	C
34	MLS20199	515870	419120	Site	Roman occupation, east of Clough Road. Ditches, pottery and animal bone were recovered in 2004 and further 1st-4th	Romano-British	-	B

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					century features were recorded in subsequent investigations. A series of field systems was identified and some evidence of small scale salt production.			
35	MLS19804	516600	418880	Findspot	A single greyware sherd was found during the Humber Wetlands Fieldwalking project.	Romano-British	-	C
36	MLS21227	516240	418648	Documentary evidence	A barrage balloon site operated by 942 Squadron Balloon Command was located a short distance to the east of Rosper Road. The area is now developed and the exact location is uncertain	Modern	-	C
37	MLS20098	515410	418210	Documentary evidence Cropmark	Medieval ridge and furrow was identified by geophysical, walkover and topographic survey. Surviving earthworks damaged in places by development	Medieval	-	C
38	MLS19806	516660	418230	Findspot	A single greyware sherd found during the Humber Wetlands Fieldwalking project	Romano-British	-	C
39	MLS8827 1365564	513680	415180	Extant structure	The Barton and Immingham Light Railway was authorised in 1907 to give access from Hull to Immingham. It ran from a junction at Goxhill to join the Humber Commercial railway at Immingham. It comprised a single line, opened in 1910/11 and was closed in 1963.	Modern	-	C
40	MLS21225	517240	418210	Structure	A 942 Squadron barrage balloon site on Station Road still has two shelters, both now modified for use as cattle byres. The main balloon anchorage and a secondary anchorage are still in place. There are concrete blocks on the site, some with anchor rings, that may have originated from balloon sites on the marshes	Modern	-	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
41	MLS20789	517376	417769	Cropmark	A possible enclosure with a double ditched trackway to the east, visible as a cropmark on an aerial photograph	Undated	-	?B
42	MLS19807	516720	417960	Findspot	A single greyware sherd was found during the Humber Wetlands Fieldwalking project	Romano-British	-	C
43	498356	517390	418335	Site	Killinghome Station. Opened in 1910 and closed in 1965	Modern	-	C
44	-	516573	417969	Cartographic evidence	Two small buildings first shown on the 1932 OS map on the east side of Rosper Road. No longer extant.	Modern	-	C
45	-	517071	418253	Cartographic evidence	A terrace of ?five houses first shown on the 1932 OS map on the north side of Station Road, No longer extant.	Modern	-	C
46	-	516744	417685	Cartographic evidence	A building first shown on the 1910 OS map on east side of Rosper Road. The building, and the plot within which it stood, are no longer visible	Modern	-	C
47	-	516882	417451	Cartographic evidence	A complex of up to ?three buildings within a small plot are first shown on the 1910 OS map and appear unchanged until 1951. One of the structures (a small red brick, possibly agricultural building) is extant but derelict.	Modern	-	C
48	MLS20121	516505	418210	Cartographic evidence	A hedgerow which forms the parish boundary between North and South Killingholme. It is shown on enclosure maps and may be Medieval in origin	?Medieval Post-medieval	-	B
49	MLS20569	516563	419494	Cartographic evidence	Historically important hedgerows which appear on the 1779 North Killingholme enclosure map.	Post-medieval	-	C
50	MLS20570	517672	417877	Cartographic evidence	Historically important hedgerows which appear on the 1779 South Killingholme enclosure map.	Post-medieval	-	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
51	MLS20141	516217	419354	Aerial Photographs	Examination of aerial photographs plotted a sinuous double ditched feature which appears to mark the edge of ridge and furrow cultivation in that area. This may represent both a headland and a former sea bank of medieval date. A system of creeks was also detected by geophysical survey marking the former high water position. Deposits interpreted as the buried shoreline were recorded during subsequent archaeological evaluations there.	Medieval	-	C
52	-	516058	419392	Aerial Photographs	Examination of aerial photographs plotted cultivation cropmarks. They display a 'reverse S' plan typical of Medieval ridge and furrow	Medieval	-	C
53	-	516414	418642	Aerial Photographs	Examination of aerial photographs plotted an extensive block of plough levelled ridge and furrow cultivation covering an area of approximately 450ha. One area is bounded on the east by a narrow ditch, possibly a vestige of a headland.	Medieval	-	C
54	-	516939	417562	Earthworks	Ridge and furrow cultivation identified by a 2006 LIDAR survey of the area. Not visible during walkover survey.	Medieval	-	C
55	20093	515900	419140	Geophysical anomaly	A group of curvilinear anomalies and a faint linear trend were detected by a geophysical survey undertaken in advance of the Southern Energy Corridor pipeline in 1999	Undated	-	D
56	20094	516060	418830	Geophysical anomaly	A group of linear and pit-type anomalies, rectilinear in nature , was detected by a geophysical survey undertaken in advance of the Southern Energy Corridor pipeline in	Undated	-	D

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					1999			
57	20139	516060	419400	Geophysical anomaly	Three linear ditches were detected by geophysical survey undertaken in advance of a proposed storage and distribution facility. A second survey detected the same features but no features were found in that location during a subsequent evaluation	Undated	-	D
58	20147	516470	419340	Geophysical anomaly	Several linear anomalies were detected by geophysical survey undertaken in advance of a proposed storage and distribution facility.	Undated	-	D
59	20148	516080	419050	Geophysical anomaly	Curvilinear and area anomalies were detected by geophysical survey undertaken in advance of a proposed storage and distribution.	Undated	-	D
60	-	516934	418422	Earthwork	Bank and ditch observed during walkover survey, may relate to the former Medieval sea wall. Maximum 0.5m high, follows sinuous course through woodland	Undated	-	C
61	-	516602	418421	Geophysical anomaly	Large group of strong anomalies identified by magnetometer survey undertaken during 2010 and 2011. The anomalies include a complex of ditches and possible pits suggestive of a settlement site covered an area c. 325m x 200m across two fields.	Undated	-	D
62	-	516985	418298	Geophysical anomaly	An isolated group of anomalies, possibly an enclosure identified by a magnetometer survey undertaken during 2010 and 2011.	Undated	-	D
63	-	516983	417884	Geophysical	A small group of anomalies, interpreted as possibly of	Undated	-	D

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
				anomaly	archaeological origin, identified by a magnetometer survey undertaken during 2010 and 2011.			
64	-	517404	418119	Geophysical anomaly	A small group of anomalies, of uncertain origin, identified by a magnetometer survey undertaken during 2010 and 2011.	Undated	-	D
101	MLS1623	515750	419650	Monument	Romano-British site discovered on construction site of Gas Plant. Four hearths, two with burnt bone, were noted, together with "evidence of closely set vertical stakes." Finds include greywares, shell-gritted, mortaria, Samian wares dating from the 1st century AD. The site lies on the edge of the Middle Marsh boulder clays, alongside the former Killingholme Haven.	Romano-British	None	B
102	MLS19771	516700	417100	Monument	Iron Age settlement including structural remains including roundhouses and salt making briquetage, adjacent to the stream channel on the shore of the Humber River. Iron Age pottery assemblage has more in common with north bank assemblages than those in Lincolnshire. Romano-British activity included cutting and re-cutting enclosure and drainage ditches. A droveway connected the area of enclosures to the creek. Until the 2nd century AD there were few imports, after which imported types such as amphora, mortaria and Samian ware are found, including pottery from Dorset and the Nene Valley. Activity in the north of the site included an area of new enclosures and ditches, whilst the bone assemblage suggests cattle, pig and sheep being raised. Presence of both immature and adult remains suggests supply of meat, skins and/or wool. A	Iron Age/ Romano-British	None	B

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					marine element to the diet is suggested by presence of shellfish.			
103	MLS8774	514000	422800	Monument	Probable Medieval Saltern	Medieval	None	C
104	MLS8784	514600	423100	Monument	Medieval Fish Traps	Medieval	None	B
105	MLS20565	513000	422000	Documentary Evidence	'East Halton Skitter provides a natural, sheltered, inlet into the lands south of the Humber Estuary . The beck which flows into the sea at East Halton Skitter is known as Skitter Beck, and is derived from Old English 'scitere', 'an open sewer'. Numerous medieval and later references exist to settlement names (variously spelled) Skitter, Skitter Ferry and Skitter Mill. Skitter Mill is recorded from the 12th century and Skitter Ferry from the 16th. These names are considered to equate to the modern place name East Halton Skitter. Medieval references to 'Skottermuth' are also thought to equate with East Halton Skitter. Assuming that all these references do in fact refer to one or more settlements in the vicinity of East Halton Skitter, it is likely that a maritime community existed in this area in the middle ages and later. Skottermuth is thought to have flourished during the 14th century but thereafter decayed, perhaps as a result of silting. By 1565 the only vessels to be found there were small, and used either for fishing or as ferry boats for men and horses to Hull. During the 1330s one boat of 40 tons from this community is recorded, and the principal maritime activity was seasonal herring fishing. By 1563 East Halton was primarily an agricultural parish with no significant maritime trade.'		None	B

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
106	MLS8617	517834	418214	Extant structure	Killingholme High lighthouse. Established in 1831, rebuilt 1876-7 for Trinity House. Lighthouse no longer manned, is used in conjunction with the Killingholme South Low lighthouse to guide shipping in the Humber, and in the 19th century was a link in the Hull Telegraph. Grade II listed.	Post-Medieval	Grade II Listed Building	A
107	MLS8619	518011	418148	Extant structure	Killingholme South Low lighthouse. Built 1836 for Trinity House. Lighthouse, no longer manned, is used in conjunction with the Killingholme High Light to guide shipping in the Humber. Grade II listed.	Post-Medieval	Grade II Listed Building	A
108	-	518700	417240	Cartographic evidence	A brick yard just north of South Killingholme Haven first mapped by OS in 1887 and has an associated wharf. The brick works was also making tiles in 1932, but both the wharf and works had gone by 1956.	Post-medieval to Modern	None	C
109	NMR 1357695	518370	420060	Wreck	The NEWLAND, from Riga, arrived in the Humber on 3rd September 1828, but on the 5th September is reported as on the Holm Sand with 5 feet water in her hold. Cargo discharging into craft. About 40 tons of hemp were saved from ship dry, the remaining part of the cargo is discharging in a damaged state. The ship fills with water every tide, and will be a wreck. Location unknown.	Post-Medieval	None	C
110	NMR 1304735	518370	420060	Wreck	CATHARINE, sank after a collision with the CATHARINA MAGDALENA, having sailed from Lynn en route to Leeds, in Whitebooth Roads 3rd April 1827. CATHARINE sank in deep water, but the crew was saved. Location unknown.	Post-Medieval	None	C
111	NMR	518370	420060	Wreck	The ATALANTA, from Boston, was reported as totally	Post-	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
	1358152				wrecked on the sands above Hull on 19th March 1831. Crew drowned. NB: The `sands' are not identified, there being several possible candidates, and the named location of "Offshore Killingholme", covering Foul Holme Spit, has been chosen by NMR for convenience. Location unknown.	Medieval		
112	NMR 1431654	518370	420060	Wreck	2nd September 1833 wreck of the British registered wooden sailing vessel FAIRY was reported stranded on Holme Spit during a gale, while en route from Newcastle-upon-Tyne to Gainsborough. Location unknown.	Post-Medieval	None	C
113	NMR 943144 UKHO 66989	520110	416760	Wreck	SINGAPORE, screw steamer built in Hull 1900, wrecked off Immingham following a collision with HM Scout class cruiser ADVENTURE, which was at anchor in the Humber in 1920. SINGAPORE was owned by the Hull Sea Fishing and Ice Co., and was a registered trawler (No.H505). UKHO provide additional positions which they highlight as unreliable, lying 3.8km NW of the NMR position at 517936, 419921.	Modern	None	C
114	UKHO 8514	517200	420676	Wreck	ALEXANDRA, tug wrecked off Killingholme Oil Jetty 15th March 1920. Site no longer charted on 3rd May 1920 and amended to a lift site, suggesting recovery of the vessel.	Modern	None	C
115	UKHO 66984	518601	418329	Wreck	Pile driving frame sunk at the end of a jetty during construction works in June 1955. The site was salvaged by the owners in July 1955	Modern	None	D
116	MLS8195 NMR	516480	420050	Monument	Killingholme Battery was built to defend the port of Killingholme on the Humber estuary. It opened between	Modern	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
	1321225 (NMR 1473796)				1915-1916 and by February 1916 was armed with two quick-firing 12 pounder guns emplaced on two octagonal concrete towers. The guns were removed in 1919 and the site was disused in 1926. Two 6-pounder Hotchkiss guns, one 1-pounder gun on a Naval carriage, and one 1-pounder gun on a travelling carriage are recorded as in place in 1916, with a 12-pounder 12-hundredweight gun listed in 1917. The battery was demolished in 1998 and surveyed before and during demolition.			
117	MLS15395	516200	420200	Monument	The North Killingholme Royal Naval oil depot may have been established just before the outbreak of the First World War. It consisted of 35 steel tanks, each about 24m diameter and clad in a protective outer skin of brick, with steel mesh and concrete within the cavity. All tanks now demolished.	Modern	None	C
118	MLS21205	516063	420776	Monument	NAS Killingholme opened in 1914 and was operated initially by the Royal Naval Air Service and later the US Navy, closing in 1919. Large numbers of aircraft were based at the station, intercepting Zeppelins, carrying out marine patrols and training. At the height of the war 46 seaplanes operated from NAS Killingholme. A converted paddle steamer seaplane carrier, pressed into service as HMS Killingholme, was also based here.	Modern	None	B
119	-	516099	420727	Monument	Composite (wood and metal) slipway possibly associated with NAS Killingholme (site 118).		None	B
120	MLS21233	515262	421309	Monument	WW2 barrage balloon anchorage site, Winters Lane.	Modern	None	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
121	MLS21226	518496	416977	Monument	WW2 barrage balloon anchorage site, north of Humber Road.	Modern	None	C
122	NMR 1341163	520110	416760	Documentary evidence	Handley Page Halifax Mk. III heavy bomber; one of a batch of 360 delivered between March and August 1944, Squadron 10. Two engines feathered; ditched off Immingham 28th October 1944. Location unknown	Modern	None	A
123	-	517260	419740	Monument	Possible Jetty located at the low water line extending into the river. The site was not accessible during the walkover survey due to extremely soft muds, and the position has been estimated. Photographic recording shows at least 14 piles remaining, upstanding to around 0.3m. The piles are aligned roughly 45° to the river at low water and at least six pairs of piles remain, with additional individual timbers. No further interpretation/significance assessment is possible without closer examination.	Unknown	None	B/C
124	-	516978	419746	Monument	Linear alignment of 5 unworked wooden posts roughly 0.04m diameter, surviving to an average height of 0.30m. Orientated east-west eroding out of the reed bank towards the river. Total length approximately 0.7m.	Unknown	None	B/C
125	-	516970	419782	Monument	Linear alignment of 24 unworked wooden posts roughly 0.04m diameter, surviving to an average height of 0.30m. Total length approximately >8m. Orientated east-west eroding out of the reed bank towards the river.	Unknown	None	B/C
126	-	516950	419808	Monument	Linear alignment of unworked wooden posts roughly 0.04m diameter, surviving to an average height of 0.30m. T	Unknown	None	B/C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					shaped with 2.1m orientated 80º and 2m orientated 320 º. Eroding out of the reed bank parallel to the river.			
127	-	516942	419820	Monument	Linear alignment of unworked wooden posts roughly 0.04m diameter, surviving to an average height of 0.30m. Orientated 320 º and exposed for 7.1m, eroding out of the reed bank at either end, lying parallel to the river.	Unknown	None	B/C
128	NMR 908347 MLS21166 UKHO 8517	515494	422086	Monument	Unidentified 'foul ground' or obstruction, could be unidentified wreckage.	Unknown	None	C
129	NMR 908346 MLS21167 UKHO 8516	515516	421914	Monument	Unidentified 'foul ground' or obstruction, could be unidentified wreckage.	Unknown	None	C
130	NMR 908345 MLS21168 UKHO 8515	516144	420989	Monument	Unidentified 'foul ground' or obstruction, could be unidentified wreckage.	Unknown	None	C
131	-	519306	418164	Magnetometer anomaly	Appears to be two objects close together or joined, could be unidentified wreckage. Target size 8.63 (Emu 4).	Unknown	None	
132	-	519165	418101	Magnetometer anomaly	Weak singular signature, could be unidentified wreckage. Target size 6.65 (Emu 8).	Unknown	None	

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
133	-	519556	417856	Magnetometer anomaly	Strong singular signature, could be unidentified wreckage. Target size 10.4 (Emu 9).	Unknown	None	
134	MLS18476	516000	420700	Cartographic evidence	Site of Killingholme gun battery, dismantled 1824.	Post-Medieval	None	C
135	MLS20085	514090	422529	Artefact Scatter	During excavations at East Halton Skitter by Northern Archaeology Associates in 2000, a total of 84 stuck pieces of flint were recovered from 11 trenches. Nearly all were manufactured from local till flint. The assemblage comprised 5 cores, 8 chunks and chippings, 45 flakes, 5 blades and bladelets, 4 edge utilised flakes, 1 edge utilised blade, 5 miscellaneous retouched flakes, 2 miscellaneous retouched chunks, 4 edge retouched flakes, 1 edge retouched blade, 1 notched flake, and 3 scrapers. One scraper is an extended end scraper of the 'Beaker' period, one core is a seven platformed blade core of early/middle Neolithic character, and some of the flakes are similar to those used in the manufacture of late Neolithic arrowheads. A middle Neolithic to early Bronze Age date is likely for the bulk of the material, with a slightly greater emphasis on the Bronze Age. The assemblage is clearly residual, originating mainly from the primary fills of the Romano-British ditches. Any potential flint scatters are likely to be the products of isolated occupation, or small knapping events. This site was listed in a desk-based assessment carried out by AC Archaeology in 2006. No additional information.	Early Neolithic to Early Bronze Age	None	B/C
136	MLS19798	515880	419700	Findspot	Four flint flakes were recovered during the Humber	Prehistoric	-	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					Wetlands Fieldwalking project.			
137	MLS21416	515500	419000	Documentary evidence	The site of a WW2 heavy anti-aircraft battery designated 'Humber M'	Modern	-	C
138	MLS20125	515945	418667	Findspot	An early Bronze Age scraper found during a watching brief on the construction of electricity pylons	Prehistoric	-	C
139	MLS4635	516426	417662	Cropmark	Linear and enclosure-like features plotted from aerial photographs. Did not appear to correlate with results of a geophysical survey undertaken on same area.	Undated	-	D
140	MLS1630 MLS20423	516500	417800	Occupation site	Unstratified Roman pottery found during an evaluation	Romano-British	-	C
141	MLS20422	516635	417431	Boundary ditch	An Iron Age ditch, running parallel to Rosper Road was recorded in 9 trial trenches.	Iron Age	-	C
142	MLS20124	516552	417404	Cropmarks	Cropmark ditches and sub circular features identified during aerial photographic transcriptions in 2002	Undated	-	C
143	MLS20104	517065	416789	Cropmark Earthwork	North-south oriented ridge and furrow mapped from aerial photos and identified on geophysical surveys. Most has now been destroyed by development.	Medieval	-	C
144	MLS21321	516835	417030	Cropmark	A small square enclosure was visible as a cropmark on an air photograph taken in 2001. It is now masked by the Conoco CHP plant.	Undated	-	C
145	MLS21101	516849	416980	Cropmark	A cropmark visible on n aerial photograph , probably a post-medieval boundary	Undated	-	C
146	MLS20424	516572	417336	Ditch	A shallow ditch containing a medieval sherd was found	Medieval	-	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
					during an evaluation in 2006			
147	MLS21322	517300	417000	Cropmark	A T-shaped arrangement of ditches is visible on wartime aerial photographs. They were dug as aircraft landing obstructions and were mostly levelled sometime after the war.	Modern	-	C
148	MLS21323	517440	417370	Documentary evidence Earthwork	Aerial photographs taken in 1941 showed a row of about 16 terraced houses to the south of Marsh Lane. OS maps suggest they were built between 1902 and 1932 and had been demolished by 1975. Low earthworks were still visible on the site in 2008	Modern	-	C
149	MLS21324	517630	417500	Documentary evidence	Marsh Farm is shown on the first edition OS map of 1887. It was demolished at some time after 1945	Post-medieval	-	C
150	MLS21335	515900	419450	Ditch	An archaeological evaluation carried out in 2009 identified ditches dating from the late 2nd and early 3rd centuries AD	Romano-British	-	C
151				Earthwork	Ridge and furrow cultivation earthworks recorded within Chase Hill Wood and Fox Covert during a LIDAR survey undertaken in 2006	Medieval	-	C
152	ELS2729			Earthwork	Ridge and furrow cultivation earthworks identified within Burkinshaw's covert and in woodland to the south during LIDAR survey undertaken in 2006. This extensive area was partially recorded subsequently by a topographic survey and watching brief within the covert (E23)	Medieval	-	C
153	MLS20098	515410	418210	Documentary	Medieval ridge and furrow was identified by geophysical,	Medieval	-	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
				evidence Cropmark	walkover and topographic survey. Surviving earthworks damaged in places by development			
154	MLS11775	515460	418810	Cropmark	Faint rectangular feature noted on air photographs. Not confirmed by geophysical survey	Undated	-	D
155	MLS1496	515300	419900	Settlement	Romano-British settlement site, north of the former site of Chase Hill Farm, excavated in 1990 and 2008	Romano-British	-	B
156	MLS17461	515350	420150	Enclosure	Rectangular enclosure recognised as a cropmark on aerial photographs, subsequently excavated and dated as Late Iron Age to 2nd - 3rd century	Iron Age-Romano-British	-	C
157	MLS21458	515080	420180	Monument	A linear and a curvilinear feature were excavated and found to be of Middle Iron Age to Romano-British date	Iron Age-Romano-British	-	C
158	MLS20090	515270	420080	Geophysical anomaly	Geophysical anomalies, including a possible ring ditch, recorded in 1999. Subsequent excavations found no archaeological features.	Undated	-	D
159	MLS21459	515370	420030	Ditch	A ditch and curvilinear gully were recorded during a trial trench evaluation	Iron Age-Romano-British	-	C
160	MLS17472	514900	420700	Cropmark	Cropmarks of a ploughed out linear earthwork. Appears to be a ridge and furrow headland that may also have had a sea defence function.	Undated	-	C
161	MLS20567	514000	421000	Hedge	Group of historically important hedgerows	Post-medieval	-	C

Site No	HER/NMR Reference	Easting	Northing	Form/Type	Description	Period	Designation	Significance
162	MLS20135	514990	419510	Hedge	The boundary between East Halton and North Killingholme parishes, formerly known as Meergate hedge, dates from before 1850	Post-medieval	-	B
163	MLS21326	514800	416900	Railway	The Humber Commercial Railway was constructed in 1912 to link the eastern jetty at Immingham Dock with the main Grimsby - New Holland line at Ulceby	Modern	-	C
164	MLS20570	517000	417000	Hedge	Group of historically important hedgerows	Post-medieval	-	C
165	ELS2650	515678	420334	Field evaluation	Two undated linear features were identified during trial trenching in advance of development of land.	Undated	-	C
166	MLS10746	514500	420900	Earthwork	Areas of ridge and furrow cultivation, appearing as both earthworks and cropmarks in East Halton parish	Medieval	-	C
167	-	517571	419443	Magnetometer anomaly	Apparently multiple objects, could be unidentified wreckage. Target size 11.41 (Emu 7).	Unknown	None	C

The Development of the Humber Estuary Following the Last Ice Age

18.5.6 Following the last ice age, around 8 000 bp (before present), the low lying areas of North Lincolnshire and East Yorkshire were flooded by rising sea water, to as much as perhaps 5m above current Ordnance Datum. After c. 2 000 years sea-level had regressed and the Humber Estuary was left as a recognisable topographic entity fringed by low lying marshland giving rise to heavy, largely stone-free soils prone to water logging. A forest of alder, oak and birch developed over the glacial till.

18.5.7 The forest was fully established by around 6 500 bp and a lower peat developed on the forest floor during the later Mesolithic due to a change to a slightly wetter climate. Vibrocores collected from within and seaward of the AMEP contained organic remains and possible former land surfaces. VC05 recovered dark grey organic clay layers and a piece of wood. The depth of organic remains in this core, at around 12.45m below CD (16.35m below OD) indicates possible fragments of a preserved palaeo-land surface dating to the Mesolithic (Wessex Archaeology, 2011).

18.5.8 A significant marine transgression during the Bronze Age laid down a thick layer of marine clay over the peat, associated with the formation of saltmarsh. A subsequent reduction in the rate of sea level rise, or a marine regression, facilitated the development of freshwater marsh identified from the deposition of a layer of Phragmites clays. The area therefore has some potential for the presence of littoral occupation, at intervals throughout the early prehistoric period. This may be concentrated in areas where relatively raised land, within or adjacent to, former marshland once offered the potential for temporary or more permanent settlement to exploit both terrestrial and marine environments. Elsewhere along the estuary there is proven potential for sites of prehistoric date, beneath alluvium and where the conditions are such that archaeological deposits (including organic remains such as wooden track ways dating from the Bronze Age to Romano-British period) remain preserved in situ. Vibrocores VC20 and VC21 within the AMEP recovered organic remains and possible former land surfaces at 0.15m above and 1.22m below CD (3.75m and 5.12m below OD) respectively, indicating the survival of land surfaces from later prehistory.

The Marine Energy Park

Maritime Background

18.5.9 The River Humber has a large catchment opening on to the North Sea and has been a focus of navigation throughout history. The archaeological potential of the AMEP in respect of maritime activity is considerable.

18.5.10 The deepwater channel of the River Humber is close to the Lincolnshire shore, in the vicinity of the AMEP from Immingham to North Killingholme. As such large amounts of shipping will have passed by the AMEP site. It can be expected that passing vessels will have been lost in this area, whilst others may deposited shipping debris onto the river bed either through deliberate discard or accidental loss during passage or whilst anchored in Whitebooth Road.

18.5.11 Some maritime activity will have focussed on the local area itself, destined for or departing from havens within the Killingholme reach for transport, fishing and so on. These activities may have resulted in wrecks and lost or discarded material, but could also include the deliberate abandonment of vessels. Local maritime activity will have resulted in various forms of infrastructure: wharves, quays, hards, boat building and repair facilities, navigational markers and other aids, for example.

18.5.12 Both the passing traffic and local maritime activity have a very long history, for which there is direct evidence in the surrounding area, but only of a later period (nineteenth century) actually within the AMEP. From a navigational point of view, the narrow deepwater channel off Killingholme is a pinch-point between the vast extent of navigable rivers (and later canals) serving the Midlands and Yorkshire, and the North Sea with its connections to the East Coast, Thames, English Channel, Low Countries, Baltic, Scandinavia and beyond. Documentary and archaeological evidence records the passing of Roman pilots, Viking warriors, Medieval settlers, post-Medieval traders, army, navy and air force personnel during both World Wars along the Humber adjacent to the AMEP.

The Early Prehistoric Period

18.5.13 The intertidal coastline at North Killingholme consists of a broad terrace around 6.9m to 7.9m below CD (-3m to -4m OD), dropping steeply to a second terrace at 12.9 below CD (-9m OD). Vibrocores have recovered multiple instances of the presence of organic material,

representing palaeo-land surfaces, buried by alluvial sand and clay deposits (*Figure 18.3*). The distribution of the cores and organic material do not allow for clear identification of the full extent of palaeo-land surfaces, however the two furthest cores containing organic material were over 1 km apart, suggesting that potentially extensive areas of potential palaeo-land surfaces may be preserved.

18.5.14 The buried palaeo-land surfaces indicate the presence of potentially habitable areas during periods of lower sea-level.

18.5.15 Although the earliest inhabitation of Britain stretches back at least 970,000 years (Parfitt et al 2010), the glacial tills found across the landward part of the study area, were formed during the last (Devensian) glaciation, which reached its maximum extent about 18,000 years ago. At this time the ice sheet probably covered the AMEP and sea level was approximately 130m lower than today. No Devensian or pre-Devensian archaeological material has been reported in the area, so the potential for archaeological deposits from the Lower and Middle Palaeolithic is not considered further.

18.5.16 The first evidence for re-occupation of northern Britain after the last Ice Age dates to around 13,000 years ago. At this time the AMEP foreshore would have overlooked the valley of the Humber River, but would have been hundreds of miles distant from the sea. There are no reports of archaeological material from the Late Upper Palaeolithic / Late Glacial periods from the area, but its possible presence cannot be discounted. Given that sea level was still much lower than the current profile described above, archaeological material of this date could be present within the sub-tidal channel of the Humber, and within the inter-tidal area.

18.5.17 The first evidence for human occupation in the AMEP comes from a number of flint flakes dating to the Mesolithic period (sites 1 to 10). At this time, c. 8500 to 4000 BC, the Humber River would have been flowing roughly within the current river valley, and the river banks, and higher ground would have been covered with a forest of oak, alder and birch. The Mesolithic period saw sea levels rise from around 40 m below current to roughly similar to today. The open coast, however, would still have been over 5km east of the present coastline and the Humber River may not have been tidal. Some of the organic material identified in vibrocores from the AMEP are likely to date from the later Mesolithic period, when the sea level was at least 7 m lower than today, and could contain well preserved archaeological evidence of land-based activities from this period.

18.5.18 In the ensuing periods a number of marine transgressions and regressions have been identified, resulting in the foreshore and immediately adjacent low lying areas becoming sequentially flooded then re-exposed . The salt and freshwater marshes that formed in the area would have provided a variety of food sources. Artefacts recovered from the AMEP (sites 1 and 11) and to the north (sites 135, 136 and 138) dating to the Neolithic through to the Bronze Age c. 2400 to 700 BC, illustrate the presence of people in the area at this time.

18.5.19 In addition to land based activities, a number of well preserved boat finds from the Humber Basin at Ferriby, Kilnsea and Brigg (McGrail, 2004: 184) illustrate that the local population was using the River possibly for fishing, fowling and transport of goods and people. These boats, both sewn planked and logboats were all flat bottomed and would not have required significant infrastructure. It is likely that boats could have been launched and beached on shallow shelving shorelines, with easy access to the hinterland settlements. The sediments of the Humber foreshore have demonstrated their suitability for the preservation of prehistoric wooden boat remains, and the possibility exists that the buried foreshore deposits in the AMEP could preserve such evidence.

Iron Age and Romano-British Period

18.5.20 Evidence for Iron Age (c. 700 BC to AD 43) settlement has been found within the AMEP (sites 12 and 13) along with evidence nearby for salt production, boat use and riverine travel. A large Spilsby Sandstone object was found during excavations of the Iron Age settlement within the AMEP (site 13) and has been tentatively identified as an anchor for a small boat, based on a similar, smaller object of the same stone found at the Roman Fort at Caister on Sea. Boats from this period continued the earlier Bronze Age construction traditions, with both a logboat and a flat bottomed sewn plank boat, or raft dating to the Iron Age, found in the Humber river basin at Brigg (McGrail 2004: 184).

18.5.21 The Iron Age settlement sites within the AMEP (sites 12 and 13) were located either side of a narrow coastal inlet, providing the inhabitants with easy, sheltered access to the River. There is a high likelihood that the Iron Age inhabitants would have had access to boats and regularly used the River to access other communities or fishing grounds, for example. Whilst no boat remains were identified during previous excavations at the sites, the waterlogged alluvial deposits would be suitable for preserving such wooden remains.

18.5.22 Iron Age settlement outside the AMEP (site 102) was located on the edge of the inlet and occupied in several distinct phases from the early

Iron Age when small scale salt production or storage was being undertaken. Following a brief hiatus, which may coincide with a period of inundation, the site was reoccupied during the late Iron Age on slightly higher ground to the north. A large boundary ditch (site 141) and drainage features may be associated with this.

18.5.23 Geophysical surveys recently undertaken within the AMEP have identified an extensive area of anomalies including a complex of ditches and pits (site 61) a possible enclosure (site 62) and further anomalies (sites 63 and 64). These lie to the southeast of site 13, close to the former shore, and are of probable later prehistoric date.

18.5.24 The Roman army is recorded to have arrived on the South Bank of the Humber in AD 43, where they halted, consolidated control in the south before crossing the River in AD 71 to complete the conquest of Britain (Humberside Archaeology Unit 1992: 3).

18.5.25 Continuation of settlement from the Iron Age through to the Roman occupation (AD 43 to 410) is evident at the settlement site excavated within the AMEP (site 13). Imported Roman pottery recovered from within, and close to the AMEP (sites 13, 101 and 102) provides a glimpse of the national and international trading networks established at this time between northern Britain and the Continent. Other imported luxury 'Roman' items such as glassware, wine and olive oil amphora have all been found in the Humberside area, highlighting the maritime links with the Roman empire (Humberside Archaeology Unit 1992: 9).

18.5.26 The hazardous task of navigating the Humber by boat is shown by the employment of pilots, one of whom records his service with the 6th legion when he set up an altar in York (Humberside Archaeology Unit 1992: 9). It is thought that the process of transferring goods and people from seagoing ships to smaller ships and boats suitable for navigating the Humber and its estuaries would have required the use of many small harbours and ports along the estuary. A number of potential harbour locations have been suggested, but none have yet been identified in the archaeological record.

18.5.27 Activity at an occupation site to the south west of the AMEP (site 102), adjacent to the stream channel, included the creation of a droveway between the settlement and creek, indicating the potential use of the creek, with its natural inlet off the Humber River, as source of transportation and communication with nearby settlements. The River would also have provided a rich source of food through fishing, fowling and collection of shellfish. Very few remains of Romano-

British period boats have been found in Britain, the best examples coming from the Thames in central London, but none have been recovered from the Humber Basin.

18.5.28 No evidence of activity from this period has yet been found along the Humber foreshore, however, excavations to the south at Stallingborough recovered evidence of crop-processing and enclosures and ditches dating to the late 3rd and 4th century AD, possibly associated with salt making or pottery production. There was no evidence of flooding events in this area, suggesting that by the late Romano-British period the sea level had stabilised at current levels and the coastal fringes were suitable for permanent settlement and farming.

18.5.29 Evidence of agricultural settlement from the Iron Age through the Romano-British period has been identified within the AMEP (sites 31 and 34) and immediately outside it (sites 101, 150, 155, 156, 157 and 159). The settlement activity may have been associated with small scale salt production but equally it may represent an outlying part of the Chase Hill complex, an extensive Romano-British ladder settlement to the north-west. Isolated sherds of Roman pottery (sites 32, 35, 38 and 42) have been recovered from higher ground within the AMEP. Despite the obvious difficulties of living on the edge of marginal land, the level of Romano-British settlement in this area is probably fairly intensive.

The Saxon Period

18.5.30 There is no archaeological evidence for continued occupation or use of the immediate coastal area around Killingholme in the Anglo-Saxon Period (AD 410 to 1066), although the name Killingholme is believed to date to this period, and a number of important Anglo-Saxon cemeteries have been excavated from the broader area.

18.5.31 Documentary evidence describes the arrival of the Angles and Frisian settlers in the area, followed by Scandinavians. Imported Frankish pottery has been found to the north of the AMEP dating to the middle-Saxon period (Bryant, 1994: 49), a small insight to the developing links with the Low Countries and northern Germany. The maritime links with the Baltic and Scandinavia increased during this period, with Scandinavian war parties arriving by ship in the Humber followed by Viking raiders and settlers. The strong cultural and trading links developed during this period between the Humber region, Scandinavia and the Baltic formed the basis of trading patterns for ports such as York and Hull through to the nineteenth century.

18.5.32 Although ship building technology was continuing to develop, ships were still built with flat bottoms allowing them to be drawn up on beaches. This approach has left little evidence of harbours and ports. Whilst it seems that settlements were concentrated on higher ground during this period, it is possible that the creek identified with the AMEP was still navigable, and that the inlet could have continued to provide a sheltered landing area for boats. Cultural links across the North Sea are demonstrated by the boat burials at Sutton Hoo and Snape in Suffolk, which not only mirrored the Scandinavian burial tradition, but also demonstrated similar boat building traditions (McGrail 2004: 210). A tenth century ship from a tidal creek of the Thames demonstrates a continuation of Romano-British construction techniques (McGrail 2004: 218) , however no ships dating to the Anglo-Saxon period have been found in the Humber basin.

18.5.33 There is no evidence for settlement within or outside the AMEP for this period but a quantity of fifth century pottery recovered during excavations at Chase Hill Farm may be significant.

The Medieval Period

18.5.34 The majority of evidence for occupation and exploitation of the AMEP in the Medieval period (AD 1066 to 1540) comes from earthworks and cropmarks representing extensive agricultural activity, including enclosures and field systems typical of Medieval ridge and furrow cultivation. Riverside activity in the broader area is demonstrated by salt works and a possible fish trap to the north of the AMEP (sites 103 and 104). The salt workings expanded the marshes eastward, and left accumulated debris landward of the marshes. Through the Medieval period, the salt working debris became covered with estuarine alluvium and eventually became suitable for pasture.

18.5.35 Despite documentary evidence attesting to the importance of the Humber for access to inland regions in the Medieval period (Childs, 1990), very little archaeological evidence has been found locally to illustrate the types of boats and ships in use on the river.

18.5.36 One example of the importance of the Humber as a navigation route includes the arrival of Harold Hadrada, King of Norway with a fleet of 300 ships in the Humber estuary in 1066, from where he fought and defeated the Earls of Northumbria and Mercia with the aid of Tostig (brother of King Harold II of England) and Scottish allies (Humberside Archaeology Unit 1991). A second fleet was sent up the Humber by the King of Denmark in 1069 to assist a rebellion in Yorkshire against

William, Duke of Normandy's claim to the English throne (Humberside Archaeology Unit 1991).

18.5.37 Maritime trade flourished in the Humber through the twelfth and thirteenth centuries with major ports at Beverley and Hedon exporting wool and cloth to London, the Low Countries and the Baltic (Childs, 1990). By 1400 Hull was the third busiest port in England, with imports of wood, iron, wool, olive oil, spices, silk, fruit and wine from Scandinavia, the Baltic, Spain, Portugal, Italy and France (Humberside Archaeology Unit, 1991: 22). In addition to this international trade, the Humber and its tributaries would have been a major route for transport and communication between settlements within the Humber basin. It is likely that in addition to the major ports, there would have been smaller local beach markets and that river side settlements would have had access to a sheltered 'haven'. The suspected Medieval port at East Halton Skitter (site 105) to the north of the AMEP is one example of a smaller harbour site, thought to also have been a ferry crossing point. It is possible that the havens at North and South Killingholme may have served a similar function.

18.5.38 Whilst no direct evidence for early infrastructure has been found archaeologically at these havens, those still in use, such as Stone Creek on the north bank of the Humber, illustrates the shelter they can provide for small ships and boats. By comparison, remains of Hull's medieval waterfront, dated to c.1325, have been located surviving to a height of over 3m (Humberside Archaeology Unit, 1991: 22). No archaeological examples of boats and ships have been located in the Humber from this date, but it is likely that there would have been a variety of vessels on the river during this period, including logboats, Baltic 'cogs', Nordic and Mediterranean style cargo ships and local vernacular Humber Keels (McGrail, 2004). Whilst the size of cargo ships is recorded as increasing throughout the medieval period, there would still have been a need for small boats for transhipment and local travel (Childs, 1990: 23).

18.5.39 The villages of North and South Killingholme are classic 'row' villages, extending along a north-south spine road. They developed on the slightly higher ground of Middle Marsh and the place-name evidence suggests that they were established by the eleventh century. Although the detailed topography of the pre-enclosure landscape cannot be recovered, its general principles are clear, not only from later maps, but also from documents, particularly a 1585 survey of East Halton and Killingholme with eighteenth century transcription and a late eighteenth century farm sale brochure. The village cultivated large tracts of arable in a two open field system, East and West fields, which

were separated by the spine road along which the farmsteads and other dwellings lay. No medieval settlement has been found within the AMEP. An isolated sherd of pottery has been recorded to the west (site 146) but no features were associated with it.

18.5.40 Three principal areas of cultivation have been identified within the AMEP (sites 37, 52, 53 and 54), all of which display a 'reverse S' plan typical of Medieval ridge and furrow cultivation. Site 143 is a continuation of this cultivation. Site 51, a sinuous double ditched feature also identified from aerial photographs, appears to mark the eastern extent of ridge and furrow cultivation and may represent both a headland and a former sea bank of medieval date. Further ridge and furrow earthworks have been identified to the north and west of the AMEP (sites 151, 152, 153 and 166). There are no well-preserved ridge and furrow earthworks in the application area.

18.5.41 All the medieval cultivation remains are located just around (or above) the 4m contour and rarely extend into the edge of the alluvium. This corresponds with the pre-enclosure map depicting the use of higher ground for cultivation and the lower lying saltmarsh appearing to be unusable or more suited to summer pasture. The hedgerow forming the parish boundary between North and South Killingholme (site 48) is shown on enclosure map of 1776-79 and may be Medieval in origin.

The Post-Medieval Period

18.5.42 Historic charts dating to 1821 (UKHO E135) and 1841 (Admiralty Chart 109 Edition A) support suggestions that shipping along the Humber continued in a similar approach to that during the Medieval period, with the use of small havens and hillside churches as navigation aids. Sailing directions dating to 1780 (Collins 1780) describe the safe sailing passage up the Humber in the vicinity of the AMEP, using buoys and transits off churches. He describes the locations and depths of the channels and the location of the sandbanks and flats. The anchorage of Whitebooth Roads, off Killingholme, is named by Collins in 1780 and described as a mile above Foul Holme Sands and 'the best Road in the Humber'. This description supports the suggestion that there may have been only limited availability of formal harbours and anchorages at this time. It also suggests that as the best anchorage in the Humber, it would have been heavily used and a focus for shipping in this stretch of the river. As with all historic anchorages, the potential exists for archaeological remains on the seabed within this area. The seabed at historic anchorages often contains ship-borne debris thrown overboard from ships at anchor, including ceramics, glass or ship related fixtures and fittings. In addition, it is not uncommon to find abandoned mooring anchors within historic anchorages, whilst remains of ships

that wrecked at anchor, usually during storms are also known. Whitebooth Road was formally marked as an anchorage on the 1912 Admiralty Chart (AC109 Edition D). The unidentified magnetic anomalies identified during geophysical survey of the AMEP (EMU 2010) could represent wreck or debris associated with the historic use of Whitebooth Roads (sites 26-30, 131-133).

18.5.43 Levels of shipping on the Humber increased steadily as politics at home and overseas enabled the expansion of trading links, and the accumulation of wealth and maritime skills in the area. Hull had developed into one of England's major ports by the 1700s and became one of the two major ports serving the needs of the Industrial Revolution, its rate of growth exceeded only by Liverpool. It was only with the development of steam engines and the telegraph in the mid nineteenth century, however, that shipping and the Humber riverside took on a more industrial than medieval look, with the construction of docks, wharves and warehouses in the late eighteenth century (Davis, 1978). In addition to the construction of docks in Hull, navigation aids and havens were established all along the Humber to ensure continued safe passage of ships and cargoes. The construction of the Killingholme High lighthouse (site 106) in 1831 marks the beginning of formalised navigation aids in the stretch of river adjacent to the AMEP.

18.5.44 The Killingholme High lighthouse (site 106) was the first of three lighthouses built in the area. The Killingholme South Low lighthouse (site 107) was built in 1836 and lined up with the High lighthouse to mark the safe channel past Grimsby towards Killingholme (*Figure 18.4*). A third lighthouse, Killingholme North Low (site 15), was constructed in 1851 and aligned with the High lighthouse to mark the channel past Foul Holme Sand to Paull. All three lighthouses were important to safe navigation on the Humber and are protected as Grade II listed buildings. Records of seven wreck incidents to the south of the AMEP between 1810 and 1915 attest to the difficulty of navigating this stretch of river, with two ships sunk as a result of collision, and the importance of the lighthouses to safe navigation at this time.

18.5.45 An 1851/52 chart (UKHO L9005) and the 1855 Ordnance Survey (OS) map show a jetty (site 16) between the Killingholme High and Killingholme South Low lighthouses (*Figure 18.5*). The jetty continues to be marked on charts and maps until the 1956 OS map, when only a number of piles are marked in the foreshore where the jetty used to be. No obvious remains of this jetty were located during the walkover survey, however one solitary post (site 17) was seen on the foreshore close to the High lighthouse, which may be the remnants of the jetty. There is the potential for further timbers to be present within the thick mud in this area

18.5.46 Three brick yards are marked on the historic OS maps between North Killingholme Haven and South Killingholme Haven. The brick and tile yard to the south of North Killingholme Haven (site 18) first appears on the OS maps in 1887 (*Figure 18.6)*, served by a jetty on the foreshore and a footbridge. The brick and tile yard, and associated jetty, are recorded on OS maps through to 1910 but do not appear on the 1932 map. The brick yard and jetty are marked on the 1912 published chart for the area (AC 109 edition D) but not on earlier charts. The jetty identified during the walkover survey in this vicinity (site 19) is likely to be the remains of this brick and tile yard jetty. Site 19 is located next to the reed bed extending towards the river at on a bearing of 60° for an estimated length of 7 m (*Plate 18.1*). The spacing between the two closest timbers is 1.75 m and the jetty seems to narrow slightly along its length. A total of 6 posts were visible above the mud upstanding to a height of around 0.25 m.

18.5.47 A second brick yard and jetty is marked on the 1887 OS map to the north of South Killingholme Haven (site 20). A second jetty was added at the brick works by 1908 and by 1932 the site has been converted to a fish meal and fish oil works. The fish processing site had three jetties in 1932 but only one in 1951. By 1956 there no jetties are mapped at the site although the fish meal works are. It is likely that site 21, which was identified during the walkover survey (*Figure 18.7*), is the remains of a jetty associated with the brick yard or fish meal works. Site 21 is located between South Killingholme Oil Jetty and Immingham Gas Terminal. (*plate 18.2*) and extends approximately 40m from the sea wall on a bearing of 54°. A total of 12 pairs of piles remain upstanding, two pairs have their cross beams still intact, and a further six individual piles have lost their pair. The jetty timbers measure approximately 30cm by 30cm and stand around 1.2 m high. The jetty is approximately 3.6m wide, with pile spacings of around 2.6m along the jetty. A number of large jetty timbers of similar dimensions were observed washed up on the foreshore of the river, and may have come from this jetty.

18.5.48 A third brick yard is mapped just north of South Killingholme Haven (site 108), to the south of the AMEP boundary. This site is first mapped by OS in 1887 and has an associated wharf. The brick works was also making tiles in 1932, but both the wharf and works had gone by 1956. The wharf area and foreshore at South Killingholme Haven has been infilled and is now occupied by storage yards.

18.5.49 Work elsewhere on the Humber has noted that Humberside brickworks were built close to construction and development sites, particularly around Hull (J. Tibbles pers comm). There are few buildings in the Killingholme marsh area in the late nineteenth century so this

observation is not supported here. It is possible, however that the bricks were used for seawall defences in the absence of local stone, or in later years the construction of the Immingham light railway. The presence of small jetties next to the brick works could suggest, alternatively, that the bricks were destined for the major construction works elsewhere on the River, such as the construction of the Hull Docks in the 1880s.

18.5.50 The two brickwork jetties and one lighthouse jetty identified on historic maps as within the AMEP suggest that there would have been a reasonable amount of local boat traffic in the area. The relatively small size of the jetties indicate that small ships or boats were in use rather than larger cargo vessels more usually associated with late nineteenth century shipping.

18.5.51 The difficulties of navigating the stretch of river close to the AMEP is highlighted by two ships recorded as wrecking within the AMEP area in the late 1890s, Ivy (1897) and William (1899) (sites 21 and 22) although neither has been located. Information suggests both these ships were sailing vessels, possibly wooden hulled, which sank after collisions with steamships. The records do not indicate any salvage work taking place, and it is possible that the damage to the ships was extensive and resulted in complete wrecking and sinking of the ships. If this were the case, it is entirely possible that remains of the wooden hulls and potentially also cargo, fixtures and fittings could survive within the anaerobic muds of the Humber seabed. A further four ships are recorded as wrecking within 1km of the AMEP between 1826 and 1833 (sites 109, 110, 111 and 112). Two are reported to have wrecked on the Foul Home Sands within the Humber and the fourth (site 110) sank in Whitebooth Roads after a collision. None of these wrecks have been located, however it is possible, as with those above (sites 21 and 22) that remains could exist within the soft anaerobic sediments of the Humber.

18.5.52 Although no wrecks from this period are charted by the UKHO within the AMEP or study area, this need not mean that no wrecks are present. The UKHO records and Admiralty charts focus on the identification of wrecks that may cause a hazard to navigation, which are predominantly upstanding features. The wrecks reported on Holme Sands and Holme Spit (sites 109, 112) may not have been marked on the navigation charts as wooden vessels can often become quickly buried in soft mud, and therefore pose no additional navigation hazard than the sands themselves. In many cases salvaging of both cargo and upper sections of the hull structure takes place, leaving only lower timbers, and as is illustrated below salvaged vessels are usually removed from charts when they are no longer a navigational hazard. This does not, however, mean that nothing of the vessel remains on the seabed, and it

has been found that the remains of salvaged shipwrecks can be preserved. Soft muds and sand shoals are excellent preservation environments for wooden shipwrecks, and there have been instances in recent years of substantial wooden wrecks of archaeological importance being discovered as a result of development work, despite being in areas subject to regular hydrographic survey. The Gresham Ship (Auer & Firth 2007) and Swash Channel wreck (Wessex Archaeology 2005) were both located on the edge of major shipping channels, in the Thames Estuary and outside of Poole harbour respectively. Both these sites were located after channel dredging took place nearby, which affected the sedimentation regimes in the area causing the sites to erode from the edge of the channel. Both sites comprised large sections of hull structure in good condition and a numerous and varied artefact assemblage.

18.5.53 The Ordnance survey map for 1824 and Admiralty Chart for the area dated 1841 record a dismantled '2 Gun Battery' (site 134) to the north of Killingholme Haven. Paull battery on the north side of the Humber was re-built in 1808 as part of the Humber Napoleonic defences and dismantled in 1822, and it is possible that the Killingholme battery was also part of the Humber defences constructed during the Napoleonic Wars, although no further information about the site has been found.

18.5.54 The current Palmerston fort at Paull was constructed in 1861-4 and used up until the start of the First World War. A note on the 1912 Admiralty Chart indicates that Paull Fort was still undertaking artillery practice at this time, and that live rounds would be fired within an area reaching south beyond North Killingholme Haven. This same chart also notes the potential for explosives within the anchorage at North Killingholme Haven. It is possible that some of the magnetometer anomalies identified within the AMEP (sites 26-30) could be related to unexploded ordnance associated with either Killingholme or Paull Battery. Shells found in the course of dredging activities in the Thames dating to the nineteenth and early twentieth centuries have proved to be of archaeological and historical interest.

18.5.55 The agricultural landscape of North and South Killingholme was radically altered by Parliamentary enclosure, which was imposed between 1776 and 1779. The open fields and common grazing land of the Medieval villages was enclosed and allocated to private landholders. This was often accompanied by large scale drainage works allowing areas of former marshland to be drained and used for arable cultivation. The straightening of the drains running through the application area was probably undertaken during this period. The planting of field hedges also occurred at this time and a number of

hedgerows survive within the AMEP that appear to have been established at the time of enclosure (sites 49 and 50). Further historic hedgerows from this time survive outside the AMEP (sites 161 and 164), including that forming the parish boundary between East Halton and North Killingholme (site 162).

18.5.56 An unnamed farm complex (site 33) and Marsh Farm (site 149) are shown on early Ordnance Survey maps but no longer survive.

The Modern Period

18.5.57 OS mapping for the early twentieth century shows that whilst the construction of Immingham Docks in 1912 and the light railway dramatically changed the landscape inland of the docks (PEIR Paragraph 18.5.27) the foreshore to the north of South Killingholme Haven remained relatively unchanged.

18.5.58 The continued presence, and presumably use of the jetties at the brickyards (sites 18 and 20) and serving the lighthouses (site 15) suggests some local shipping activity within the AMEP through to the early 1950s. The continued difficulty of navigating the stretch of water off Killingholme is provided by a relatively small number of wrecks located within and around the AMEP by the UKHO. These wrecks provide an insight into the range of shipping in the Humber in the early twentieth century with an example of a cargo ship continuing the timber trade from the Baltic (site 24), fishing vessels (site 113) and harbour work vessels (sites 114 and 25). The wrecks close to the AMEP include two Hull built ships, the cargo steamship Sergei (site 24) built in 1899 and lost in 1923 and the steam trawler Singapore (site 113) built in 1900 and lost in 1920. There is little recorded information about the two work vessels the tug Alexandra (site 114) lost 1920 and the barge Cook S26 (site 25) lost in 1955. In addition to these shipwrecks, the UKHO record the loss of a pile driving frame (site 115) highlighting that shipwrecks are not the only archaeological sites to be found underwater, particularly along coastlines and rivers which have been developed and industrialised. The surviving remains of Cook 26, identified during magnetometer surveys (EMU 2010) highlight that although documentary records may suggest a wreck has been salvaged, parts of the wreck or structure often remain in or on the seabed.

18.5.59 The Humber region was subject to air raids in both WW1 and WW2, which resulted in losses to aircraft on both sides. During WW1 the main threat was from Zeppelins, which focused raids on Hull and Goole, as well as pressing further inland. The Humber region has a large number of anti-aircraft defences, ranging from bombing decoys to

armed batteries and pillboxes. A First World War heavy anti aircraft battery is recorded at Killingholme Marshes, lying just to the north of the AMEP (site 116). In addition to defensive structures, strategic military installations, including the North Killingholme Royal Naval oil storage depot (site 117) and a major seaplane base Naval Air Station (NAS) Killingholme (site 118) were constructed within the study area. NAS Killingholme opened in 1914 and was operated by the Royal Naval Air Service and later the US Navy, closing in 1919. Large numbers of aircraft were based at the station, intercepting Zeppelins and carrying out marine patrols. The station was situated in East Halton marsh in an area now occupied by the vehicle distribution site. The remains of a slipway likely to be associated with NAS Killingholme are still visible in the intertidal area to the north of the AMEP (site 119). Records of aircraft losses in WW1 are generally very poor, and any remains from losses associated with NAS Killingholme are likely to be slight, buried and may not have yet been identified in geophysical surveys. Any remains would be subject to automatic protection under the Protection of Military Remains Act.

18.5.60 The Humber region, and Hull particularly, suffered significant damage during WW2 air raids. Hull was hit by 82 air raids which damaged or destroyed around 95 percent of housing. Despite the bombs and damage, the Hull dockyards continued to operate throughout the war. A number of anti-aircraft sites were constructed in the vicinity of the AMEP, including five barrage balloon anchorage sites (sites 25, 36, 40, 120 and 121) three of which lie within the AMEP (sites 25, 36 and 40). A series of 'T' shaped ditches (site 147), dug as aircraft landing obstacles, have been recorded and a heavy anti aircraft battery (site 137), designated 'Humber M' is recorded at Chase Hill Wood.

18.5.61 As a result of the numerous bombing raids throughout WW2, there is the potential for unexploded ordnance to lie within the Humber muds in the foreshore and underwater. The magnetometer anomalies identified within and close to the AMEP (sites 26-30 and 131-133) could represent unexploded ordnance.

18.5.62 Many British and German aircraft were reported lost in the Humber area during the Second World War, however, none have been located in the vicinity of the AMEP. The closest reported loss is a Halifax MKIII MZ576 bomber reported lost in 1944 at a position approximately 2 km south of the AMEP (site 122), however it should be noted that descriptions of lost aircraft locations are notoriously inaccurate (Wessex Archaeology 2008) and it is possible that remains could lie within the AMEP.

18.5.63 The construction of Immingham Docks in 1912 (following the passing of the Humber Commercial Railway and Dock Act in 1904) led to a period of great industrial growth in that area in the early part of the twentieth century, transforming the former marshland. A network of railways was opened to more readily transport goods and workers to and from the docks at Immingham and Grimsby. The Barton and Immingham Light Railway (site 39), which runs through the application area, was opened in around 1910 and closed in 1963. Part of Killingholme Station (site 43) still stands and is now a private house. Another branch of the railway (site 163) was constructed in 1912 to link the eastern jetty at Immingham to the main line.

18.5.64 Examination of aerial photographs and historic maps has identified a number of former buildings within the AMEP (sites 44, 45, 46 and 47). Of those only a single building survives, at site 47, a small red brick building originally part of a larger complex. A row of about sixteen houses has been identified south of Marsh Lane (site 148) but no trace now survives

Undated Features

18.5.65 Several undated timber features were identified in the area immediately north of the AMEP during the walkover survey. Site 123 is located at the low water line and extends into the river. The site was not accessible during the walkover survey due to extremely soft muds, and the position has been estimated. Photographic recording shows at least 14 piles remaining, upstanding to around 0.3 m. The piles are aligned roughly 45° to the river at low water and at least six pairs of piles remain, with additional individual timbers. No further interpretation is possible without closer examination.

18.5.66 Sites 124, 125, 126 and 127 are linear alignments of unworked wooden posts all lying to the immediate north of the AMEP boundary. Two of the post alignments run perpendicular to the river (sites 124 and 125) (*plate 18.3*) one is parallel to the river (sites 127) (*plate 18.4*) and a smaller site is T shaped with one section heading east-west and another heading north-south. The posts are all unworked pieces of wood roughly 0.04 m diameter, surviving to an average height of 0.30 m. Each of the features seems to continue into the eroding reed bank and there is potential for further remains to be preserved within the bank. A number of potentially similar sites have been identified elsewhere in the area at Sutton on Sea (NMR 1484850), Easington (Humber HER MHU20513), Saltfleet (NMR 1490108, 1490107 and 1506739) and Cleethorpes (NMR 1144478). The site at Sutton-on-Sea was described as a wooden hurdle and dated to the late Saxon period whilst the

Easington site is described as vertical wattles and are thought to be prehistoric. The Saltfleet sites are regular wooden stakes thought to be post-medieval or modern whilst the Cleethorpes site is comprised of lines of timber stakes and interpreted as fish traps dating sometime from the Saxon to post-Medieval period.

18.5.67 There are three UKHO records of 'foul ground' close to the low water mark to the north of the AMEP (sites 128, 129 and 130). The sites could represent wreckage either from a ship or aircraft, possibly related to the former naval seaplane base at North Killingholme.

18.5.68 Geophysical investigations identified nine magnetometer anomalies, one of which was identified as the remains of Cook 26 (site 25) and five additional ones lie within the AMEP (sites 27, 28, 29, 30 and 167). Two of the anomalies within the AMEP have magnetic signatures similar to that of site 25, and could be previously unidentified wreck remains. The smaller magnetic anomalies could be smaller metal wrecks, the metal fixtures and fittings of wooden hulled, composite built ships or other shipping debris. It is equally possible that the smaller magnetic anomalies could be ordnance associated with the Paull Battery firing range or from First or Second World War air raids.

18.5.69 A number of cropmark features have been identified both inside (site 41) and outside the AMEP (sites 139, 142, 144, 145, 154 and 160). No investigation has been undertaken on these features. A further six sites have been identified from field evaluation by geophysical survey (sites 55, 56, 57, 58, 59, 60, 158 and 165). Where subsequent investigation has been undertaken (sites 57, 158 and 165) no dateable features were identified.

Further Surveys

18.5.70 The baseline data presented here provides a comprehensive basis on which to assess the effects of the AMEP development on heritage assets. Further surveys, comprising geoarchaeological assessment, field walking, geophysical survey and trial trenching, are proposed to allow for a detailed programme of mitigation to be established. The arrangements for the surveys will be set out in two Written Schemes of Investigation, each to be agreed with EH and NLC; one for works relating to marine interests below high water (encompassing the inter-tidal zone), and a parallel document for terrestrial heritage interests above high water.

18.6 IMPACTS

Introduction

18.6.1 The degree of change to each receptor/heritage assets is considered in text below. The assessment of overall magnitude of effect is derived using the criteria set out in *Table 18.5*.

Table 18.5 Assessment of overall magnitude of impact

Magnitude of Change	**Sensitivity of Receptor**			
	National Significance	**County/Regional Significance**	**Local Significance**	**Not significant**
High	Major Significance	Moderate Significance	Moderate to Minor Significance	Minor Significance
Medium	Moderate Significance	Minor to Moderate Significance	Minor Significance/	Minor / No Significance
Low	Minor Significance	Minor Significance	Minor to No Significance	No Significance
None	No Significance	No Significance	No Significance	No Significance

Construction Phase

The Supply Chain Site and Heavy Component Manufacturing Plant

18.6.2 In the case of terrestrial archaeological assets adverse direct physical impacts may arise wherever construction- or landscaping-related ground disturbance takes place. Both activities have the ability to partially or totally remove buried sites or upstanding features. Topsoil stripping alone, even where no further construction is proposed, can allow significant damage to fragile archaeological deposits hitherto protected by a soil cover, through compaction or rutting, if traversed by vehicles or if covered with significant weight of infill. Even where these effects are short term, the residual impact, after mitigation may result in long term adverse changes to the archaeological resource. It is likely that further archaeological deposits of local or county interest will be recorded in future investigations and may be negatively affected by construction activities to prepare the site for operational use. These effects may be considered to be of Moderate to Major Significance.

18.6.3 There will be in excess of 1m of infill following topsoil stripping, on buried archaeological remains within the site. This weight of overburden, and the use of heavy plant on the newly-formed surface over a prolonged period, is considered by consultees to be too great to allow for preservation in situ of archaeological deposits without special engineering.

18.6.4 Adverse impacts on heritage assets may also arise through the intrusion into the setting or appreciation of the assets; effects which may be given equal weight in terms of current planning guidance. During the construction phase these effects might be considered short term and reversible, for example the use of high cranes, heavy lifting equipment may cause vibration and noise. These are likely to be considered of Minor or No Significance.

18.6.5 Indirect impacts which would have permanent effects on the archaeological resource may occur, for example, on or adjacent to sites containing waterlogged archaeological (or palaeo-environmental) remains. In these areas any interruptions to the existing movement of groundwater or its chemistry may cause desiccation, oxidation or erosion of hitherto preserved organic deposits. Although the effect could be short term, the impact could result in permanent, often unseen, negative effects to the archaeological asset. Subject to the results of further investigations these may be considered of Minor or No Significance.

Table 18.6 Summary of impacts on terrestrial archaeology associated with Construction site

IMPACT FROM /EFFECTS ON	Surface archaeological deposits	Buried archaeological deposits	Buried peat or land surfaces	Other Heritage assets on or off site
Topsoil stripping, earthmoving and infilling	Earthwork Site 60 or traces of medieval ridge and furrow cultivation will be removed and lose evidential significance. Minor effects on assets of local significance.	Sites 61 - 64, and other buried remains that may exist within the site, may be buried by less than 300mm of soil cover. Rutting and compaction can occur during soil removal. Total removal	None identified	None identified

IMPACT FROM /EFFECTS ON	Surface archaeological deposits	Buried archaeological deposits	Buried peat or land surfaces	Other Heritage assets on or off site
	Removal of historic hedgerows (Sites 48 – 50). One of which is of county significance (Site 48)	may occur during ditch widening or other re-profiling. Loss of evidential significance to sites of at least local or county significance, possibly national.		
Infilling site to new levels	None identified	Once protective soil cover is removed from sites 61 - 64, and any other areas of archaeological interest, the archaeological deposits may be susceptible to further rutting and from compaction from infilling, resulting in loss of evidential significance to sites of at least local or county significance, possibly national.	Near surface deposits may be compacted and lose evidential significance of at least county/regional significance.	None identified
Use of large construction plant, cranes etc	None identified	Will contribute to compaction and loss of evidential significance to sites of at least local or county significance, possibly national.	None identified	May result in effects of setting of several local designated assets. Reversible and relatively short-term. Possible

IMPACT FROM /EFFECTS ON	Surface archaeological deposits	Buried archaeological deposits	Buried peat or land surfaces	Other Heritage assets on or off site
				damage to Listed Lighthouse, Site 15, through vibration during piling or other works
Lowering of water levels	None identified	Wet organic deposits or artefacts in, eg ditch deposits, may become desiccated and lose evidential significance. Sites are of regional significance.	Buried peat deposits and organic artefacts may become desiccated and lose evidential value. Such deposits may be of at least regional significance	None identified
Overall predicted effects	**Minor significance**	**Minor to Moderate significance**	**Minor to Moderate significance**	**Minor significance**

The New Quay

18.6.6 Direct impacts from construction of the new quay on archaeological sites will arise from the following activities:

- Dredging of alluvium from the reclamation area;
- Excavation of flap anchor trench;
- Installation of tubular and sheet piles for new quay;
- Rainbowing of fill over flap anchors;
- Hydraulic fill of reclamation area;
- Installation of piles to support relieving slab, including jetty;
- Installation of rock revetment;
- Relocation of existing outfall to north;

- Works associated with existing seawall to north west and south east of new quay.

18.6.7 Where horizons with potential to contain archaeological material are to be entirely removed, subsequent activities (e.g. piling; rainbowing of fill; hydraulic fill) in these areas will have no additional direct impact.

18.6.8 Adverse direct impacts on heritage assets may arise from intrusive works associated with the activities above, including dredging, piling and excavation. Such works can damage and remove material of archaeological interest and expose it to subsequent processes that will cause decay. Adverse direct impacts may also arise where the import of new materials such as fill or rock for revetment cause compaction to underlying features of archaeological interest and the deposits which currently protect them.

18.6.9 Adverse secondary impacts may arise from construction equipment that affects the seabed, notably the spuds/feet of jack-up vessels such as backhoe dredgers and piling rigs.

18.6.10 Construction of the new quay is not expected to have any adverse indirect impacts on marine heritage assets through changes in hydrology and sedimentation/ erosion regimes. It is possible that an increase in erosion may occur on the flanks of the approach channel, affecting soft deposits of recent marine origin. Accretion may occur inshore of the power station intake / outfall lines, which may warrant additional dredging back to the current bed level. Both possibilities are indicative, based on modelling. In the event that monitoring shows either erosion or accretion is taking place, and that such changes may have direct or indirect consequences for archaeological material, then specific mitigation will be provided through the Written Scheme of Investigation (WSI; see below).

18.6.11 Where fill is to be imported, it will be obtained from existing marine aggregate licence areas. Other than these existing licensed areas, no additional extraction is proposed outside the footprint of the Project.

18.6.12 Vibrocores VC20 and VC21 within the area of the new quay contain organic material indicative of the presence of prehistoric land surfaces and deposits.

18.6.13 There are two unidentified magnetometer anomalies (sites 28 and 29) and records of three named but, as yet, unlocated shipwrecks (sites 22,

23 and 24) within the quay area, though as the named shipwrecks are documentary references only, their remains may lie elsewhere.

18.6.14 In the intertidal area adjacent to the existing seawall to the north west of the new quay are four undated alignments of wooden posts (sites 124-127), a brick and tile yard with a jetty first shown on the OS map of 1887 (site 18) and the remains of a jetty (site 19) which may be the remains of the jetty of site 18.

18.6.15 In the intertidal area adjacent to the existing seawall to the south east of the new quay are the jetty (site 16) shown near Killingholme High Lighthouse on C19th OS maps and a post (site 17) which may be the remains of site 16, plus jetties associated with a brick and tile yard / fish processing site shown on earlier OS maps (site 20) and the extant remains of a jetty which may be associated (site 19).

18.6.16 There are no known aviation wrecks within the area of the new quay.

18.6.17 In addition to the features that are known from coring, desk-based study and intertidal walkover, there is potential for as yet unknown features and sites to be present in the area of the new quay, ranging from prehistoric land surfaces and associated sites, to hitherto unknown wrecks of boats and ships from the prehistoric to modern periods, to aviation remains. These sites, if present, could range from low to high sensitivity and, in the case of aviation remains, be subject to automatic legal protection.

18.6.18 The following table summarises impacts on buried landscapes, maritime archaeological sites and aviation archaeology.

Table 18.7 Summary of Impacts

IMPACT FROM /EFFECTS ON	Palaeo-land surfaces	Maritime Archaeology	Aviation Archaeology
Dredging of alluvium from intertidal area and excavation of flap anchor trench	Removal and/or exposure of former land surfaces indicated by vibrocores; removal of associated archaeological material. Secondary impacts from dredging equipment, such as	Removal and/or exposure of boat and shipwrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown boat and shipwrecks, wreckage, small	Removal and/or exposure of aircraft wrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown aircraft wrecks, wreckage, small features and

IMPACT FROM /EFFECTS ON	Palaeo-land surfaces	Maritime Archaeology	Aviation Archaeology
	jack-up legs of backhoe dredgers.	features and artefacts, including remains of documented shipping casualties. Secondary impacts from dredging equipment.	artefacts. Secondary impacts from dredging equipment..
Installation of tubular piles and sheet piles for new quay and piling to support relieving slab and jetty NB: No further impact from piling if all deposits of archaeological interest removed by dredging / excavation.	Direct damage to former land surfaces and associated archaeological material. Secondary impacts from installation equipment, such as jack-up spuds for piling rigs.	Direct damage to as yet unknown boat and shipwrecks and wreckage. Secondary impacts from installation equipment.	Direct damage to as yet unknown aircraft remains. Secondary impacts from installation equipment.
Rainbowing and hydraulic fill of reclamation area; installation of rock revetment NB: No further impact from fill if all deposits of archaeological interest removed by dredging / excavation.	Compaction of underlying former land surfaces and associated archaeological material.	Compaction of as yet unknown boat and shipwrecks.	Compaction of as yet unknown aircraft remains.
Relocation of outfall and works associated with existing seawall	Removal and/or exposure of former land surfaces indicated by vibrocores; removal of associated archaeological material.	Removal and/or exposure of features indicated by post alignments and former jetties. Removal and/or exposure of as yet unknown boat and shipwrecks, wreckage, small features and artefacts, including	Removal and/or exposure of as yet unknown aircraft wrecks, wreckage, small features and artefacts.

IMPACT FROM /EFFECTS ON	Palaeo-land surfaces	Maritime Archaeology	Aviation Archaeology
		remains of documented shipping casualties.	
Overall significance	**Minor to Moderate Significance**	**Minor to Moderate Significance**	**Minor to Moderate Significance**

The Berthing Pocket, Approach Channel and Turning Area

18.6.19 Dredging activities will comprise:

- Capital dredging to -11m CD in the berthing pocket. Removal of up to 9m of sediment including side slopes of a gradient appropriate to the bed material.

- Capital dredging to -9m CD in the approach channel. Removal of a maximum of 5.5 m at the northern end of the quay and around 2.5m at southern end.

- Capital dredging to -9m CD in the turning area. Removal of a maximum of 1.5 m. Possible over dredge to -11m OD if arisings can be used for quay backfill.

18.6.20 The base of the berth pocket will be reinforced to enable the use of jack-up equipment to load turbine components during the operational phase. The reinforcement will comprise installation of a series of sheet-piled cells filled with granular material. The excavation and piling of the reinforcement will be within glacial till and chalk and is therefore considered to have no archaeological effect.

18.6.21 Adverse direct impacts on the archaeological heritage may arise from dredging, which can damage and remove material of archaeological interest and expose it to subsequent processes that cause decay.

18.6.22 Adverse secondary impacts may arise from construction equipment that affects the seabed, notably the spuds/feet of jack-up vessels such as backhoe dredgers.

18.6.23 Dredging is not expected to have any adverse indirect impacts on marine heritage assets through changes in hydrology and sedimentation/ erosion regimes. It is possible that an increase in erosion may occur on the flanks of the approach channel, affecting soft deposits of recent marine origin. Accretion may occur inshore of the

power station intake / outfall lines, which may warrant additional dredging back to the current bed level. Both possibilities are indicative, based on modelling. In the event that monitoring shows either erosion or accretion is taking place, and that such changes may have direct or indirect consequences for archaeological material, then specific mitigation will be provided through the Written Scheme of Investigation (WSI; see below).

18.6.24 The arisings from dredging will either be used in the Project or disposed of at existing licensed disposal areas. Other than these existing licensed areas, no additional disposal is proposed outside the footprint of the Project.

18.6.25 Vibrocores VC07, VC09 and VC13 within the dredging area, and VC05, VC06, and VC08 adjacent, all contain organic material indicative of the presence of prehistoric land surfaces and deposits.

18.6.26 There are three unidentified magnetometer anomalies (sites 27, 30 and 167) in the dredging area.

18.6.27 There are no known aviation sites within the dredging area.

18.6.28 In addition to the features that are known from coring and desk-based study, there is potential for as yet unknown features and sites to be present in the area of the new quay, ranging from prehistoric land surfaces and associated sites, to hitherto unknown wrecks of boats and ships from the prehistoric to modern periods, to aviation remains. These sites, if present, could range from low to high sensitivity and, in the case of aviation remains, be subject to automatic legal protection.

18.6.29 The following table summarises impacts on buried landscapes, maritime archaeological sites and aviation archaeology.

Table 18.8 Summary of Impacts

IMPACT FROM /EFFECTS ON	Palaeo-land surfaces	Maritime Archaeology	Aviation Archaeology
Dredging operations	Removal and/or exposure of former land surfaces indicated by vibrocores; removal of associated archaeological material. Secondary impacts	Removal and/or exposure of boat and shipwrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown boat and	Removal and/or exposure of aircraft wrecks possibly indicated by magnetic anomalies. Removal and/or exposure of as yet unknown aircraft

IMPACT FROM /EFFECTS ON	Palaeo-land surfaces	Maritime Archaeology	Aviation Archaeology
	from dredging equipment, such as jack-up legs of backhoe dredgers.	shipwrecks, wreckage, small features and artefacts, including remains of documented shipping casualties. Secondary impacts from dredging equipment.	wrecks, wreckage, small features and artefacts. Secondary impacts from dredging equipment
Construction of Reinforcement of berthing pocket	None identified	None identified	None identified
Overall predicted effects	Minor to Moderate Significance	Minor to Moderate Significance	Minor to Moderate Significance

AMEP Operational Phase

The Supply Chain Site and Heavy Component Manufacturing Plant

18.6.30 The principal effects on the terrestrial historic environment of the AMEP during the Operational Phase will be on the settings of significant heritage assets. An assessment of the effects on settings has been undertaken and is included here as *Annex 18.4*.

18.6.31 The location of large structures within the site and up to six complete wind turbines and a number of towers awaiting despatch, often in the most elevated part of the site adjacent to the new quay, may be visible from, or affect the setting of, more distant heritage assets. The turbines and towers, each only temporarily, will be the most visible component of the site over the greatest distance, while the permanent structures will be visible in a more restricted zone (*cf Figures 20.3b* and *20.3c*)

18.6.32 These new sources of potential effects on setting will be introduced into an area already dominated by a distinctive, modern, late twentieth century industrial landscape that includes port, oil terminal and power production facilities. The most prominent existing industrial features comprise derricks, flare stacks and cooling towers, up to c. 30 m in height, that have been constructed over the past c. 25 years. The visual backdrop to many heritage assets in the study area is, therefore, dynamic and able to accommodate change.

18.6.33 The setting assessment has considered significant heritage assets within a c.10km radius of the site. This has been undertaken in order to identify those assets where both the visual setting of the heritage asset contributes to its significance, and where the North and South Killingholme Industrial conurbation is visible from that asset. Due to the low lying nature of the area, it will be possible to view the towers from many heritage assets, including beyond the 10km survey area (see Zone of Theoretical Visibility [ZTV] in *Figure 20.3a* and *20.3b*), but as part of a skyline that already includes significant modern industrial activity. These assets are considered to have modern settings that are less sensitive to distant visual change, where change may be imperceptible, and where their significance will remain unaffected. This is consistent with advice contained in *Wind Energy and the Historic Environment* (English Heritage 2007, 8);

> *...historically dynamic landscapes, particularly those where the prevailing character is industrial or agriculturally intensive, may be more suited to accommodating large-scale wind energy developments than less dynamic area.*

Table 18.9 Summary assessment of impacts on setting of significant heritage assets (See Figure 18.3)

SITE	Designation	Summary description of setting characteristics	Assessment of effects	Assessment of overall magnitude of impact on the significance of the asset
Group of three lighthouses (*Figure 18.1*; Sites 15, 106, 107)	Listed Buildings grade II. National significance.	The group were designed, at various times, to have open views across the Humber estuary to enable safe passage of shipping. Current footpath allows close public viewing but no direct access.	The construction of the new quay will disrupt the direct SE alignment of the lighthouses, and will obscure their visual appreciation from the river. The diversion of the footpath will result in loss of communal value. Major adverse effect on setting.	Effect on setting of Site 15 is of major significance; Effect on the setting of the group of three listed lighthouses is of Major Significance
East Halton brick and tile	Listed Building	Prominent chimney adjacent	See photomontage	Effect is of Minor

SITE	Designation	Summary description of setting characteristics	Assessment of effects	Assessment of overall magnitude of impact on the significance of the asset
kiln chimney (*Figure 18.2*)	grade II. National significance.	to sea wall NE of East Halton, marks early industrial use of the former marshland.	*Figure 20.4a*. Some loss of prominence in industrial skyline from the north. Minor adverse effect on setting.	Significance
Church of St Denys, North Killingholme (*Figure 18.2*)	Listed Building Grade I.	Church in prominent position on approach to village from the west. Locally tree screened, but existing backdrop of modern industrial structures.	Incremental increase in modern industrial views will add to intensity of industrial skyline.	Effect is of Minor Significance
Thornton Abbey (*Figure 18.2*)	Scheduled monument / grade 1 Listed Building and associated Listed Buildings. National significance.	Site constructed in remote, low lying location. Immediate setting comprises a group of associated medieval structures and remains to the west of East Halton Beck. Distant views from the site to the N and S Killingholme industrial skyline are only partly screened by trees and appear intrusive, particularly entering the site through the main gateway.	Incremental increase in modern industrial views will add to intensity of industrial skyline. Photomontage *Figure 20.4d* shows view, but from a much closer position Minor adverse effect on setting.	Effect is of Minor Significance
Manor Farm, moated site,	Scheduled Monument.	The site lies adjacent to the	Incremental increase in	Effect is of Minor

SITE	Designation	Summary description of setting characteristics	Assessment of effects	Assessment of overall magnitude of impact on the significance of the asset
East Halton (*Figure 18.2*)	National significance.	village and extensive earthwork remains of ridge and furrow in post medieval field boundaries. One of four moated manor sites in the locality, but are not visible. Has open views from the site to the S and SE are dominated by thick hedges and modern industrial skyline.	modern industrial views will add to intensity of industrial skyline. See Photomontage *Figure 20.4d*. Minor adverse effect on setting.	Significance
Baysgarth moated sites and earthworks, East Halton; North Garth and Manor Farm, North Killingholme (*Figure 18.2*)	Scheduled Monuments, grade II* and grade II Listed buildings. National significance.	These three scheduled sites, along with Manor Farm, East Halton, comprise a significant group of medieval moated sites. Some traces of ridge and furrow survive in the vicinity within post medieval fields. Although largely screened by hedges, views to the east are already dominated by the adjacent oil refineries.	Incremental increase in modern industrial views will add to intensity of industrial skyline. Minor adverse effect on setting.	Effect is of Minor Significance
Paull Battery (*Figure 18.2*)	Scheduled Monument. National significance.	The site located in prominent position on harbour edge was	See photomontage *Figure 19.4b* (night view only).	Effect is of Minor Significance

SITE	Designation	Summary description of setting characteristics	Assessment of effects	Assessment of overall magnitude of impact on the significance of the asset
		designed to afford open views down the estuary to control hostile shipping movements and defend Hull. South side of estuary already dominated by N and S Killingholme industrial backdrop.	Small incremental increase in modern industrial views. Minor adverse effect.	
Hull Docks decoy (*Figure 18.2*)	Scheduled Monument. National significance.	Site designed to be seen from air and during night time blackout. Land-based views across estuary dominated by industrial skyline	See photomontage *Figures 20.4c and 19.4a* for nearby view. Moderate incremental increase in modern industrial skyline.	Effect is of Minor Significance
Thorngumbald Clough Light houses (*Figure 18.2*)	Listed Buildings grade II. National significance.	Open views across Humber. Intervisibility with Killingholme lighthouses already diminished by modern industrial backdrop.	Minor incremental increase in modern industrial skyline.	Effect is of Minor Significance
Brocklesby Park (*Figure 18.2*)	Registered Park (grade 1) and complex of grade I, II* and II Listed Buildings.	The park comprises some 600 hectares. Views from the main house are to the south. Views to the north are restricted from within the Park by tree belts to the north of the	The principal views within the park and functional relationship between the numerous heritage assets within it are unaffected. Minor adverse effect on	Effect is of Minor Significance

SITE	Designation	Summary description of setting characteristics	Assessment of effects	Assessment of overall magnitude of impact on the significance of the asset
		house. Some views from the northernmost park of the park, along the B121 include distant views of the existing industrial complexes at N and S Killingholme.	setting.	
Thornton Hall and farm buildings Thornton Curtis (*Figure 18.2*)	Listed Building grade II* and grade II. National significance.	The house lies on the east side of Thornton Curtis on a slightly elevated position, facing south, with adjacent farm buildings. The house has a restricted curtilage, but formerly had more extensive designed garden and parkland landscape to the north. House is largely tree-screened.	Views from the house may include AMEP turbines. Effect likely to be Minor adverse to imperceptible.	Effect is of Minor Significance
Wootton Hall, Wootton (*Figure 18.2*)	Listed Building grade II*. National significance	Country house in parkland and formal gardens (not registered). Lies immediately north of the modern village. Not visible from public access, so assessed remotely. House is largely tree-screened.	Views from the house may include AMEP turbines. Effect likely to be Minor adverse to imperceptible.	Effect is of Minor Significance
Sunk Island Conservatio	Conservation Area.	One of UK's largest	Views to the SE will include	Effect is of Minor

SITE	Designation	Summary description of setting characteristics	Assessment of effects	Assessment of overall magnitude of impact on the significance of the asset
n Area (*Figure 18.2*)	National Significance	Conservation Areas. Flat, remote farmed landscape with isolated farm buildings. Reclaimed from the sea post 18th century. Open views into and out of the area. Views to south include south Humber estuary industrial and port skyline from North Killingholme to Grimsby.	AMEP turbines . See photomontage *Figures 20.4c and 19.4a* for nearby view. Effect likely to be Minor adverse.	Significance

The New Quay

The Berthing Pocket, Approach Channel and Turning Area

18.6.34 There are no identified potential impacts to archaeology during the operational phase beyond activities associated with normal navigation in the Humber Estuary.

18.7 MITIGATION MEASURES

AMEP Construction Phase

The Supply Chain Site and Heavy Component Manufacturing Plant

18.7.1 A programme of site investigations will be undertaken in accordance with the Written Scheme of Investigation to be agreed with the North Lincolnshire Council Archaeological Officer and English Heritage. This will involve surface artefact recovery by fieldwalking, earthwork survey, geoarchaeology assessment, trial trench excavation, open area excavation and monitoring of construction activities. This will be

followed by a programme of assessment, analysis and publication of results.

18.7.2 The archaeological mitigation works will include those commitments already made by Able UK Ltd in achieving planning consents for the northern portion of the site that is already developed (Planning refs 04/1520; 05/0562; and 06/0039).

18.7.3 The Listed lighthouses, Site 15, will lie within the site boundaries. The building should be protected from heavy plant passing or working in the vicinity to reduce risks of damage. Some renovation or re-use of the building is desirable to ensure its continued survival. A management plan will be agreed with the local authority.

The New Quay

18.7.4 Detailed mitigation measures to accompany construction of the new quay are being set out in a Written Scheme of Investigation (WSI) for marine and intertidal archaeology that has been drafted to accompany this Environmental Statement. The WSI provides for a further phase of investigations to enable detailed design of mitigation measures, as well as an outline of the mitigation measures that will be provided. The mitigation measures set out in the WSI will include monitoring by NLC/English Heritage and make provision for post-investigation assessment, material conservation, archaeological analysis, interpretation and publication of significant results, and preparation and deposition of a publicly-accessible archive. The WSI is subject to the agreement of NLC and English Heritage. It is anticipated that implementation of the WSI will be secured through a condition.

The Berthing Pocket, Approach Channel and Turning Area

18.7.5 Detailed mitigation measures to accompany dredging of the berthing pocket, approach channel and turning area are being set out in the Written Scheme of Investigation (WSI) for marine and intertidal archaeology referred to above.

AMEP Operational Phase

The Supply Chain Site and Heavy Component Manufacturing Plant

18.7.6 The Listed lighthouse will be maintained in a good state of repair. A management plan will be agreed with North Lincolnshire Council. No other mitigation is proposed to reduce adverse effects on the setting of heritage assets.

18.7.7 None identified.

18.8 RESIDUAL IMPACTS

18.8.1 There are no identified residual impacts.

18.9 CUMULATIVE IMPACTS

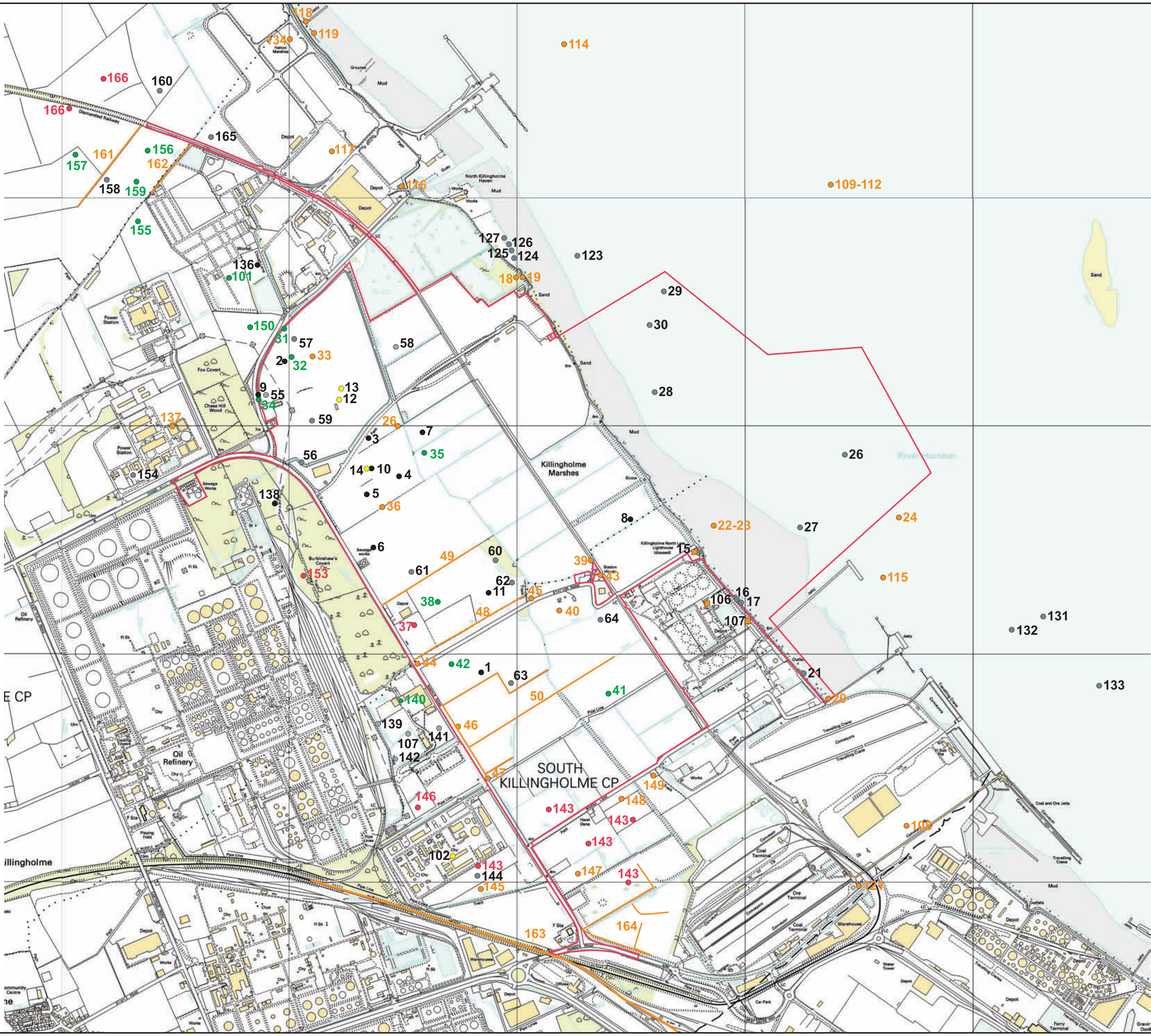
AMEP Construction Phase

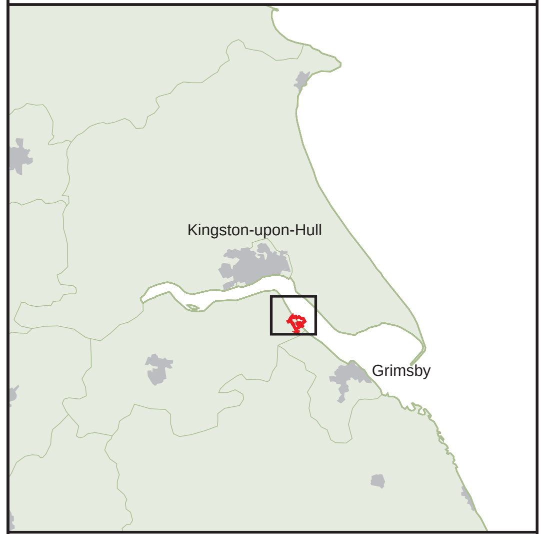
18.9.1 The projects identified for cumulative impact assessment are predominantly land-based, consequently no cumulative impact on marine and intertidal archaeology is anticipated as a result of AMEP, over and above the impacts assessed above.

18.9.2 There is a potential for cumulative loss of evidential value from buried archaeological sites affected by development sites around the Humber Estuary. Modern development control policies and guidance provide adequate mitigation and safeguards for the preservation of significant remains in situ, where practicable, and for the recording, analysis and dissemination of information about sites where preservation is not achievable. It is assumed that each of the projects considered to have potential cumulative effects will be assessed in accordance with current best practice.

AMEP Operational Phase

18.9.3 There may be some cumulative intrusion into distant views from significant scheduled sites or listed buildings around the Humber Estuary. The principal schemes that will act in combination will be the Able UK Northern Area, the Heron Renewable Energy Plant and the IGCC Power Station.





0 1km

Key

Non-designated heritage asset	Designated heritage asset	
●	■	Mesolithic-Bronze Age
●	■	Iron Age
●	■	Romano-British
●	■	Medieval
●	■	Post-medieval/modern
●	■	Undated
	—	Historic hedgerow

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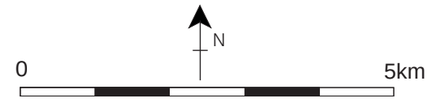
Illustrator:	SC/KJB
Scale:	1:25,000 @ A3
Date:	24/11/11

Figure 18.1:
Location of recorded heritage assets within the study area



Key

- Conservation Area
- Grade I/II* Listed Building
- Grade II Listed Building
- Scheduled Monument
- Registered Park

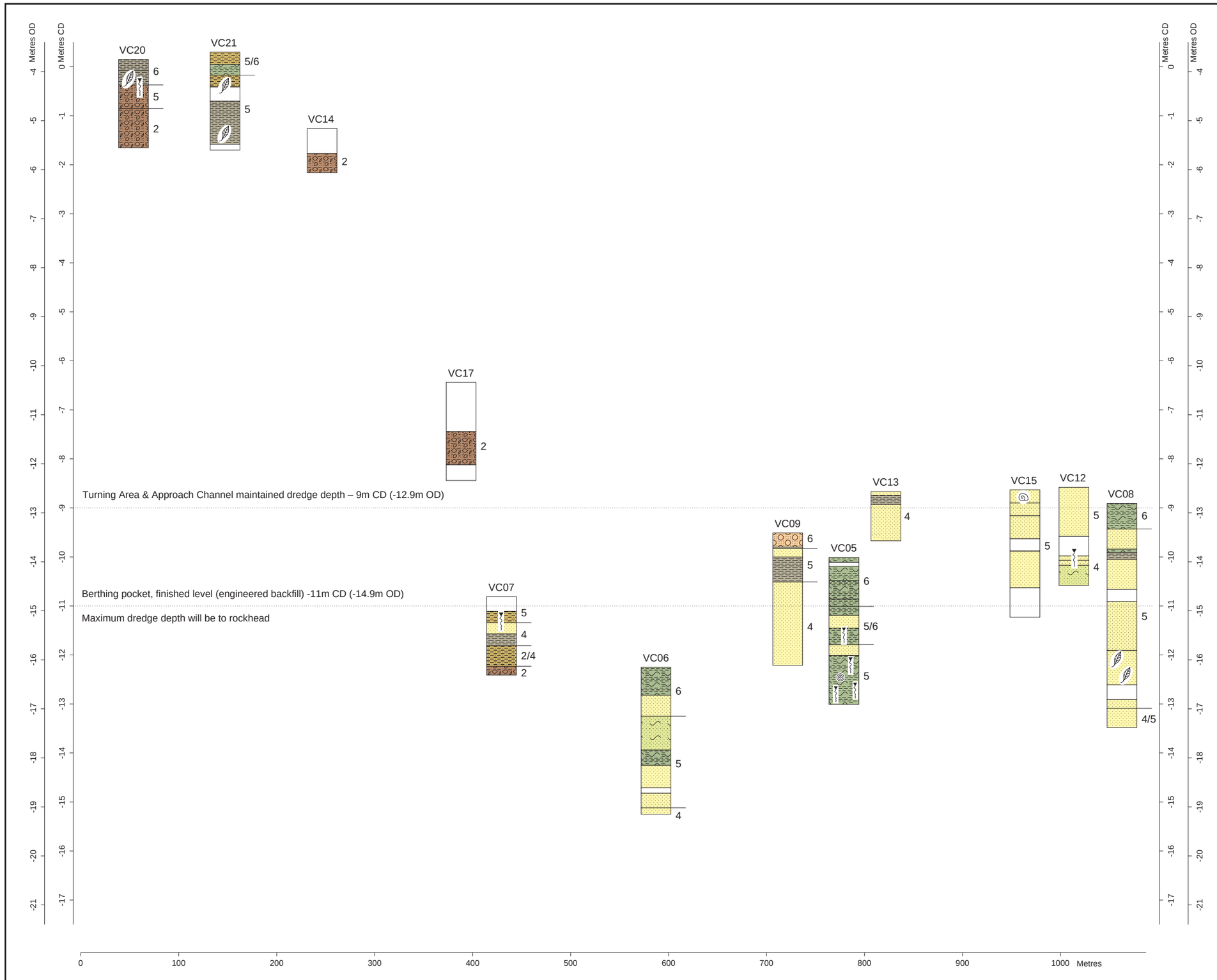
PROJECT

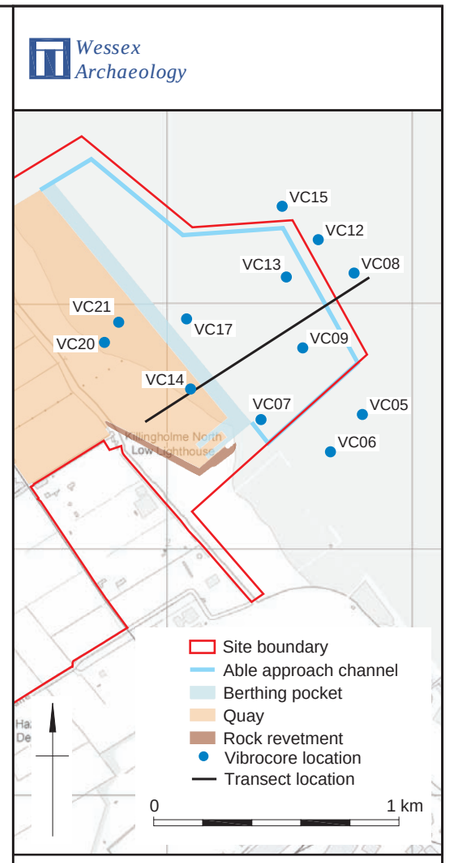
Able UK Marine Energy Park

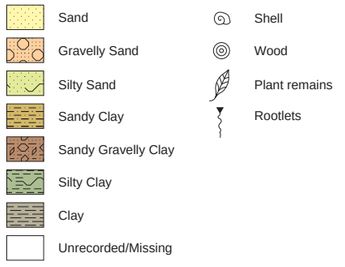
TITLE

Figure 18.2: Location of Designated Heritage Assets

AC archaeology







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Date:	09/12/11
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Report Figures\Geoarch\11-11-25	

Schematic diagram showing relative depths and locations of vibrocores within the AMEP, with interpretive units alongside

Figure 18.3

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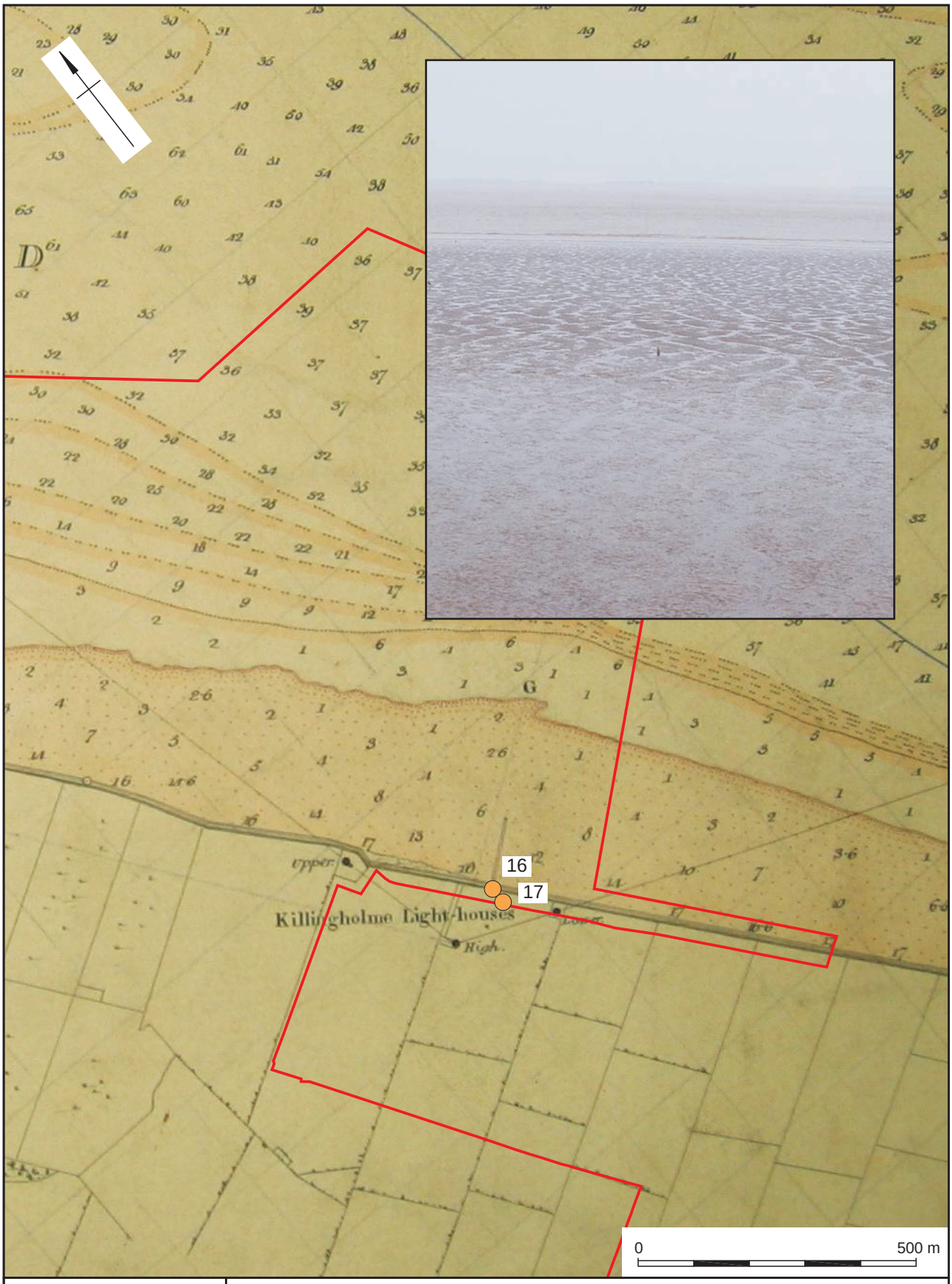
Wessex Archaeology

1872 Admiralty Chart drawing of the Killingholme Lighthouses and photograph of the High (red) (site 106) and South Low (white) (site 107) lighthouses today.

Figure 18.4



Site boundary
Walkover observations

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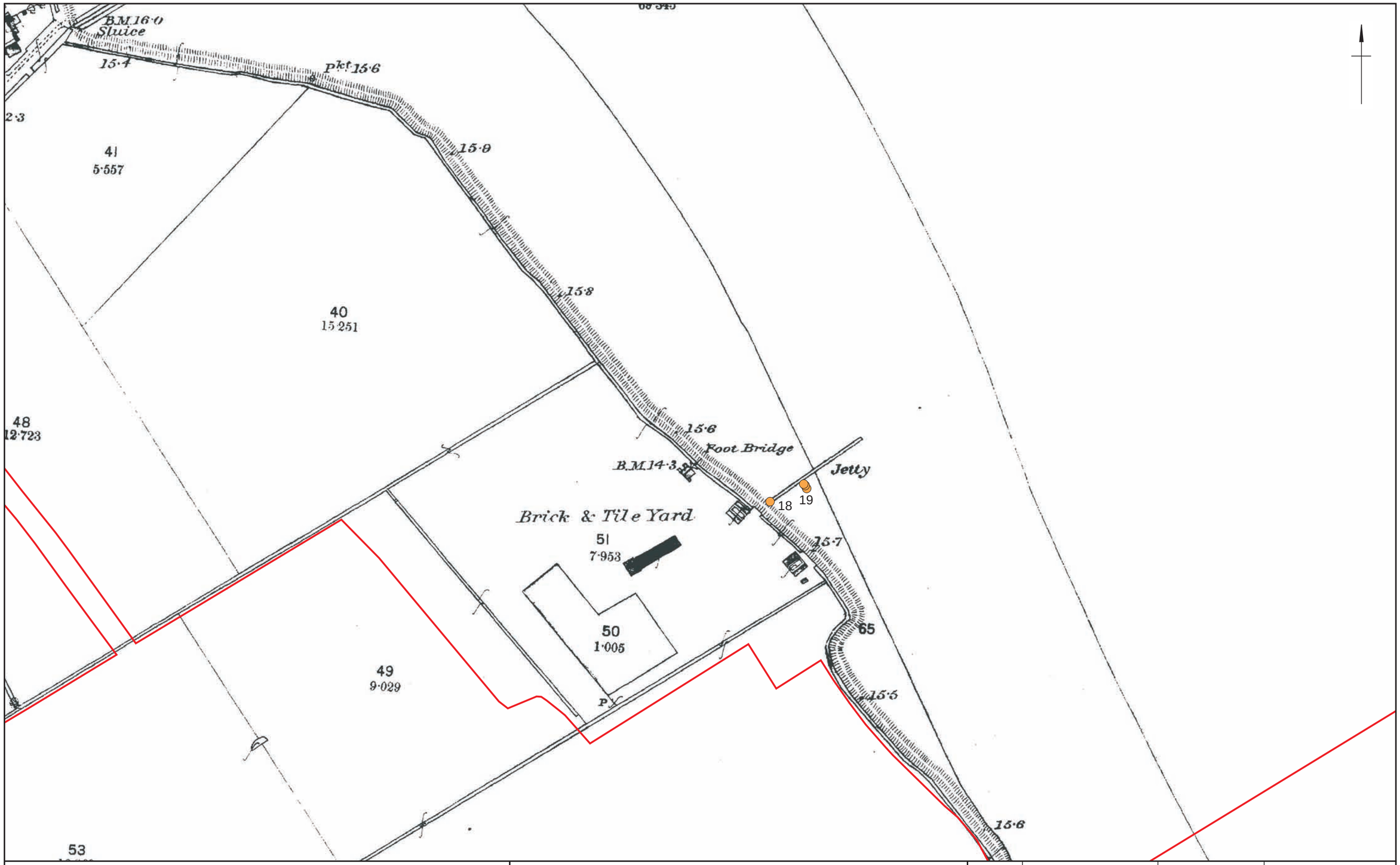
Wessex Archaeology

Historic Chart showing the location of a jetty (site 16) in relation to the Killingholme Lighthouses.
Inset: photograph of post (site 17) located during fieldwalking in the vicinity of the lighthouse jetty.

Figure 18.5



Wessex Archaeology

Site boundary
Walkover observations

0 100 m

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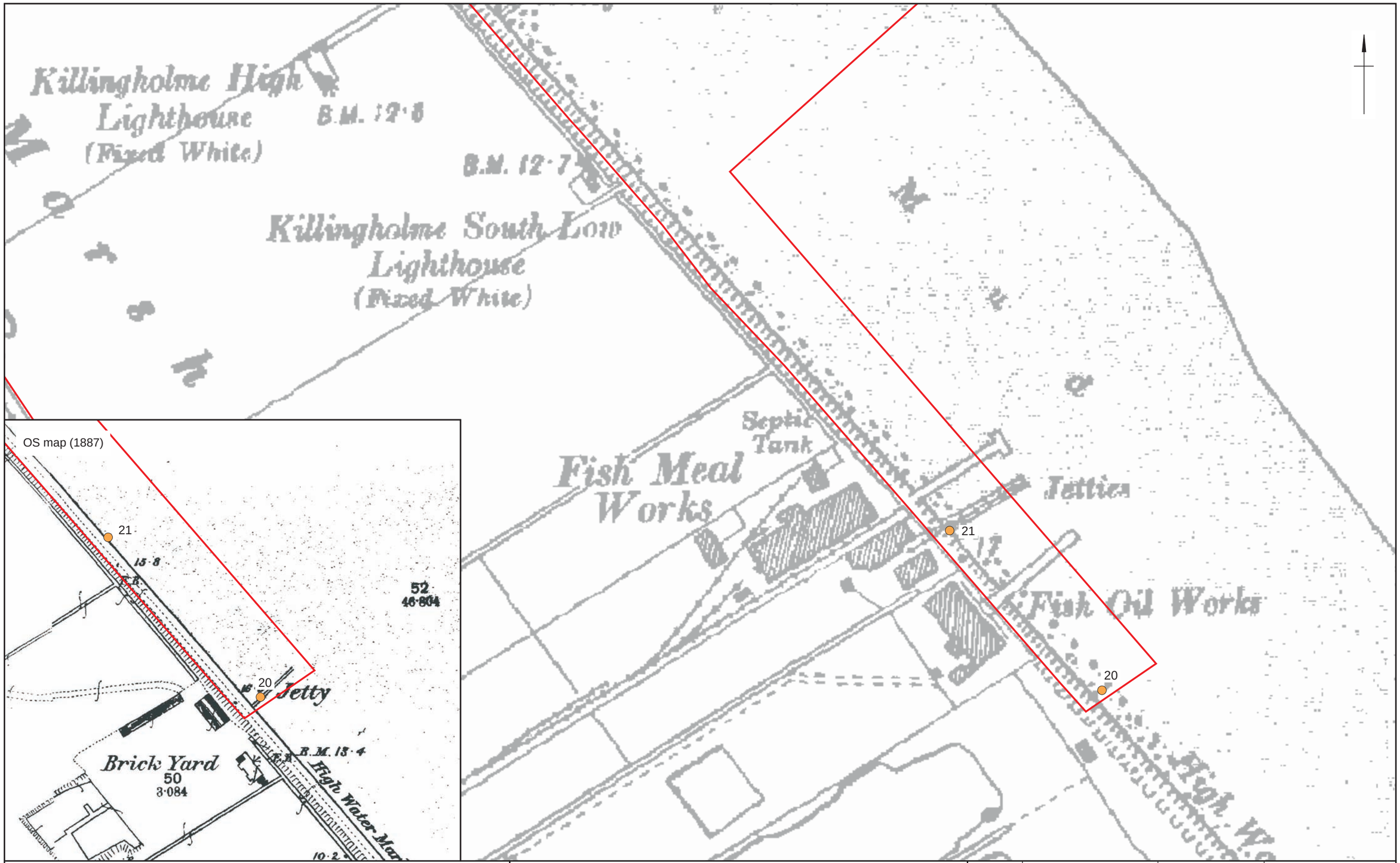
OS Map (1887) showing location of brick yard and jetty south of North Killingholme Haven (site 18) and positions collected for site 19 in the field.

Figure 18.6



Wessex Archaeology

Site boundary
Walkover observations

0 100 m

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OS map (1932) showing three jetties associated with the brick yard to the north of South Killingholme Haven (site 20) and positions collected for site 21 during fieldwork.

Figure 18.7

Plate 18.1: Site 19 - Jetty located to the south of North Killingholme Haven

Plate 18.2: Site 21 - Jetty located to the north of South Killingholme Haven, between South Killingholme Oil Jetty and Immingham Gas Terminal

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Wessex Archaeology

Plate 18.3: Site 125 - Unidentified alignment of unworked wooden posts located to the south of North Killingholme Haven

Plate 18.4: Site 127 - Unidentified alignment of unworked wooden posts located to the south of North Killingholme Haven

Date:	23/06/11	Revision Number:	1
Scale:	N/A	Illustrator:	KJB
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Wessex Archaeology