PROPOSED RESIDENTIAL DEVELOPMENT, ATWICK ROAD, HORNSEA, EAST YORKSHIRE

HERITAGE ASSESSMENT

Ed Dennison Archaeological Services Ltd
18 Springdale Way
Beverley
East Yorkshire
HU17 8NU

PROPOSED RESIDENTIAL DEVELOPMENT, ATWICK ROAD, HORNSEA, EAST YORKSHIRE

HERITAGE ASSESSMENT

Report no:	2021/639.R01
Version:	Final
Date:	May 2021
Author:	Ed Dennison

Ed Dennison Archaeological Services Ltd
18 Springdale Way
Beverley
East Yorkshire
HU17 8NU

On behalf of

Ward Homes Yorkshire Ltd
Village Farm
Main Street
Seaton
East Yorkshire HU11 5RA

HERITAGE ASSESSMENT,
PROPOSED RESIDENTIAL DEVELOPMENT,
ATWICK ROAD, HORNSEA, EAST YORKSHIRE

CONTENTS

EXECUTIVE SUMMARY

In April 2021, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Ward Homes Yorkshire Ltd to produce a Heritage Assessment in support of a planning application for a proposed residential development on the east side of Atwick Road, Hornsea, East Yorkshire (NGR TA 1974 4831 centred). The proposed development site covers 1.94ha.

This Heritage Assessment describes the archaeology and heritage of the area, and assesses the nature, extent and significance of any heritage assets which might be affected by the proposed development. It also presents the results of a geophysical survey undertaken across the whole of the proposed development area. The report has been produced by Ed Dennison Archaeological Services Ltd (EDAS), and is in accordance with the revised National Planning Policy Framework (NPPF) paragraph 189 and the requirements of East Riding of Yorkshire Council's Local Plan Strategy Document.

The proposed residential development will affect two identified assets (Sites 14 and 22). Site 14 represents the alignment of a Second World War anti-tank defence which ran around the northern and eastern edges of the proposed development site. No remains of this site exist above ground, and any below-ground remains are also likely to have been removed. The site was therefore afforded a 'negligible' value of significance. Site 22 represents a number of faint linear anomalies identified by the geophysical survey - these features are aligned north-west/south-east, and run contrary to other north-south anomalies associated with former ridge and furrow arable cultivation. These features mirror the alignments of similar anomalies and cropmarks relating to a probable late Bronze Age monument seen further to the north, and so they may be archaeological interest. Based on current evidence, the site was afforded a medium grade of significance, and the development proposals may result in a moderate grade of adverse effect.

Apart from these geophysical anomalies, and based on the results of the background research and the geophysical survey, there appears to be no other archaeological interest in the site. The site was formerly part of Hornsea's unenclosed common pasture called The Leys, the field was created by 1809 enclosure process, and has been in arable cultivation for some considerable time. The remains of a modern structure within the site is no archaeological or historical significance.

A programme of archaeological evaluation, comprising the excavation of a number of trenches, is recommended to confirm the results of the geophysical survey. Depending on the results of this work, some further pre-development excavation may be required, to allow those parts of Site 22 likely to be affected by development to be 'preserved by record'.

1 INTRODUCTION

1.1 In April 2021, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Ward Homes Yorkshire Ltd to produce a Heritage Assessment in support of a planning application for a proposed residential development on the east side of Atwick Road, Hornsea, East Yorkshire (NGR TA 1974 4831 centred) (see figures 1 and 2). The proposed development site covers 1.94ha.

1.2 The purpose of this Heritage Assessment is to describe the archaeology and heritage of the area, and to assess the nature, extent and significance of any heritage assets which might be affected by the proposed development. It has been produced by Ed Dennison Archaeological Services Ltd (EDAS), and is in accordance with the National Planning Policy Framework (NPPF) paragraph 189 (MHCLG 2019, 55) and the requirements of East Riding of Yorkshire Council's Local Plan Strategy Document (ERYC 2016a & b).

2 METHODOLOGY AND SOURCES

2.1 For the purposes of this assessment, a study area of 1km diameter centred on the proposed development site was defined, although information for the more general area was also collected. In line with standard archaeological practice (e.g. CIfA 2017), and guidance contained in the NPPF (MHCLG 2019), and the requirements of the Humber Archaeology Partnership, the following sources of information were examined to produce this report.

Sources of Information

2.2 The electronic records forming part of the Humber Historic Environment Record (HHER), which is held and maintained by the Humber Archaeology Partnership in Hull, was consulted for information on the known archaeological heritage of the area. Unfortunately, it was not possible to visit the HHER in person, to examine the paper records and other background information, due to the COVID-19 restrictions that were in place during the preparation of this assessment report.

2.3 Other on-line data from the 'Heritage Gateway' website (*http://www.heritagegateway.org.uk/gateway*), which provides links to the National Heritage List for England (NHLE), Historic England Research Records (HERR), the National Monument Record Excavation Index (NMREI) and the Register of Historic Parks and Gardens, was also collected. A number of other archaeological databases were searched for relevant information, for example the Defence of Britain database for details of Second World War sites (*http://archaeologydataservice.ac.uk/archives/view/dob/*), the British and Irish Archaeological Bibliography for records of previous archaeological investigations (*https://archaeologydataservice.ac.uk/library/*), and the artefacts and finds recorded by the Portable Antiquities Scheme (*http://finds.org.uk/*). Information on those buildings listed as being of Special Architectural or Historic Interest was also obtained from the 'Heritage Gateway' website.

2.4 The Ordnance Survey's historic maps of the study area were also consulted, at both 6" and 25" scales, from those available via the National Library of Scotland website (*http://maps.nls.uk/index.html*). A visit was also made to the East Riding Archives Office (ERAO) in Beverley, to examine historic maps, local history material and other relevant documents.

2.5 A range of published and unpublished documentary sources in both local and national collections was consulted for background information and specific data on specialised aspects of the history and archaeology of the study area. A list of all the sources consulted for this assessment is provided in the bibliography (Chapter 7) below.

Records of Previous Research or Investigations (see figure 8)

2.6 Cropmarks and soilmarks seen on aerial photographs in the Holderness area have been examined and plotted onto modern Ordnance Survey map bases by Historic England, as part of their ongoing survey work through the National Mapping Project. This information is available at the HHER, and their records show that four sites have been identified within or immediately adjacent to the study area (**Sites 1, 4, 13 and 15**); one of these sites (**Site 1**) is protected as a Scheduled Monument (HHER 20906; NHLE 1423379; HERR 1552167).

2.7 The east coast of Holderness is well known for the remains of its Second World War 'Coastal Crust' defences, and records produced by the Fortress Study Group as part of their 1992 Holderness Pilot Study were examined; these records have subsequently been incorporated into the HHER and HERR. A total of eight 2WW sites have been identified within the study area, comprising three pill boxes, a concrete road block, a Royal Observer Corp look-out post, and various weapon pits, practice trenches and barbed wire obstructions (**Sites 6, 9, 10, 11, 14, 16, 17 and 21**). Not all these sites remain extant today.

2.8 Two fields to the north and north-east of the current proposed development site were subject to a geophysical survey in 2003, as part of an archaeological evaluation exercise to determine the potential of the site prior to residential development (**Site 7**) (GeoQuest Associates 2003; HHER EHU1217). In the event, little of archaeological interest was recorded, although some anomalies suggestive of former ridge and furrow were noted as well as some weak differently aligned anomalies that were thought to be field drains. A subsequent watching brief over the western half of the site during groundworks for 112 dwellings and a temporary access road produced no archaeological results (Rawson 2005; HHER EHU1218). A further archaeological watching brief was undertaken in 2001 during the construction of a detached dwelling on Northumberland Avenue, off the west side of Atwick Road (**Site 20**), but again, no archaeological remains or deposits were identified (Tibbles 2001; HHER EHU680).

2.9 The increasing frequency of the threat of erosion to the east coast of England, between Whitby in North Yorkshire and the Norfolk border, led to a major English Heritage funded project to record the archaeological heritage and potential of the area; this project was the Yorkshire and Lincolnshire Rapid Coastal Zone Assessment Survey. The Holderness coast was included in the Bempton to Donna Nook section of the project, and an initial identification survey was undertaken in 2006-07 (Brigham, Buglass & George 2008). A subsequent, more detailed, field survey and assessment phase was undertaken in 2009-10 (Brigham & Jobling 2011). Both these reports contain details of archaeological sites identified within and adjacent to the survey area, and the relevant information is referenced below.

2.10 In addition to the above archaeological investigations, detailed documentary research into the origins and development of Hornsea and its environs has been published by the Victoria County History (Allison 2002); this builds on earlier accounts by Poulson (1840, 314-340) and Bedell (1848). A more recent detailed

history of the town and surrounding area has been produced by Harrison (2005), and Walker (1995) has described the effects of the Second World War in Hornsea and the surrounding areas.

Geophysical Survey of the Development Site

2.11 A geophysical survey of the proposed development site (c.1.94ha) was undertaken by Archaeological Services WYAS in April 2021 (Brunning 2021). The site was divided into 30m by 30m grids and tied in to known Ordnance Survey points using Trimble VRS differential GPS equipment, and data collection was collected using Bartington Grad601 magnetic gradiometers with automatic data logging facilities. Samples were recorded at 0.25m intervals on traverses 1.0m apart within the 30m by 30m grids, so that 3,600 readings were recorded in each grid. These readings were later downloaded to a computer for processing and interpretation. Appendix 2 provides a non-edited copy of the survey report and the results of the survey are given and discussed in Chapter 6 below.

Site Visits and Inspections

2.12 An initial visit to the proposed development site was undertaken on 2nd May 2021 to assess the suitability for the geophysical survey. A more detailed visit to the sites identified by this assessment within the wider study area was undertaken on 15th May 2021.

3 DESIGNATED ASSETS AND PLANNING POLICY CONTEXT

Designated Assets

3.1 Designated Heritage Assets are defined as comprising World Heritage Sites, Scheduled Monuments, Listed Buildings, Protected Wreck Sites, Registered Parks and Gardens, Registered Battlefields and Conservation Areas (MHCLG 2019, 66). It should be noted that there is also a lower level of heritage assets, those which may or may not be of equivalent significance to a Scheduled Monument, but which are currently undesignated.

Scheduled Monuments

3.2 Scheduled Monuments are considered to be of national importance and are protected under the Ancient Monuments and Archaeological Areas Act 1979, and they are administered by Historic England (formerly English Heritage) on behalf of the Secretary of State. Under the terms of Part 1 Section 2 of the Act, it is an offence to damage, disturb or alter a Scheduled Monument either above or below ground without first obtaining permission (Scheduled Monument Consent) from the Secretary of State.

3.3 The nearest Scheduled Monument to the proposed development site lies c.600m to the north-east, and part of the scheduled area falls into the northern edge of the study area (**Site 1**). This Scheduled Monument is identified as 'East Field cropmark site centred 300m SSE of Northorpe, interpreted as a Neolithic henge later used as a Bronze Age ringwork' (NHLE 1423379; HHER 20906); the site was first scheduled on 1st April 2015. Another Scheduled Monument, a moated site in Hall Garth Park immediately to the north of St Nicholas' Church, lies 750m south-south-east of the proposed development site.

Listed Buildings

3.4 Listed Buildings are afforded protection under the Planning (Listed Buildings and Conservation Areas) Act 1990. Listing is a national designation, but Listed Buildings are divided into three grades, I, II* and II, which relate to their architectural and historical value. Section 66 of the 1990 Act states that planning authorities must have special regard for the desirability of preserving (*inter alia*) the setting of any Listed Building that may be affected by the grant of planning permission.

3.5 There are no Listed Buildings within or immediately adjacent to the study area. The nearest two are listed Grade II, and they lie on the north side of Eastgate in Hornsea, namely a cobble wall, pump and pump turn (NHLE 1418818) and no. 3 Eastgate (NHLE 1263784), located some 585m to the south of the proposed development site.

Other Designated Assets

3.6 There are no World Heritage Sites, Protected Wreck Sites, Registered Parks and Gardens, or Registered Battlefields within 10km of the study area; the nearest of any of these assets is the Registered Park and Garden at Burton Constable, which lies 11.5km to the south. The closest Conservation Area is that covering the core of Hornsea, the nearest part of which lies 357m to the south of the proposed development site on College Gardens; this Conservation Area was designated in July 1969 and was subject to a Conservation Area Appraisal in May 2006, and its northern extent runs into the study area (**Site 22**) (ERYC 2006).

National Planning Policy Framework (2019)

3.7 The National Planning Policy Framework, originally published in 2012 and revised in 2018 and 2019 (MHCLG 2019), sets out the Government's planning policies for England and how these are to be achieved, with the purpose of planning being to help achieve sustainable development. At the heart of the policy framework is the presumption in favour of sustainable development (paragraph 11).

3.8 NPPF policies relating to conserving and enhancing the historic environment state that, when determining applications, local planning authorities should require an applicant to describe the significance of any affected heritage asset, including any contribution made by their setting. This should be proportionate to the assets' importance and, where a development site may include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, undertake a field evaluation (paragraph 189). The level of detail should be proportionate to the asset's importance and sufficient to understand the potential impact of the proposals on their significance.

3.9 When considering the impact of a proposed development on the significance of a designated heritage asset, the NPPF notes that great weight should be given to the asset's conservation. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Substantial harm to Grade II Listed Buildings, or Grade II Registered Park or Gardens, should be exceptional. Substantial harm to or loss of heritage assets of the highest significance, including Scheduled Monuments and Grade I and II* Listed Buildings, should be wholly exceptional (paragraphs 193-194). Significance (for heritage policy) is defined as "the value of a heritage asset to this and future generations

because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting" (Appendix 2).

3.10 Where a proposed development would lead to substantial harm or total loss of significance of a designated heritage asset, the NPPF states that local planning authorities should refuse consent unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits (paragraph 195). Where a development will lead to less than substantial harm of the significance of a designated asset, this harm should be weighed against the public benefits of the proposal (paragraph 196). The document goes on to state that the effect of an application on the significance of a non-designated heritage asset should also be taken into account when determining an application, a balanced judgement being required having regard to the scale of any harm or loss and the significance of the heritage asset (paragraph 197).

3.11 Finally, the NPPF states that local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and the archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted (paragraph 199).

East Riding Local Plan Strategy Document 2016

3.12 The East Riding Local Plan was adopted by East Riding of Yorkshire Council in 2016. The policies in this document relating to the historic environment are grouped under headings such as 'Integrating High Quality Design', 'Promoting a High Quality Landscape', 'Valuing our Heritage', 'Conserving and Enhancing Biodiversity and Geodiversity', 'Strengthening Green Infrastructure' and 'Managing Environmental Hazards' (ERYC 2016a, 122-158).

3.13 Of particular relevance to this assessment report is Policy ENV3 dealing with 'Valuing our Heritage' (ERYC 2016a, 134). This states:

A. Where possible, heritage assets should be used to reinforce local distinctiveness, create a sense of place, and assist in the delivery of the economic well-being of the area. This can be achieved by putting assets, particularly those at risk, to an appropriate, viable and sustainable use.

B. The significance, views, setting, character, appearance and context of heritage assets, both designated and non-designated, should be conserved, especially the key features that contribute to the East Riding's distinctive historic character including:
   1. Those elements that contribute to the special interest of Conservation Areas, including the landscape setting, open spaces, key views and vistas, and important unlisted buildings identified as contributing to the significance of each Conservation Area in its appraisal;
   2. Listed Buildings and their settings;
   3. Historic Parks and Gardens and key views in and out of these landscapes;
   4. The dominance of the church towers and spires as one of the defining features of the landscape, such as those of Holderness and the Wolds;
   5. Heritage assets associated with the East Yorkshire coast and the foreshore of the Humber Estuary;

6. The historic, archaeological and landscape interest of the Registered Battlefield at Stamford Bridge;
7. The historic cores of medieval settlements, and, where they survive, former medieval open field systems with ridge and furrow cultivation patterns;
8. The nationally important archaeology of the Yorkshire Wolds; and
9. Those parts of the nationally important wetlands where waterlogged archaeological deposits survive.

C. Development that is likely to cause harm to the significance of a heritage asset will only be granted permission where the public benefits of the proposal outweigh the potential harm. Proposals which would preserve or better reveal the significance of the asset should be treated favourably.

D. Where development affecting archaeological sites is acceptable in principle, the Council will seek to ensure mitigation of damage through preservation of the remains in situ as a preferred solution. When in situ preservation is not justified, the developer will be required to make adequate provision for excavation and recording before or during development.

3.14 This policy replaces previous, more disparate, policies which were included in the former Beverley Borough Local Plan (adopted June 1996), the East Yorkshire Borough Wide Local Plan (adopted June 1997), and the Joint Structure Plan for Kingston upon Hull and the East Riding of Yorkshire (adopted June 2005).

East Riding Local Plan Allocations Document (2016)

3.15 Hornsea is identified as a 'Town' in the East Riding Local Plan Strategy Document (ERYC 2016a, 27& 40) with 750 new houses proposed up to 2028-29. The plan allocates nine sites for residential development, and the proposed development site coincides with area HOR-B, which covers 1.93ha and is described as being 'Land north of Indoor Bowling Centre, Atwick Road' (ERYC 2016b, 138-140).

3.16 The allocations document notes that development proposals will be required to provide a substantial landscaped buffer to the northern boundary and additional landscaping to the western boundary. The site has an indicative capacity of 52 dwellings (ERYC 2016b, 140).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Introduction

4.1 The parish and township of Hornsea has a rich archaeological heritage, which has been succinctly summarised by the Yorkshire and Lincolnshire Rapid Coastal Zone Assessment Survey report (Brigham, Buglass & George 2008, 75-82); for Hornsea parish, the identified sites are prefixed 'HO'. Poulson (1840, 314-340), Bedell (1848), Allison (2002) and Harrison (2005) all provide accounts of the history and landscape development of the area. The following text has been complied from these and other sources and databases, as listed in the bibliography (Chapter 7) below.

Early Prehistoric Periods (up to 800 BC)

4.2 Like most of the East Riding, the Holderness landscape has been exploited since early prehistoric times, with traces of Palaeolithic and Mesolithic activity often

centred around the meres and wetlands which characterised the area; evidence for this activity is generally restricted to the recovery of isolated artefacts. Later Neolithic and Bronze Age settlers also made use of these environments, and evidence for their occupation is slightly more widespread.

4.3 A barbed bone point, probably of Upper Palaeolithic or Mesolithic date, was found in Hornsea during the construction of a gasholder in 1905, 3.6m below the existing ground surface (HHER 3544; HO152); this was presumably at the former Wade gasworks to the south of the town, just to the east of Hornsea Mere. A similar example has more recently been found in a quarry at Gransmoor near Driffield, which has been dated to between 11500 and 11100 BP (before present) (Brigham, Buglass & George 2008, 75). A 'rhino horn', probably an elephant tusk, was recovered from an area of 'submarine forest' by George Poulson in the mid 19th century, and this can presumably also be assigned to this period (HHER 8963; HO157).

4.4 There is some evidence for later prehistoric activity in and around Hornsea. The Mesolithic (c.10000-4000 BC) population would have been transient, moving through the landscape and relying on natural resources, and the mere and coast would have formed attractive locations for seasonal settlement. However, to date, the only artefact to have been found from this period is a barbed antler point or harpoon recovered from below the low water mark to the east of Beverley Farm, south of the town (HHER 8972; HO119), although five other small concentrations of flints have also been found on the north side of the mere (Harrison 2005, 41-42).

4.5 Artefactual evidence for Neolithic or early Bronze Age activity is also restricted, for example a collection of eleven flints recovered from an archaeological evaluation at Newbegin in Hornsea in 2000 (HHER 20470; HO75), and other scattered surface finds of various stone axe heads and flint implements, mostly from the northern part of the parish (Harrison 2005, 45-48). This contrasts markedly with the higher better drained chalk uplands of the Yorkshire Wolds, where the large number and density of sites implies that this was a well-populated landscape at this time. However, cropmarks identified in 2010 in a field to the south-east of Northorpe, partly extending into the study area, are thought to represent a henge monument dating to the late Neolithic period (2800-2000 BC), set within and respected by a later field system. This suggests that the henge was reused in the late Bronze Age as a high status domestic enclosure (NHLE 1423379; HHER 20906); this site is a Scheduled Monument and is discussed further below (**Site 1**).

Iron Age and Romano-British Periods (800 BC-AD 410)

4.6 In contrast to earlier periods, there is an increasing body of evidence for Iron Age/Romano-British occupation within Holderness, with numerous agricultural settlements set within a highly developed pattern of fields, trackways, drainage ditches and enclosures. Initially, this evidence was almost solely derived from cropmarks and soilmarks identified on aerial photographs, but more recent investigations undertaken as part of linear infrastructure schemes, such as the cable corridors for the Westermost Rough Windfarm (Williams 2016) and the Humber Gateway Offshore Windfarm (Burgess 2014), and also along the route of the Easington to Paull and the Easington to Ganstead pipelines (Oxford Archaeology North 2012; Glover *et al* 2016), have been able to expand on the aerial photographic evidence, showing that the area was far more intensively settled and farmed than previously thought.

4.7 In general, the early Iron Age is characterised by small unenclosed settlements or farmsteads, often only seasonally occupied, which are usually poorly represented in the archaeological record (Roberts 2009, 49). However, late Iron Age sites are more common, and are represented by discrete, scattered, rectangular or rectilinear enclosures containing one or more large circular huts with droveways or tracks providing access to the adjacent field systems. Many of these enclosures are separated from each other by open ground, and so they probably form a series of independent farming units. Groups of two or three co-joined or closely spaced enclosures form slightly larger sites, which may represent larger farmstead complexes (Fenton-Thomas 2005, 69-76).

4.8 Despite widespread evidence from the region as a whole, only a small number of sites of Iron Age/Romano-British date have so far been identified within and around Hornsea. Undated ditches seen on aerial photographs either side of Atwick Road may be of this date, although they could also be of medieval or later date (HHER 19472; HO20) (see **Site 4** below). A ditch and polygonal enclosure have also been identified immediately west of the road a little further to the south, on the edge of the town near the Atwick Road allotments (HHER 3624; HO40) (see **Site 15** below). An Iron Age gold stater was found on Atwick beech sometime before 1905 (HHER 5419; HO03), and quantities of Iron Age pottery have been collected from the coastline in the recent past (Harrison 2005, 51-52).

4.9 In terms of Romano-British material, a gold coin of the Emperor Magnentius (AD 350-353) was found in the town before 1935 (HHER 3550; HO153), and a coin of Licinius (AD 307-323) before 1965 to the west of the railway (HHER 8458; HO87). Other pottery scatters and finds of domestic material, dating to the 3rd and 4th centuries, have been recovered from the northern part of the parish, and there appear to be two distinct concentrations of material, around Mount Pleasant and in the area of Cliff Road, Esplanade and Hartley Street in the town, suggesting two separate farmsteads (Harrison 2005, 56-57). Roman pottery was also found during the course of an archaeological evaluation at The Levels in 2001 (HO69). All this evidence suggests there was some late Iron Age and Roman settlement in the area.

The Anglo-Saxon and Early Medieval Periods (c.410-1066)

4.10 The end of the Roman period in East Yorkshire occurs in AD 410, which is when the military forces were withdrawn. However, there is some evidence to show that some of the Roman villas and settlements on the Wolds continued to be occupied, and some of the earlier Neolithic and Bronze Age barrows and earthworks were reused for burials (Fenton-Thomas 2005, 130-133). It is also possible that some of the curvilinear cropmark complexes may represent one element of post-Roman occupation, and several recent excavations have revealed evidence for Anglian activity and burial (for example at Low Caythorpe; Abramson 1996). The known settlements and cemeteries seem to cluster around the edge of the Wolds, suggesting that the highest land was given over to pasture linked by a series of long distance trackways (Watkin 1983). The routes of some of these tracks still survive in the present landscape, either as parish or township boundaries or as green lanes.

4.11 The occurrence of specific place-name elements has often been used to provide clues to the distribution of settlement and ethnic groups between the 4th and 9th centuries, and it is clear that many East Yorkshire villages and towns have their origins in the Anglo-Saxon period. However, actual evidence for Anglo-Saxon occupation is generally rare, as continued occupation and modern development

tends to destroy earlier remains. The extent of Anglian settlement can be seen through villages with suffixes such as *-ham* (meaning a village, homestead or manor), *-ton* (farmstead), and *-wic* (a village or dairy farm), while elements such as *-by* (a farmstead), *-thwaite* (a clearing), *-saeter* and *-booth* provide examples of Scandinavian settlement, many of these being pre-fixed with personal names. The part played by the Danes in the colonisation of the marshy land is also emphasised by the frequency of minor names incorporating *-holm* (island) and *-carr* (boggy ground) (Gelling 1984, 50-52 & 73). Local Anglian settlement names include Seaton (meaning 'the farmstead near the lake' i.e. the mere), Hornsea Burton ('fortified farmstead'), Bonwick ('dairy farm near the weeds') and Barmston ('Beorn's farmstead'), while Scandinavian settlement names include Northorpe and Southorpe, Wassand ('the sand bank or sandy shore near the ford'), and Sigglesthorne ('Sigel's thorntree) (Harrison 2005, 62-63 & 70).

4.12 Hornsea has been shown to have been an important market centre with Anglian origins, being sited at the east end of the mere, originally located some distance from the sea. The name *Hornessei* in the 10th century Domesday Book possibly derives either from a peninsula ('horn') projecting into the mere, or the shape of the mere itself. Archaeological investigations during development work at the Hydro Hotel (now the Granville Court Hotel) in 1913 and 1982-83 located a 6th century Anglian cemetery, comprising some 18 burials which were accompanied by a range of gravegoods including a silvered buckle, silver pendant, a dagger, strap fasteners, a necklace and pottery (HHER 3547; HO30; Head 1997; Tibbles 1997). As yet, the settlement associated with this cemetery has not been located. Other monuments of the period also include a cart burial, possibly of Iron Age date but more likely to be Anglo-Saxon as it was found near the above-mentioned cemetery (HHER 3542; HO34), and a bone comb found on the cliffs at the north end of the town in 1970 (HHER 35548; HO17). Taken together, these finds suggest a substantial early Anglian presence in the eastern part of the present town, perhaps associated with a settlement near the Old Mere.

Medieval Period (1066-1540)

4.13 By the medieval period, the town had grown into an important market centre, partly based on fishing and a seaborne trade. Although the town lay at the east end of the mere, there was a seafaring settlement called Hornsea Beck located on the coast, and there were also outlying hamlets of Northorpe, Southorpe and Hornsea Burton; apart from Hornsea Beck, each had their own townships and manors, within the larger parish of Hornsea (Allison 2002, 273).

4.14 Harrison has identified four phases of expansion in the medieval town. Its origins lie in the immediate post-Conquest period, when a resident but scattered population moved into a new nucleated settlement laid out in the late 11th century, almost certainly by St Mary's Abbey in York, who acquired the manor of Hornsea in c.1088. This settlement comprised various tofts and crofts (house sites and rear enclosures) running off a main street (Westgate) with a parallel back lane to the south (Back Westgate), both set on a slightly arced east-west alignment which reflects the local topography (Harrison 2005, 79-80). By 1203, Hornsea was one of the four wealthiest manors in Holderness, and this led to a second phase of expansion in the early 13th century. A market place was created between the church and the mere, new building plots were laid out around it, and the Westgate area was incorporated into the new plan. The market place originally covered a much larger area than at present, extending from Mill Lane in the north, Westgate in the west, the Southgate/Newbegin junction in the south, and the church in the east (Harrison 2005, 81-82). Another phase of expansion then took place in

c.1275 when Edward I granted permission for an annual December fair, which was held to the south of the market place in an area still named as 'Fair Place'. Other grants for additional markets and fairs followed in the later medieval period. A final phase of development occurred in the later 14th and 15th centuries, when residential extensions took place along Southgate and Newbegin (Harrison 2005, 84-87).

4.15 A church and priest are recorded in the 11th century Domesday Book, but the present St Nicholas' Church has a 13th century nave and aisles, and a late 13th century tower, and it was altered and enlarged in the late 14th and 15th century, before being restored in the 19th century; it is Grade I Listed Building (HHER 7026; HO67; NHLE 431492). The rectory formerly stood in the adjacent Hall Garth Park, within the earthworks of a partially infilled moated site; the structure was pulled down before 1787 (HHER 3546; HO60). The earthworks were incorporated into the town's public park in the 19th century, and were later used as a feature in a golf course; the site is a Scheduled Monument (NHLE 1007845). In 1423 a new vicarage was built to the east of the church, probably where the current vicarage stands - this was a substantial complex of buildings with a garden, and detailed accounts for building work done in 1485-88 survive (Harrison 2005, 90-91). A medieval market cross stood in the Market Place until the mid 19th century, but it was initially moved to Southorpe Hill Farm, before being moved again to the churchyard in 1898 (HHER 15475; HO85). Another cross, the 14th century Wayside Cross, still stands in Southgate (HHER 3553; HO110).

4.16 The villages of Hornsea Beck and Hornsea Burton have now been lost to coastal erosion. Hornsea Beck lay at the mouth of the Stream Dike, formerly located further to the north-east than the present watercourse. This village acted as a port for the town, where goods could be offloaded and fishing catches landed, and is first mentioned as a port in 1228. A narrow spit of land and a quay provided a sheltered anchorage, and there were a number of cottages without gardens here. It was a relatively large settlement, with 264 tax payers in 1377, suggesting a total population of around 500, reducing to around 240 by 1490. Erosion resulted in the gradual destruction of the village, so that by the early part of the 16th century it was in a poor condition. Only a few open rectangles signifying abandoned plots are shown on a map of c.1784, and the hamlet appears to have eventually succumbed to the sea by the end of the 18th century (Harrison 2005, 101-105). Hornsea Burton lay to the south of the town, again on the coast, and its township covered 410 acres. It appears to have always been a small settlement with 99 poll-tax payers in 1377 but only 50 inhabitants in 1490, and by 1663 there were only eight houses remaining, grouped around a small green. In 1697 it was recorded as having been lost to the sea, probably due to coastal erosion over time rather than any single cataclysmic event (Harrison 2005, 98-99).

4.17 There were also two other subsidiary inland villages, Northorpe and Southorpe. The latter is located off the south-east side of the mere, where earthworks representing enclosure boundaries and house platforms lie on the west side of the Hull Road; the site is a Scheduled Monument (NHLE 1003469). Northorpe lay to the north of the town, on the east side of Atwick Road (see figure 3); the name is perpetuated in the modern 'Northorpe' House and the township covered some 440 acres (HHER 8893; HO11). Little appears to be known about its layout, but tax assessments suggest that it was always small; cottages were recorded there in the early 17th century, but all were empty by 1809 and all above-ground remains have been lost to agriculture (Allison 2002, 275). Further details on Northorpe hamlet are given below (**Site 2**).

4.18 As has been seen elsewhere in Holderness, the initial nucleation of settlement in the late 11th century was probably accompanied by a reorganisation of the agricultural system, in particular the laying out of the large open arable fields which then survived throughout the medieval period. The fields lay on the higher ground to the north of the town, probably divided by the Atwick Road into the East and West Fields (a later North Field was created in the early 19th century), together with areas of common pasture and meadow; each open arable field contained around 400 acres (see figure 3). Although later maps provide clues (see below), the precise boundaries of the open fields are not known, and Harrison (2005, 106 & 108) suggests that Northorpe's arable land lay on the east side of Atwick Road; it may have been subsumed into the town's East Field once that hamlet was deserted. Southorpe and Hornsea Burton also had their own fields to the south of the town. Documents show that the individually-owned strips in the open arable fields were grouped together, and not inter-mixed and scattered throughout the field as was normally the case elsewhere, and the field was farmed in rotation. An area of common pasture, called the Leys, also lay either side of Atwick Road and extended to some 100 acres (Allison 2002, 284). The agricultural regime would have been mixed, with sheep and cattle being raised as well as arable crops, and in the 12th-13th centuries a typical holding covered 40-50 acres, later expanding to 70-100 acres; there was a movement away from arable when population levels fell due to the Black Death (Harrison 2005, 109).

4.19 Large areas of ridge and furrow earthworks, representing the medieval ploughlands, are visible on aerial photographs throughout the northern part of the parish (e.g. HO31), although most has now been ploughed out or built over. The earthworks form series of blocks within the larger open fields, with the ridges generally aligned north-south or east-west.

Post-medieval Period (AD 1540 - 1900)

4.20 The predominant medieval landowner in Hornsea was St Mary's Abbey in York. At the Dissolution in 1539, ownership passed firstly to the Crown and then a series of lessees including Hugh and Slingsby Bethell from 1674 and Peter Acklam from 1684. In 1696 the Crown granted it to Willem Bentinck, who conveyed it to Hugh Bethell in 1743, and it remained with this family until 1874 (Allison 2002, 282).

4.21 During the later medieval period and early post-medieval periods, the population of the town declined to a low point in the mid 17th century. As a result, landowners were able to buy up vacant plots in the centre of Hornsea and amalgamate them to form large gardens, a practice which continued into the 18th century. Nevertheless, most of the houses were modest in size, with the majority having less than three hearths as recorded in 1672, although there were a few exceptions; in 1784 the town contained 46 houses and 82 cottages (Allison 2002, 275). The surviving early houses are of 17th century date, of a single storey with attics, and many also had agricultural buildings or barns on their plots (Harrison 2005, 131). Many of these barns, and other boundary walls, were built of cobbles which were used extensively in Hornsea as a building material before the second half of the 19th century (Harrison 2005, 206-207).

4.22 For the early part of the post-medieval period, the economy of the town remained rooted in agriculture, although the declining population in the 17th century meant that there was a greater emphasis on pasture and livestock farming compared to arable (Harrison 2005, 86 & 118-123). It was noted above that the town's open arable fields lay to the north, divided into the West and East Fields either side of Atwick Road, separated by an area of common pasture called the Leys - this

common is shown on Jefferys' 1772 map of Yorkshire (plate 15) (see figure 4). The erosion of North Cliff meant that the area of the East Field was constantly being reduced - in 1609 it was said that some 240 yards of land had been lost since 1547, and in 1637 it was said that 100-200 acres had been lost within living memory (Allison 2002, 284).

4.23 In the early 19th century, a desire for greater agricultural productivity and independence from the communal system of farming led to the enclosure of Hornsea's common land and open fields; this took place in 1809, following a Parliamentary Act of 1801 (Harrison 2005, 153-160). The Act and accompanying plan is held in the East Riding Archives Office (ERAO IA 81 & PE/30/107/1). Allotments totalling 2,135 acres were made, including 409 acres of the East Field and the 100 acres of the Leys. As usual, the majority of the newly enclosed land went to the major landowners, although 842 acres or 37% went to the smaller owners whose communal rights were otherwise extinguished - twelve allotments of between 10-19 acres were made as well as 32 of under ten acres (Allison 2002, 285). The proposed development site is shown on the east side of Bridlington Road (now Atwick Road) as a newly enclosed field measuring 6 acres 1 rod 32 perches occupied by Anne Levett (see figure 5A).

4.24 The new enclosures were bounded with hawthorn hedges, and there is a marked contrast in the field shapes and patterns in the northern part of the parish. Along the top of North Cliff there are numerous long narrow east-west strips allotted to many different owners, probably reflecting the importance of access to the beach for fishing and the collection of cobbles and sand for building materials; some of these fields are shown on the 1854 Ordnance Survey map (sheet 197), named as 'Cliff Rights' and accessed by Cliff Road. Further to the west are the more regular and larger rectangular fields of the former East Field and the Leys, with 'East Field' 'North Field, 'The Leys' and 'Leys Hill' names still marked (see figure 6). The parish's infrastructure was also reorganised as part of the enclosure process, and a number of new roads were laid out, or existing tracks were straightened and formalised - these include Cliff Road (a bridle road) and Bridlington Road which were to be 40 feet wide. New outlying farmsteads, such as Eastfield House and Northfield House, were also built in the newly created fields; Carr Farm and Trinity House Farm in Hornsea Burton are probably slightly earlier in date as these open fields were enclosed in c.1663 (Allison 2002, 285).

4.25 The 1854 Ordnance Survey maps also show that, while most of the land around the town was still given over to agriculture, there is some evidence of rural industry. Several lime kilns are shown, which would have produced lime fertiliser to spread on the land, as well as corn mills and wind mills, and there is a large brick and tile works in the south-east corner of Hornsea Burton township. A brick works was also recorded on Westgate in 1794, and a landing place where fish could be brought ashore was created at the end of Sea Lane (Allison 2002, 287).

4.26 The 1809 enclosure plan and a c.1800 plan of Hornsea itself show that the town was still relatively small at this date, with houses along Westgate, Southgate, Newbegin and Eastgate (ERAO IA 81 & DDX/253/1). However, the 19th century saw a significant upturn in the town's fortunes, largely driven by the creation of a coastal resort (Allison 2002, 278-281). Although visitors had been attracted to the sea from the 1800s, the construction and opening of the railway in 1864 saw numbers increase dramatically; the town had two stations, Hornsea Bridge located off the south-east corner of the mere (which was to be the original terminus) and Hornsea serving the growing resort (see figure 6). The railway was authorised by a Parliamentary Act of 1862 (MacMahon 1974, 21), so quite why it is depicted as a

single track line on the Ordnance Survey map of 1854 is unexplained. Development started to expand to the east of the medieval town, with several new streets and terraces being laid out, firstly in the area of the railway station and New Road, and also to the north between Cliff Road and the sea (Allison 2002, 277). Those responsible for this growth were predominately Hull merchants, such as J A Wade (who promoted the railway), Samuel and Thomas Haller, and William M Jackson. Attractions and facilities built for the visitors included hotels, boarding houses, a pier, gardens, promenades, sea regattas, a golf course, and a picture theatre (Allison 2002, 279-280). Infrastructure needed to be improved for these new residential areas, and a gas works and a second brick and tile works were established by J A Wade on the Hull Road in 1864, a waterworks was built on Atwick Road in 1878, and the towns drains and sewers in the town were improved in the 1870s (Allison 2002, 288).

Modern Period (1900 onwards)

4.27 Additional amenities continued to be built for visitors in the newer eastern part of the town, both for day-trippers and those who stayed for longer periods. For example, tennis courts and a new golf club opened in 1908, and the Hall Garth Park was opened in 1920. New theatres were built, as was the Floral Hall in 1913, and in 1923 the sea wall was extended to the north and south, the southern end eventually continuing across the Hornsea Gap to Hornsea Burton, to create a long sea-front promenade (Allison 2002, 280).

4.28 Residential development obviously continued in and around the town. In the southern part of the study area, development to the north of the Hornsea windmill (**Site 18**), on the west side of Atwick Road, started in open fields between 1854 and 1891, the initial phase comprising three villas named as 'The Leylands' off the north side of a short unnamed access road (now Northumberland Avenue). A further estate was built to the south, shown on the 1927 Ordnance Survey map, around a right-angled road centred on the former windmill (Westwood Avenue, The Leys and Springbank Avenue).

4.29 As might be expected, the threat of military invasion along the Holderness coast was a feature of the early 20th century, and work started on new coastal defences. Fieldworks were constructed along vulnerable sections of the coast, consisting of trenches, redoubts, barbed wire entanglements, minefields, anti-tank defences, anti-aircraft and coastal batteries, other gun emplacements and the fortification of some existing buildings and farms (Foot 2006, Walker 1995, 56-59). The most visible elements of these defences were mutually supporting concrete emplacements, known as 'pillboxes'. Although some c.1917 examples survive at Auburn Sands to the south of Bridlington, none appear to have been identified in the Hornsea area (Kolonko 2018b). However, a more concentrated set of coastal defences was constructed in the spring of 1940, collectively known as the 'Coastal Crust'. These defences were designed to slow down any invasion where troops and supplies could be landed on a beach, and to hold defensive positions as long as possible. This defensive line utilised pillboxes, anti-tank walls, anti-tank cubes, anti-tank beach scaffolding, minefields and many other static defences such as weapons pits (small trenches for two or three soldiers) and section trenches which accommodated around eight soldiers. Many of the pillboxes and other defensive structures in the Hornsea area were built by Tarran Industries of Hull; the owner, R G Tarran, Sheriff of Hull in 1941 and Hull's Chief Air Raid Warden, was found guilty of false accounting in 1944 and sentenced to three months hard labour (Walker 1995, 59).

4.30 Detailed surveys have been undertaken of the 'Coastal Crust' defences at a number of locations along the east coats, including Reighton Sands, Auburn Sands, Atwick (just to the north of Hornsea), and Sand-le-Mere (just north of Withernsea) (Kolonko 2018a & 2018b; Foot 2006, 175-179; Ruddy no date).

4.31 The pillboxes were the mainstay of the defensive positions. Many types exist, including government specified designs and local variants that were constructed in certain areas to provide a specified function (Osborne 2020). The main function of a pillbox was to give protection to riflemen or light machine gun teams if they came under fire, and they were also sited to give maximum covering fire to other pillboxes and to provide enfilading or flanking fire (Kolonko 2020). An irregular hexagon design, sometimes referred to as a 'Eared' pillbox, is only found in East Yorkshire, specifically between Scarborough and Withernsea - this could house two Vickers machine guns firing out of the large loopholes in the structure's oblique faces, and it was specifically designed to allow the machine guns to fire in 'enfilade' to the pillbox's flanks (Kolonko 2018a, 7-8) (see figure 7 top). A second type of pillbox with a larger lozenge design was again specific to the north-east of England, and this was capable of housing up to eight solders, enabling them to fire both rifles and bren light machine guns from the interior (Kolonko 2018a, 9). In this design, the machine gun loopholes were sited in the shorter angled ends of the pill box, there were four rifle embrasures in the front wall, the entrance was offset in the rear wall and protected by a short blast wall, and there was a lateral internal wall to deflect noise and afford additional protection (see figure 7 bottom). In this part of the Holderness coast, there was typically a forward line of 'Eared' machine gun pillboxes covering the beach front, supported with anti-tank cubes (aligned parallel and at right angles to the coast where inland access was possible), and a secondary line of 'lozenge' pillboxes covering a ridge of high ground some 300m to the rear of the beach; contemporary aerial photographs suggest that the pillboxes were ringed with double lines of barbed wire. Other inland defences also included minefields and road and rail blocks, with concrete posts and trenches to prevent aircraft from landing. The positions were manned by a combination of local Home Guard and regular infantry troops, and there were garrisons at Skipsea, Seaton, Hornsea and Atwick, and a battalion headquarters at Hornsea (Foot 2006, 175; Walker 1995, 42-51).

4.32 A number of structures forming the part of the coastal defences have been identified within and adjacent to the study area; these include both types of pillbox, trenches and weapons pits (see Chapter 5 below). Other wartime sites in the vicinity include two 'Diver' anti-aircraft batteries and camps, designed to counter 'V1' flying bombs in 1944-45 (HHER 18932 & 18950; HO10 & HO125), a former camp to house the beach defence troops (HO115), a coastal battery of two 4.7 inch guns (HHER 18948; HO 120), fortified structures at South Cliff Farm (HHER 18971; HO130), a military camp at Greenacre Park (HHER 18983; HO134), and a 1st World War seaplane facility on the mere (HHER 11135; HO 114). Many of the wartime sites in the town have now been demolished and cleared, and most of the beach or cliff-line defensive systems have been lost to costal erosion, although many inland sites, such as the lozenge pillboxes, still survive.

4.33 The railway to Hornsea was closed in 1965, and the Hornsea Bridge station was demolished and the site re-developed for housing. Trinity House Farm was demolished in the 1980s and the site also redeveloped. A windmill and brickworks in the same area were replaced by the Hornsea Pottery (1949-2000), which after final closure was partly cleared to become the Freeport retail village (Brigham, Buglass & George 2008, 50). Large parts of the coastal strip, on either side of the town, are now occupied by mobile home and caravan parks, and these have been

accompanied by several large new residential estates built slightly further inland. Much of the seafront in the town has recently been altered or improved to include new sea defences, paved areas and artwork along the promenades.

5 THE STUDY AREA

Introduction

5.1 As previously noted, the study area for this assessment report extends for a distance of 500m in all directions from the centre point of the proposed development (see figure 8).

Physical Characteristics

5.2 The study area is bisected by the north-south aligned B1242 Atwick Road. The land to the east of the road is generally flat, typically 20m-19m AOD, and extending east towards Cliff Road. To the west of Atwick Road, the land rises slightly to Leys Hill which rises to a height of 27m AOD to the west of Springfield Farm. Springfield Farm was built between 1891 and 1927, and has recently had a caravan park added to its north side. A large residential development was created in the fields on the west side of Cliff Road after 1952, and this has recently been extended to the north in 2005 and 2018. The field forming the site of the proposed development lies on the east side of Atwick Road, and was formerly partially occupied by a modern garage/workshop complex, set back slightly from the road frontage. Apart from this structure and its access road, the rest of the development site is in arable cultivation.

5.3 The underlying solid geology is formed by the Rowe Chalk Formation, a chalk, sedimentary bedrock formed approximately 66 to 84 million years ago in the Cretaceous Period. This is overlain by a Devensian till, which formed up to 2 million years ago in the Quaternary Period (*http://mapapps.bgs.ac.uk/geologyofbritain/home.html*). The soils are a typical stagnogley soil of the Holderness Association, a slowly permeable seasonally waterlogged fine loamy soil (Soil Survey 1983).

Designated Heritage Assets

5.4 As noted in Chapter 3 above, the nearest Scheduled Monument to the proposed development site lies c.600m to the north-east. This is identified as 'East Field cropmark site centred 300m SSE of Northorpe, interpreted as a Neolithic henge later used as a Bronze Age ringwork' (NHLE 1423379); the site was first scheduled on 1st April 2015, and part of the scheduled area falls into the northern edge of the study area (**Site 1**) (see figure 8).

5.5 There are no Listed Buildings within or immediately adjacent to the study area, the nearest being on Eastgate in Hornsea itself. There are no World Heritage Sites, Protected Wreck Sites, Registered Parks and Gardens, or Registered Battlefields within 10km of the study area. The nearest part of the Hornsea Conservation Area lies 357m to the south of the proposed development site on College Gardens; a small section of the Conservation Area extends into the southern end of the study area.

5.6 The Hornsea Conservation Area was designated in July 1969 and was subject to a Conservation Area Appraisal in May 2006 (ERYC 2006). Its northern extent runs into the study area (**Site 23**). The appraisal notes that the special character of the

Conservation Area lies in its development as a small market town of diverse, mainly 19th century architecture. The advent of the railway promoted development close to the sea, towards which the town grew and consolidated itself with conscious attempts at planned parks, gardens and middle-class properties. The town exhibits the usual mix of red-brown brick, slate or pantile roofs, as well as several examples of the use of cobble, a valued local building material. The Mere, to which the Conservation Area abuts, is unique in East Yorkshire, and is a SSSI. Although much of the town turns it back on the mere, those properties along Mereside and Southgate take full advantage of this spectacular visual asset. The document notes the Listed Buildings within the town, as well as several other unlisted buildings of note - the latter include St Bede's, Mill House and Beacon Oak along Atwick Road.

5.7 The following table lists the designated assets within the study area (see figure 8).

Asset	*Name*	*Concordance*	*NGR*
1	Eastfield cropmark site, south-east of Northorpe Farm	NHLE 1423379; HHER 20906; HERR 1552167	TA1985 4892 centred
23	Hornsea Conservation Area		TA 202 478 centred

Non-Designated Heritage Assets

5.8 A total of 21 non-designated assets have been identified within the study area, as set out in the following table. Their locations are shown on figure 8. It should be noted that the stated national grid references (NGR) for the identified sites relate to the study area and may not necessarily cover their full extent, particularly for any of the linear sites.

Asset	*Name*	*Concordance*	*NGR*
2	Northorpe deserted village (site of), east side of Atwick Road	HHER 8893; HERR 1544013; HO11	TA 1965 4915 centred
3	Springfield Farm, west side of Atwick Road	-	TA 1954 4871 centre
4	Ditches (cropmarks), either side of Atwick Road	HHER 19472; HERR 1544025; HO20	TA 1958 4870 centred
5	Hornsea water treatment works, east side of Atwick Road	HHER 8210; HERR 1204056; HO29	TA 1966 4854 centred
6	Royal Observer Corps post (site of), east side of Atwick Road	HHER 18988; HERR 913369; HO27	TA 1967 4855 centred
7	Archaeological investigations during residential development (geophysical survey and watching brief), east of water treatment works	HHER EHU1217; HHER EHU1218	TA 2002 4860 centred
8	Ridge and furrow earthworks (site of), east of water treatment works	HHER 8851; HERR 1544030; HO22	TA 2010 4862 centred
9	2WW pillbox, north of Northgate	HHER 18889; HERR 915843;	TA 2011 4855 centred
10	2WW pillbox, east of bowling club	HHER 9947; HERR 913312; HO38	TA 1987 4826 centred
11	2WW road block (site of), Atwick Road	HHER 18986; HERR 913425; HO36	TA 1971 4828 centred
12	Ridge and furrow (site of), The Leys	HHER 21285; HO31	TA 1950 4840 centred

13	Iron Age/Romano-British enclosure (cropmarks), The Leys	HHER 22095; HERR 1581791	TA 1944 4821 centred
14	2WW ditch and barbed wire obstruction (site of), either side of Atwick Road	HHER 21287; HO39	TA 1997 4832 - TA 1960 4787 linear
15	Ditches and polygonal enclosure (cropmarks) (site of), Cheyne Garth	HHER 3642; HERR 1544097; HO40	TA 196 481 centred
16	2WW pillbox, south side of Atwick Road allotments	HHER 18992; HERR 913326; HO41	TA 1971 4813 centred
17	2WW practice trench (site of), east side of Atwick Road	HHER 21289; HERR 1445567; HO45	TA 1979 4805 centred
18	Windmill New House, west side of Atwick Road	HHER 5006; HERR 503083	TA 1978 4794 point
19	Ash or wood store (site of), Hornsea School	HHER 19713; HERR 1544105; HO49	TA 2001 4797 centred
20	Archaeological investigations during residential development (watching brief), Northumberland Avenue	HHER EHU680	TA 1965 4800 centred
21	2WW practice trench (site of), College Gardens	HO45	TA 1979 4805 centred
22	Geophysical survey anomalies, east side of Atwick Road	-	TA 1974 4831 centred

Discussion of the Archaeological Resource

5.9 As implied from the archaeological background section above (Chapter 4), some evidence for prehistoric and Iron Age/Romano-British occupation in the general area around the study area can be seen from cropmarks visible on aerial photographs. Typical features include circular or curvilinear structures, single or linked enclosures, ditches, pits, former earthworks and field boundaries, all revealed as patterns caused by differential growth of crops over varying depths of soil. Subsequent excavation of these cropmarks often confirms the density and complex nature of the archaeological remains. It is clear that the cropmarks, which can be patchy and ephemeral in nature due to the underlying geology and climatic conditions, represent only a partial element of the buried resource.

Early Prehistoric Periods (up to 800 BC)

5.10 A major prehistoric 'hengiform' settlement site, identified in July 2010 from cropmarks, lies to the south-east of Northorpe Farm (**Site 1**). This is a Scheduled Monument, and the protected area extends into the northern part of the study area. The cropmarks appear to represent a multivallate circular enclosure with a diameter of c.49m, contained within a rectilinear field system (see figure 9 top). The circular enclosure consists of one broad inner ditch, c.4m wide, with traces of two concentric narrow ditches, perhaps palisade trenches, beyond. The inner of these two ditches appears to define a causewayed entrance on the south-east side. Inside the enclosure is a poorly defined circular mark, suggesting a round house structure of c.13m diameter. The field system extends to the north, south and mostly east of the enclosure, and appears to respect the enclosure. A gap in the boundary opposite the enclosure causeway implies a deliberately sited access and may indicate the contemporaneous use of both enclosure and field system. The field system also has a series of small ditch-defined plots immediately north and east of the enclosure.

5.11 Based on comparison with other similar known monuments, the main enclosure has been classified as henge, a ritual or ceremonial centre dating to late Neolithic

period (2800-2000 BC). The henge is then thought to have been reused in the later Bronze Age (c.1000-750BC) as a ringwork because of the way that the surrounding field system clearly respects and directly relates to it; the field system is consistent with being part of a more extensive Bronze Age co-axial field system. The location, scale and setting of the cropmark site in its landscape setting is consistent with other known henge monuments - its position, on slightly elevated ground, but not on the highest land within the immediate area, is very typical, and the lower lying ground to the north, south and east is likely to have been open water when the site was in use. It should be noted that there are no surface features associated with the cropmarks, and no investigation of the monument, such as geophysical survey and/or excavation, has been undertaken to date. It is interesting to see that some elements of the cropmark site, specifically the presumed boundaries of the late Bronze Age field system, may well have been picked up by the 2003 geophysical survey in the fields to the north and north-east of the site (GeoQuest Associates 2003) (Site 7) (see figure 9), although there were not identified as such and no remains were seen during a subsequent watching brief on the site. Similarly-aligned anomalies were also identified by the geophysical survey of the proposed development site (see **Site 22** below).

5.12 No other early prehistoric sites are known from within or immediately adjacent o the study area although, as noted above, surface finds of various stone and flint implements have been recovered from the northern part of Hornsea parish (Harrison 2005, 45-48).

Iron Age and Romano-British Periods (800 BC-AD 410)

5.13 A rectilinear enclosure and associated field boundary have been identified from cropmarks seen on aerial photographs taken in 2011 on the southern slope of Leys Hill (**Site 13**) (see figure 9 top). Only the northern part of the enclosure is visible, but it measures c.43m by c.51m internally. Comparison with other similar sites suggests it is of Iron Age/Romano-British date.

5.14 Further cropmarks of ditches and a polygonal enclosure are visible on aerial photographs to the south-east of the above site (**Site 15**). The aerial photograph was taken sometime in 1968 (OS 68/114/490, held in HHER), and the cropmarks are visible in a small square field on the west side of 'The Leyland's with a housing development to the south; the site is also likely to represent a small Iron Age/Romano-British enclosure or potential farmstead. The site has since been destroyed by a residential development (Cheyne Garth).

5.15 Additional cropmarks have been noted on other aerial photographs, one ditch in particular running in a general north-east/south-west alignment under Atwick Road and Springfield Farm (**Site 4**). There is no dating evidence for these cropmarks but, although they could relate to the Iron Age/Romano-British periods, they could equally be of medieval or post-medieval date.

5.16 These cropmark sites, together with other pottery scatters and finds of domestic material dating to the 3rd and 4th centuries, and recovered from the northern part of the parish (Harrison 2005, 56-57), suggest there is some background evidence for Iron Age and Romano-British activity in the area. However, no specific site or finds are known from the immediate environs of the proposed development site.

The Anglo-Saxon or Medieval Periods (c.410-1066)

5.17 No remains or assets dating to this period have been found within or immediately adjacent to the study area.

Medieval Period (AD 1066-1540)

5.18 As discussed in Chapter 4 above, the majority of the study area lay within the former medieval open field system, either associated with Hornsea itself or perhaps originally that belonging to Northorpe village. Harrison (2005, 106 & 108) suggests that Northorpe's arable land lay on the east side of Atwick Road, while Allison (2002, 285) notes that Hornsea's East and West Fields were divided by Atwick Road (see figure 3); it may be that Northorpe's fields were subsumed into the town's East Field once the small village was deserted. From a comparison of the historic maps, it would appear that the proposed development site actually lay within the common pasture called The Leys. The open fields and common pasture were enclosed in 1809, when the field boundaries as shown on the Ordnance Survey 1854 map (sheet 197) were created. There is evidence for large-scale ridge and furrow arable cultivation on aerial photographs, both as earthworks and cropmarks, on both sides of Atwick Road (**Sites 8 and 12**), forming a series of blocks within the larger open fields and common, with the ridges generally aligned north-south or east-west. However, modern agricultural regimes mean that little remains upstanding; some ploughed-down ridge and furrow was revealed during archaeological investigations for the housing estate to the east of the water treatment works on Atwick Road (Ashcourt Drive) (**Site 7**) (see figure 9 bottom).

5.19 The name 'Northorpe' (**Site 2**) is derived from Old Scandinavian meaning a 'northern outlying farmstead', and it probably signifies a secondary foundation from the main settlement of Hornsea; it is not specifically mentioned in the 11th century Domesday Book. The first documentary reference to the village occurs in 1198 but otherwise there is generally little other material relating to it. It appears to have been a small and poor settlement, and was one of the poorest villages in the East Riding, in terms of value, in the 1334 lay subsidy. The village contained just seven poll-tax payers in 1377, implying a total population of between 15 and 20. In 1490, only 14 residents were noted, perhaps representing two families, and it was largely deserted by the late 16th century (Harrison 2005, 99-101). Cottages were recorded in the early 17th century, but all were empty by 1809 (Allison 2002, 275). Apparently traces of some of the old enclosures could be seen in 1848 in the north-east part of The Leys, and stones, presumed to represent some of the earlier cottages, have been dug up in the past (Bedell 1848, 86; Poulson 1840, 340).

5.20 The name of the village is preserved in the present Northorpe Farm (although this was built between 1854 and 1891, there only being a 'barn' on the 1854 Ordnance Survey 6" map, and the word 'Northorpe' is written across several fields here on the 1854 map, perhaps signifying the extent of the village on the east side of Atwick Road (see figure 6). The extent of the former enclosures of the village (but not necessarily the house sites) are shown on the 1809 enclosure map (ERAO IA 81) (see figure 5 bottom), and they run into the northern end of the study area and into a recent housing development (Ashcourt Drive). No earthworks or other features remain, and many of the former field boundaries have been removed, and no remains of the houses etc were revealed during the investigations carried out as part of the housing development (Site 7).

Post-Medieval Period (AD 1540-1900)

5.21 A former windmill is located on the west side of Atwick Road, towards the southern end of the study area (**Site 18**). A windmill is depicted on Jefferys' map of 1772 (see figure 4), which is presumably a post mill, and it was replaced by a tower mill, built 'nearby' in 1820-21 (Gregory 1985, 21). It was worked by steam by 1909 and was mentioned until 1921; part of the tower remained in 1997 (Allison 2002, 286). The site is depicted on the 1854 Ordnance Survey 6" map (sheet 197) as an L-shaped range partly aligned along the road frontage, with a detached circular tower to the west and another detached structure to the north, all named as 'Hornsea Mill (Corn)' (see figure 6). By 1891, additional structures had been built on the west side of the tower, and there was a range attached to the east side, open to its north side; it is still named as 'Hornsea Windmill (Corn)' (see figure 10 bottom left). Additional buildings had been built by the time of the 1910 edition, but by 1927 the complex is named as 'Hornsea Windmill (Disused)' (see figure 10 bottom right). The tower has recently been converted into a house ('Windmill New House').

5.22 Springfield Farm (**Site 3**) is not depicted on the Ordnance Survey 6" map of 1854 (sheet 197), nor the subsequent 25" map of 1891 (sheet 197/3-4). It is shown on the 1910 edition, named as 'Springfield' and depicted as a sub-square house off the west side of Atwick Road, with agricultural ranges forming a yard open to the south further to the west (see figure 10 top right). Significant development had taken place by 1927, with additional ranges to the north of the yard and smaller detached structures to the west (see figure 10 top left). A modern caravan park development has recently been developed to the north of the farm complex.

5.23 On the east side of Atwick Road, to the north of the proposed development site, is a water treatment facility and amenity refuse site (**Site 5**) (see plate 1). The town's water supply was supplied by shallow wells and pumps until 1878, when a waterworks with a deep well and pumping station was built by the local government board. The building was improved several times, but from 1927 the town's water supply was obtained in bulk from Hull using a water tower in Mappleton, and a direct supply from Hull was provided from 1963. The original 1878 waterworks building, of red and yellow brick in an Italianate style, was for a time used as a refuse incinerator, and later for storage; refuse was tipped into an adjacent former clay pit (Allison 2002, 288). No buildings are shown in 1854, but the 1891 25" Ordnance Survey map (sheet 197/3-4) depicts a large sub-square building set back from the road, with a chimney on the south side, and ancillary structures to the north-west, all named as 'Water Works (Hornsea)' (see figure 10 centre left). The complex had been expanded by the time of the 1910 edition, with a rectangular 'reservoir' and adjacent tanks, now named as 'Water Works (Hornsea U. D. Council)'. The site is similarly depicted in 1927, with the addition of another chimney, and the smaller tanks named as 'Filter beds' (see figure 10 centre right).

5.24 As previously noted, the open fields and areas of common pasture to the north of the town were enclosed in 1809, following a Parliamentary Act of 1801. Jefferys' map of Yorkshire, published in 1771-72 shows the unfenced Atwick Road passing through unenclosed common land, with no other enclosures depicted (see figure 4). The common land extends west as far as the pre-enclosure route of Bewholme Lane. This map also shows the post mill on the west side of the road, in the angle of the two roads, the forerunner to Site 18). No other outlying houses or farmsteads are shown at this time.

5.25 The 1854 Ordnance Survey map (sheet 197) shows the enclosure landscape of rectangular fields and straight roads and tracks as being fully established (see

figure 6). The names 'The Leys', 'Ley's Hill' and 'East Field' are shown in the general area, signifying the areas of the former open fields, and the area of 'Church Land' probably relates to glebe land from which the vicar was able to secure a living. The map also names 'Northorpe' across several fields on the west side of Atwick Road, representing the area of former enclosures associated with Northorpe village; only a 'Barn' is shown in this area.

Modern Period (1900 onwards)

5.26 A large proportion of the identified sites or assets within the study area are associated with the 'Coastal Crust' defences of the 2nd World War; these defences fell within the Beverley Sector of the East Riding Coastal Area, and there was a battalion headquarters in the town (Foot 2006, 175). It is important to appreciate that, when considering these sites, they formed part of an integrated system of defences - subsequent development of the area and the demolition and infilling of many of these defences mean that those that do still survive (such as pillboxes) remain in isolation with relevantly little meaning.

5.27 Three lozenge-type reinforced concrete semi-sunken pillboxes have been identified, one to the north of Northgate, now within a housing estate (**Site 9**), one on the eastern boundary of the bowling club (**Site 10**), and another on the south side of the Atwick Road allotments (**Site 16**). The 1992 Fortress Study Group report notes that all face towards the town, to prevent any invading force from leaving a beachhead, and all were considered to be in good condition at that time. Those by the bowling club (Site 10) and the allotments (Site 16) are reported to have two long loops to the front, and both the rear loops knocked into one - the loops in the north end of the blast wall have also been widened to allow a greater field of fire. It was only possible to visit one of the pillboxes, Site 9, as part of this assessment as the others were sited on private land. This pillbox was found to be in a relatively good condition, although any grass covering to the top had been removed (see plate 2). It is aligned north-south which, if preventing any attack from the south (i.e. within the town and any beachhead), would mean that the entrance was open to that side. It has the usual arrangement of loopholes, with those on the east side having been infilled with modern vents blocks. One of the machine gun loops has a circular smoke vent above it. The entrance and blast wall is placed on the west side, but this has been partly blocked with modern blocks and a metal plate screwed to the outside. It was not possible to gain access to the interior. The modern detailed mapping (figure 2) suggests that the other two pillboxes in the study area were also aligned almost north-south.

5.28 These pillboxes were associated with an anti-tank defence, formed from a combination of earthwork ditch and parallel lines of barbed wire, the latter having mines laid between (**Site 14**). This feature is visible on 1945 aerial photographs (obtained independently by EDAS), running around the northern end of the town (as it then existed) from the north side of the mere to the east coast, with the pillboxes set either side of it. The anti-tank defence is recorded on the HHER as a trackway with a barbed wire obstruction between two grid references (TA 1997 4832 and TA 1960 4787), whereas in reality it has a very convoluted alignment, largely running around field margins (see figure 8). Within the study area, the alignment can be seen on the aerial photograph running north through the sports field to the west of Westwood Avenue, and then forming a V-shape through what is now a housing development (Cheyne Garth) and then along the west side of the allotments; this section is marked by two parallel lines of barbed wire. The wire is then replaced by a tank ditch dug along the north side of the allotments, after which the lines of wire continue around the inside of the west, north and east sides

of the proposed development site. The wire then angles across the south-west corner of the adjacent field (where a pillbox is sited), before continuing east along field boundaries, through a modern housing development - the eastern end within the study area becomes a ditch again. Once the wire had been removed after the war, no evidence for the alignment would survive. The point at which the anti-tank defence crossed Atwick Road was marked by four anti-tank cubes built in reinforced concrete (**Site 11**) (of which nothing now remains), and two practice trenches on the east side of Atwick Road (**Sites 17 and 21**) further to the south, again with no evidence surviving.

5.29 The final 2nd World War site is a Royal Observer Corps post, which the Fortress Study Group note was built on top of the Council incinerator at the water treatment works (**Site 6**). However, Walker (1995, 30) suggests that this was not the case, and he could find no evidence for its existence. Whatever the case, no remains of this site now survive, although the incinerator does have a very wide flat roof, on which a post could have easily been positioned.

Assessment of Importance or Significance

5.30 Using the data gathered by this assessment, an initial assessment of the grade of importance or significance of each identified site or asset within the study area can be made. This assessment is based on professional judgement, and a combination of the Secretary of State for Culture, Media and Sport's criteria for scheduling Ancient Monuments or listing buildings of Special Architectural or Historic Interest, and the four values used by Historic England to assess significance, namely evidential value, aesthetic value, historical value and communal value (English Heritage 2008, 27-32).

5.31 A value or significance grading system can be applied to the identified heritage assets, namely Very High/International, High/National, Medium/Regional, Low/Local, Negligible and Unknown. Further details on how these grades can be generally applied is contained in Appendix 1.

5.32 The value or significance grade given to each of the 23 identified sites or assets within the study area is given below. This shows that there are two assets of High Value, six assets of Medium Value, four assets of Low Value, and eleven assets of Negligible grade. Those assets investigated as part of previous excavations or watching briefs are considered to be of Negligible Value, as it is assumed that any archaeological deposits that might have been present will have been disturbed, excavated or otherwise removed. The same would apply to other sites which have been built over although, in the case of sites which have been demolished and not subsequently developed, it is possible that some deposits may lie below existing ground level.

Asset	*Name*	*Significance*
1	Eastfield cropmark site, south-east of Northorpe Farm (SM)	High
2	Northorpe deserted village (site of), east side of Atwick Road	Low
3	Springfield Farm, west side of Atwick Road	Negligible
4	Ditches (cropmarks), either side of Atwick Road	Low
5	Water treatment works, east side of Atwick Road	Medium
6	Royal Observer Corps post (site of), east side of Atwick Road	Negligible
7	Archaeological investigations during residential development (geophysical survey and watching brief), east of water treatment works	Negligible
8	Ridge and furrow earthworks (site of), east of water treatment works	Negligible
9	2WW pillbox, north of Northgate	Medium

10	2WW pillbox, east of bowling club	Medium?
11	2WW road block (site of), Atwick Road	Negligible
12	Ridge and furrow (site of), The Leys	Negligible
13	Iron Age/Romano-British enclosure (cropmarks), The Leys	Medium
14	2WW ditch and barbed wire obstruction (site of), either side of Atwick Road	Low
15	Ditches and polygonal enclosure (cropmarks) (site of), Cheyne Garth	Negligible
16	2WW pillbox, south side of Atwick Road allotments	Medium?
17	2WW practice trench (site of), east side of Atwick Road	Negligible
18	Windmill New House, west side of Atwick Road	Low
19	Ash or wood store (site of), Hornsea School	Negligible
20	Archaeological investigations during residential development (watching brief), Northumberland Avenue	Negligible
21	2WW practice trench (site of), College Gardens	Negligible
22	Geophysical survey anomalies, east side of Atwick Road	Medium?
23	Hornsea Conservation Area	High

5.33 It should be noted that the above grades have been based on data collected to date, and the value or significance of some sites may be graded higher or lower as or when more information is obtained.

6 THE PROPOSED DEVELOPMENT

Description of the Site and the Proposed Development

6.1 The proposed development site lies on the east side of Atwick Road (see figure 2). The total area of the site covers 1.94ha, and it is bounded by existing hedged field boundaries on all sides. The site is generally flat, ranging from 17.80m AOD towards the north-west corner to 18.49m AOD in the south-east corner. At the time of an initial site visit and the geophysical survey (April 2021), the field had been sown with an arable crop (see plate 4).

6.2 The remains of a former milking parlour and then latterly a mechanics garage, of modern breeze block and concrete construction with a corrugated asbestos roof, lie towards the western side of the site but set back slightly from the road frontage, with an access track leading off Atwick Road. It is not known precisely when it was constructed, but is shown on an 1968 aerial photograph (OS 68/114/490, held in HHER). It is entirely of modern construction, and of no archaeological or historical interest (see plate 5).

6.3 The proposed development involves the construction of some 60 houses, with an access directly off Atwick Road. The development will also incorporate areas of open space, an equipped play space and a surface water/foul water pumping station. A landscaping belt will also be created along the north and east boundaries.

The Archaeological Resource of the Proposed Development Site

6.4 The first map to show the proposed development site in any detail is the 1809 enclosure plan (see figure 11A). This depicts a rectangular hedged field on the east side of Bridlington Road covering 6 acres 1 rod and 32 perches in The Leys, allocated to Anne Levett, the wife of Robert Levett, a cabinet maker from Hull; she also had land in Souththorpe. On the 1854 Ordnance Survey map (sheet 197), the site is again shown as a single field on the east side of Atwick Road, with a row of trees along the southern boundary and a small square pond on the northern edge, but otherwise nothing of interest is shown; a ditched field boundary with a track on its north side runs along the north side of the field, with the former ditch

also along part of the western boundary (see figure 11B). The name 'The Leys' crosses the field, showing that it was originally part of the pre-enclosure open common pasture.

6.5 The later 1891 25" map (sheet 197/3-4) shows no features of archaeological interest, although only some of the trees depicted on the southern boundary in 1854 are shown while the pond on the north side is not (see figure 11C). The ditch and track along the north side of the field are still shown. By 1927, the small pond on the northern boundary is evident, as well as another towards the south-west corner (see figure 11D).

6.6 As noted above, the course of the anti-tank defences around the north side of Hornsea ran along part of the west side of the field, and continued along the north side and down the east side, all inside the field (**Site 14**); there was a small 'bump' in the north side of the field to take account of the small pond here. This section of defences comprised a double line of barbed wire with mines laid between, but no evidence for the former alignment survives within the field (see plate 3). This site was therefore given a 'Low' level of value or significance, although this primarily relates to any extant sections of earthworks, and so that section around the proposed development site should be 'Negligible'. The north side of the field is marked by a deep drainage ditch, c.3m wide and c.3m deep, but this lies on the north side of the boundary and so is unlikely to be associated with the anti-tank defences.

6.7 As noted above, a geophysical survey was undertaken of the proposed development site in April 2021 (Brunning 2021). This identified three linear weak magnetic anomalies with a general north-west/south-east trend within the proposed development site (**Site 22**) (see figure 12). These run contrary to the generally more north-south anomalies associated with former ridge and furrow arable cultivation. It is perhaps significant that these weak anomalies mirror the alignments of similar features recorded by the 2003 geophysical survey in the fields to the north and north-east of the site (GeoQuest Associates 2003), as well as some of the ditched field system seen as cropmarks associated with the late Bronze Age monument seen further to the north (Site 1) (see figure 9). Nothing was revealed during a watching brief of the western part of the 2003 surveyed site, although the anomalies here had been interpreted as possible land drains and slight or ephemeral ditches may not have been identified. Potentially, therefore, some or all of the weak anomalies identified within the proposed development site may be of archaeological interest and may be associated with a late Bronze Age or Iron Age/Romano-British field system. At present, this site is afforded a Medium level of value or significance.

6.8 Magnetic disturbance along the eastern and southern boundaries of the proposed development site were identified by the geophysical survey, caused by high metal fencing and the warehouse of the Hornsea Bowling Club respectively. It is also possible that some of this disturbance may result from the former anti-tank defence which ran along the east side of the site. A circular area of magnetic disturbance towards the west end of the northern boundary coincides with a small pond shown on the historic mapping, now infilled.

Assessment of Development Impact

Impact and Effect Grades

6.9 In general, an assessment of development impact on any heritage asset will depend on the value or significance of that asset combined with the degree or magnitude of potential impact. Details of the value grades applied to the 23 identified assets within the study area have been given above, and the magnitude of development impact can also be graded according to whether it is Substantial/Major, Moderate, Slight/Minor, Negligible or No Change. Details of how these grades can be applied in principle is given in Appendix 1, and it should be noted that impacts can be positive as well as negative or adverse. The overall Significance of Effect or impact can then be determined by combining the value/significance of an asset and the magnitude of impact. The way in which this overall effect is calculated is also explained in Appendix 1.

Identified Assets

6.10 As can be seen from the table below, the proposed residential development will affect only two of the identified assets, which are considered to be either of Low or Medium significance or value. Given the nature of the proposals, virtually all below-ground archaeological deposits which might be present will be disturbed or destroyed by the development. As a result, the magnitude of impact is considered to substantial, leading to overall negative significance of effects categorised as Slight or Moderate.

Asset no and name	*Significance*	*Magnitude of Impact (adverse)*	*Overall Significance of Effect (adverse)*
14: 2WW ditch and barbed wire obstruction (site of), either side of Atwick Road	Negligible	Major	Slight
22: Geophysical survey anomalies, east side of Atwick Road	Medium?	Major	Moderate?

Recommended Mitigation Measures

6.11 When a proposed development is permitted in an area of historic landscape or that containing identified archaeological remains (irrespective of their date, importance or complexity), it is expected that some form of archaeological intervention is undertaken, to mitigate the effects of the proposals so that any archaeological remains that might be disturbed or destroyed can be recorded. Such intervention may take place before or during development, and can involve archaeological excavation and/or evaluation (usually by trial trenching), or a watching brief (the monitoring of groundworks).

6.12 The first phase of an archaeological evaluation on an otherwise previously undeveloped site would normally involve a geophysical survey. This has been done for this proposed development site, and the results have been discussed above and the unedited geophysical survey report appears as Appendix 2. The next phase of appropriate work would therefore involve trial trenching across the whole site, in order to confirm both the results of the geophysical survey and to assess otherwise 'blank' areas. This work is designed to evaluate the extent, character and significance of any archaeological remains within the proposed development site, to determine the archaeological potential of the site, and to assess the impact of the development on any identified archaeological remains.

6.13 If the evaluation work reveals significant archaeological remains which will be affected by the proposed development, mitigation measures should be explored to ensure their preservation. This preservation may take three forms: physical preservation (retaining the visual amenity and landscape contribution of the site, free from adverse development), 'in situ preservation' (to preserve archaeological remains below development), or 'preservation by record' where destruction is unavoidable (to include full and detailed excavation followed by post-excavation analysis and publication of results). As noted above, the nature of the proposed development implies that the majority of the affected asset will need to be recorded prior to development, to achieve 'preservation by record'. Any future archaeological work on the site, either prior to and/or during development, would be subject to an appropriate specification and, if made a condition of planning approval, a detailed 'Written Scheme of Investigation', which would need to be approved by the Local Planning Authority and their archaeological advisors in advance of any site investigations.

7 BIBLIOGRAPHY

Primary Sources

ERAO = East Riding Archives Office, Beverley

1772 Jefferys' Map of Yorkshire (plate 15)

c.1800 Map of Hornsea 'by the scale of the eye' (ERAO DDX/253/1)

1809 Hornsea enclosure plan: 'A Plan of the Township of Hornsea in the County of York...' (ERAO IA 81)

1809 Hornsea enclosure act (ERAO PE/30/107/1)

1854 Ordnance Survey 6" map Yorkshire sheet 197, surveyed 1852

1855 Ordnance Survey 6" map Yorkshire sheet 180, surveyed 1851-52

1891 Ordnance Survey 25" map Yorkshire sheet 197/3-4, surveyed 1890

1910 Ordnance Survey 25" map Yorkshire sheet 197/3-4, revised 1908-09

1927 Ordnance Survey 25" map Yorkshire sheet 197/3-4, revised 1925-26

Secondary Sources

Abramson, P 1996 'Excavations along the Caythorpe Gas Pipeline, North Humberside'. *Yorkshire Archaeological Journal* vol 68,1-88

Allison, K J 2002 'Hornsea'. In Allison, K J (ed) *A History of the County of York, East Riding vol 7: Holderness Wapentake Middle and North Divisions*, 273-295

Bedell, E W 1848 *An Account of Hornsea*

Brigham, T & Jobling, D 2011 *Rapid Coastal Zone Assessment: Yorkshire and Lincolnshire: Bempton to Donna Nook, English Heritage Project 3729 Phase 2 report* (Humber Archaeology Report 324)

Brigham, T, Buglass, J & George R, D 2008 *Rapid Coastal Zone Assessment: Yorkshire and Lincolnshire: Bempton to Donna Nook, English Heritage Project 3729 Phase 1 report* (Humber Archaeology Report 235)

Brunning, E 2021 *Atwick Road, Hornsea, East Riding of Yorkshire: Geophysical Survey* (unpublished ASWYAS report 3580)

Burgess, A 2014 *Humber Gateway Onshore Cable Route, Easington to Saltend, East Yorkshire: Post-excavation Assessment Report* (unpublished Wessex Archaeology report 76814.01)

CIfA (Chartered Institute for Archaeologists) 2017 *Standards and Guidance for Historic Environment Desk-based Assessment*

English Heritage 2008 *Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment*

ERYC (East Riding of Yorkshire Council) 2016b *East Riding Local Plan 2012-2029: Allocations Document Adopted July 2016*

ERYC (East Riding of Yorkshire Council) 2016a *East Riding Local Plan 2012-2029: Strategy Document Adopted April 2016*

ERYC (East Riding of Yorkshire Council) 2006 *Conservation Area Appraisal: Hornsea*

Fenton-Thomas, C 2005 *The Forgotten Landscapes of the Yorkshire Wolds*

Foot, W 2006 *Beaches, Fields, Streets, and Hills: the Anti-invasion Landscapes of England 1940* (CBA Research Report 144)

Gelling, M 1984 *Place-Names in the Landscape*

GeoQuest Associates 2003 *Geophysical Survey of an area of land to the east of Atwick Road, Hornsea, East Riding of Yorkshire* (unpublished GeoQuest Associates report)

Glover, G, Flintoft, P & Moore, R 2016 '*A Mersshy Contree called Holderness': Excavations on the Route of a National Grid Pipeline in Holderness, East Yorkshire*

Gregory, R 1985 *East Yorkshire Windmills*

Head, R 1997 'An Anglo-Saxon Cemetery at Hornsea, East Riding of *Yorkshire*'. *East Riding Archaeologist* vol 9, 10-60

Harrison, S 2005 *The History of Hornsea East Yorkshire from Earliest Times to the Year 2005*

Kolonko, C 2020 'What can we learn from Pillboxes'. Coastal and Intertidal Zone Archaeological Network (Citizan) blog 29th May 2020 (available at *https://www.citizan.org.uk/blog/2020/May/29/what-can-we-learn-pillboxes/*, accessed May 2021)

Kolonko, C 2018b 'Wartime Defences at Auburn Sands'. Coastal and Intertidal Zone Archaeological Network (Citizan) blog 14th December 2018 (available at *www.citizan.org.uk/blog/2018/Dec/14/wartime-defences-auburn-sands/*, accessed May 2021)

Kolonko, C 2018a 'Interpreting the Second World War Pillboxes at Reighton Sands'. *Forum: the Journal of Council for British Archaeology Yorkshire* vol 7, 4-13

MacMahon K A 1974 *The Beginning of the East Yorkshire Railways* (East Yorkshire Local History Series no 3)

MHCLG (Ministry of Housing, Communities and Local Government) 2019 *National Planning Policy Framework*

Osborne, M 2020 *Spotter's Guide to Pillboxes and Other Anti-Invasion Structures of World War II* (Pillbox Study Group guidebook)

Oxford Archaeology North 2012 *Easington to Paull Natural Gas Pipeline, East Yorkshire: Post-excavation Assessment* (unpublished OAN report 20120-13/1256)

Poulson, G 1840 *History and Antiquities of the Seigniory of Holderness vol 1*

Rawson, D 2005 *Archaeological Observation, Investigation and Recording at Atwick Road, Hornsea* (unpublished Humber Field Archaeology watching brief report 800)

Roberts, I 2009 'A Late Iron Age and Romano-British Settlement at High Wold, Bempton Lane, Bridlington, East Yorkshire'. *Yorkshire Archaeological Journal* vol 81, 47-137

Ruddy, A J no date Sand-Le-Mere: Defence of a Coastal Inlet, East Yorkshire (available at *http://www.pillbox-study-group.org.uk/defence-articles/sand-le-mere-defence-of-a-coastal-inlet/*, accessed May 2021)

Soil Survey (of England and Wales) 1983 *Soils of England and Wales: Sheet 1 Northern England*

Tibbles, J 2001 *Watching Brief at 19 Northumberland Avenue, Hornsea* (unpublished Humber Field Archaeology watching brief report)

Tibbles, J 1997 'An Archaeological Watching Brief at the Granville Court Site in 1995'. *East Riding Archaeologist* vol 9, 61-65

Walker, J E S 1995 *The Home Front: Hornsea and Holderness in the Secord World War*

Watkin, J R 1983 'The Archaeology of Anglian East Yorkshire - a Review of some Published Evidence and Proposals for Future Fieldwork'. *East Riding Archaeologist* vol 7, 25-39

Williams, D 2016 'Excavations of the Onshore Cable Route for the Westermost Rough Offshore Wind-Farm'. *East Riding Archaeologist* vol 15

Internet Sources (accessed May 2021)

https://archaeologydataservice.ac.uk/library/ - Archaeology Data Service Grey Literature Library and British and Irish Archaeological Bibliography

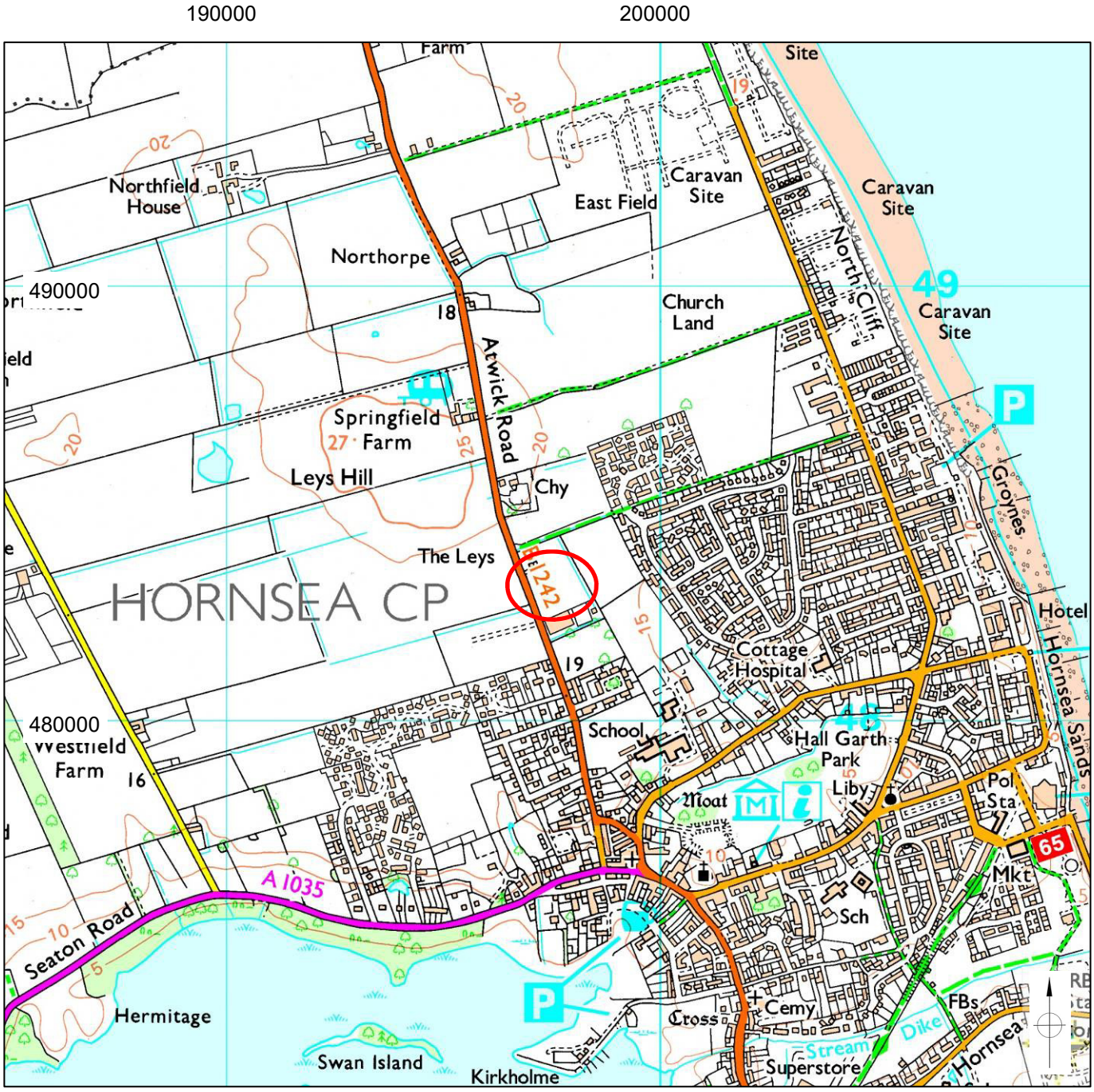
http://archaeologydataservice.ac.uk/archives/view/dob/ - Archaeology Data Service Defence of Britain database

http://finds.org.uk/ - Portable Antiquities Scheme

http://mapapps.bgs.ac.uk/geologyofbritain/home.html - Geology of Britain viewer

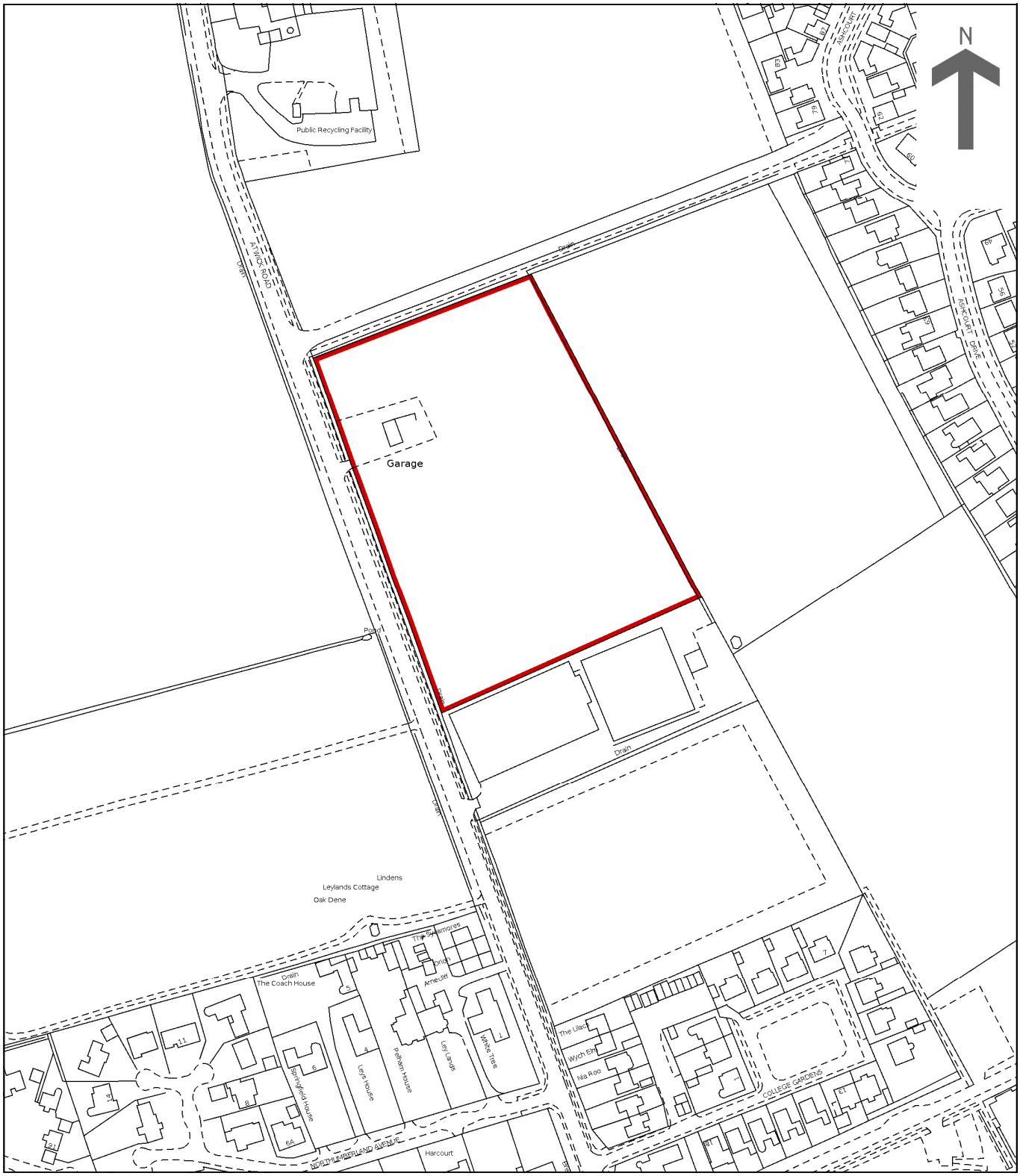
http://maps.nls.uk/index.html - National Library of Scotland: Map Images

http://www.heritagegateway.org.uk/gateway - Historic England Heritage Gateway

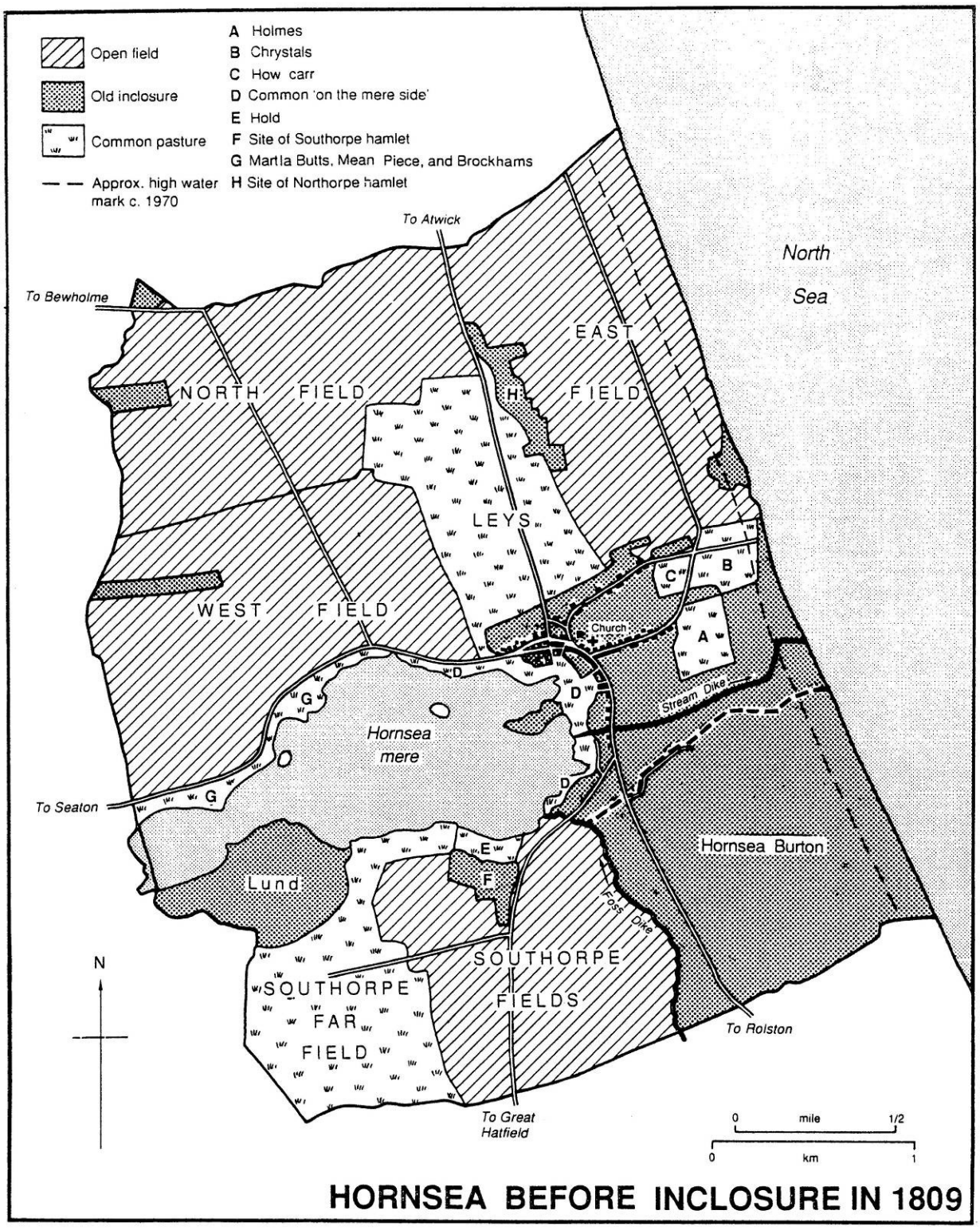


0 1km

PROJECT: ATWICK ROAD, HORNSEA	
TITLE: GENERAL LOCATION	
SCALE: AS SHOWN	DATE: MAY 2021
EDAS	FIGURE: 1

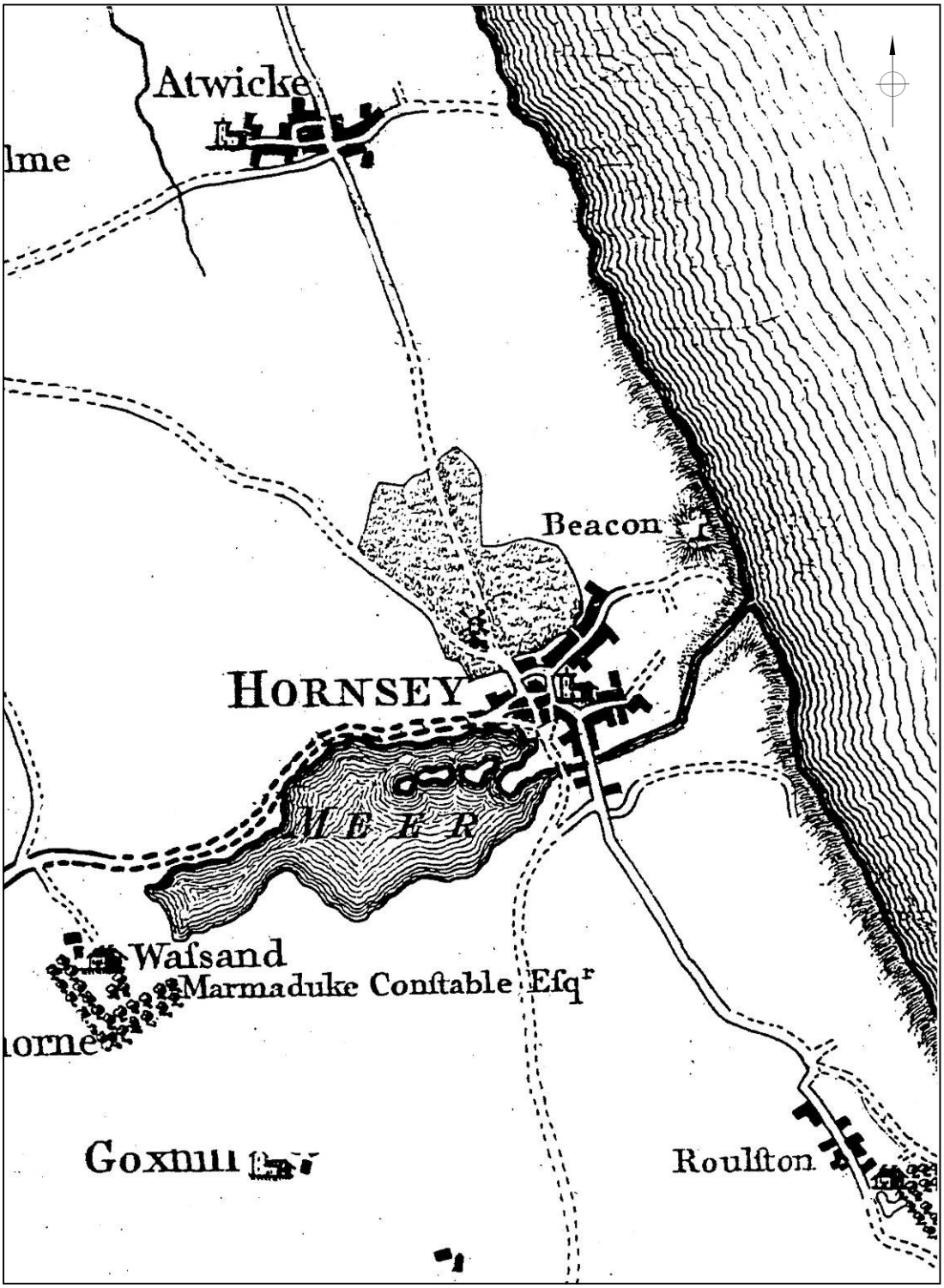


PROJECT: ATWICK ROAD, HORNSEA	
TITLE: DETAILED LOCATION	
SCALE: NTS	DATE: MAY 2021
EDAS	FIGURE: 2



Source: Allison, K J 2002 'Hornsea'. In Allison, K J (ed) *A History of the County of York, East Riding vol 7: Holderness Wapentake Middle and North Divisions*, 285.

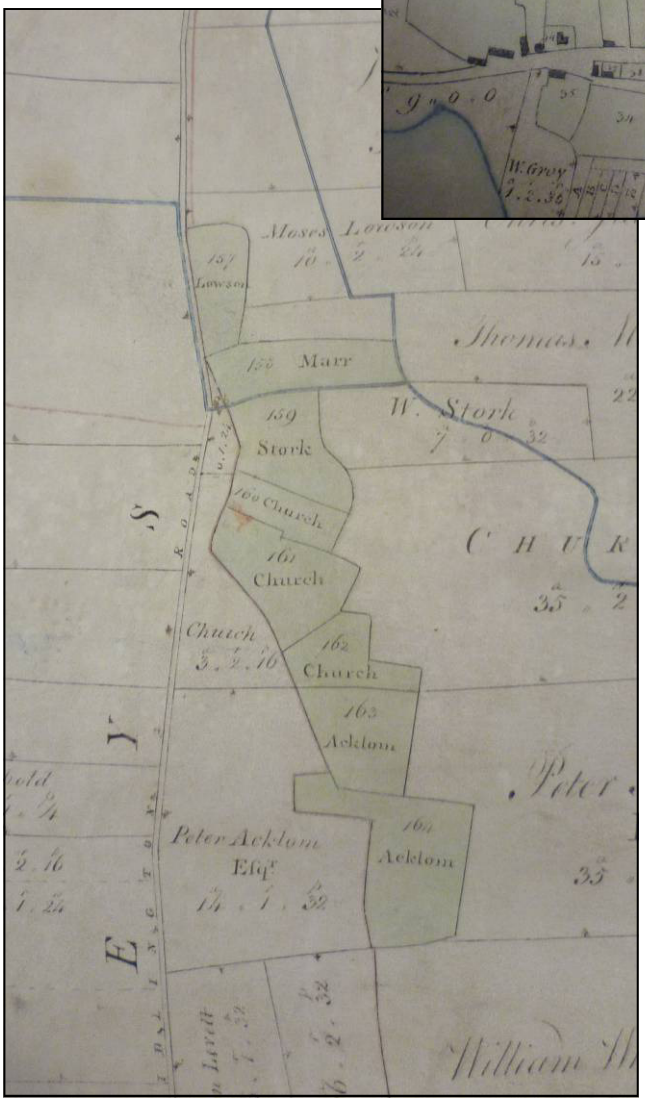
PROJECT: ATWICK ROAD, HORNSEA	
TITLE: PRE-1809 LANDSCAPE	
SCALE: AS SHOWN	DATE: MAY 2021
EDAS	FIGURE: 3



Source: Jefferys' 1772 map of Yorkshire (plate 15).

PROJECT	
ATWICK ROAD, HORNSEA	
TITLE	
JEFFERYS' 1772 MAP	
SCALE	DATE
AS SHOWN	MAY 2021
EDAS	FIGURE 4

(A) Proposed development site.



(B) Site of Northorpe village.

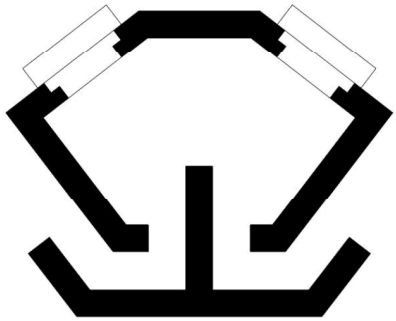
Source: 1809 Hornsea enclosure plan: 'A Plan of the Township of Hornsea in the County of York...' (ERAO IA 81).

PROJECT: ATWICK ROAD, HORNSEA	
TITLE: HORNSEA 1809 ENCLOSURE PLAN	
SCALE: NTS	DATE: MAY 2021
EDAS	FIGURE: 5

PROJECT	
ATWICK ROAD, HORNSEA	
TITLE	
1854 ORDNANCE SURVEY MAP	
SCALE: NTS	DATE: MAY 2021
EDAS	FIGURE: 6

Source: 1854 Ordnance Survey 6" map Yorkshire sheet 197, surveyed 1852.

'Eared' pillbox

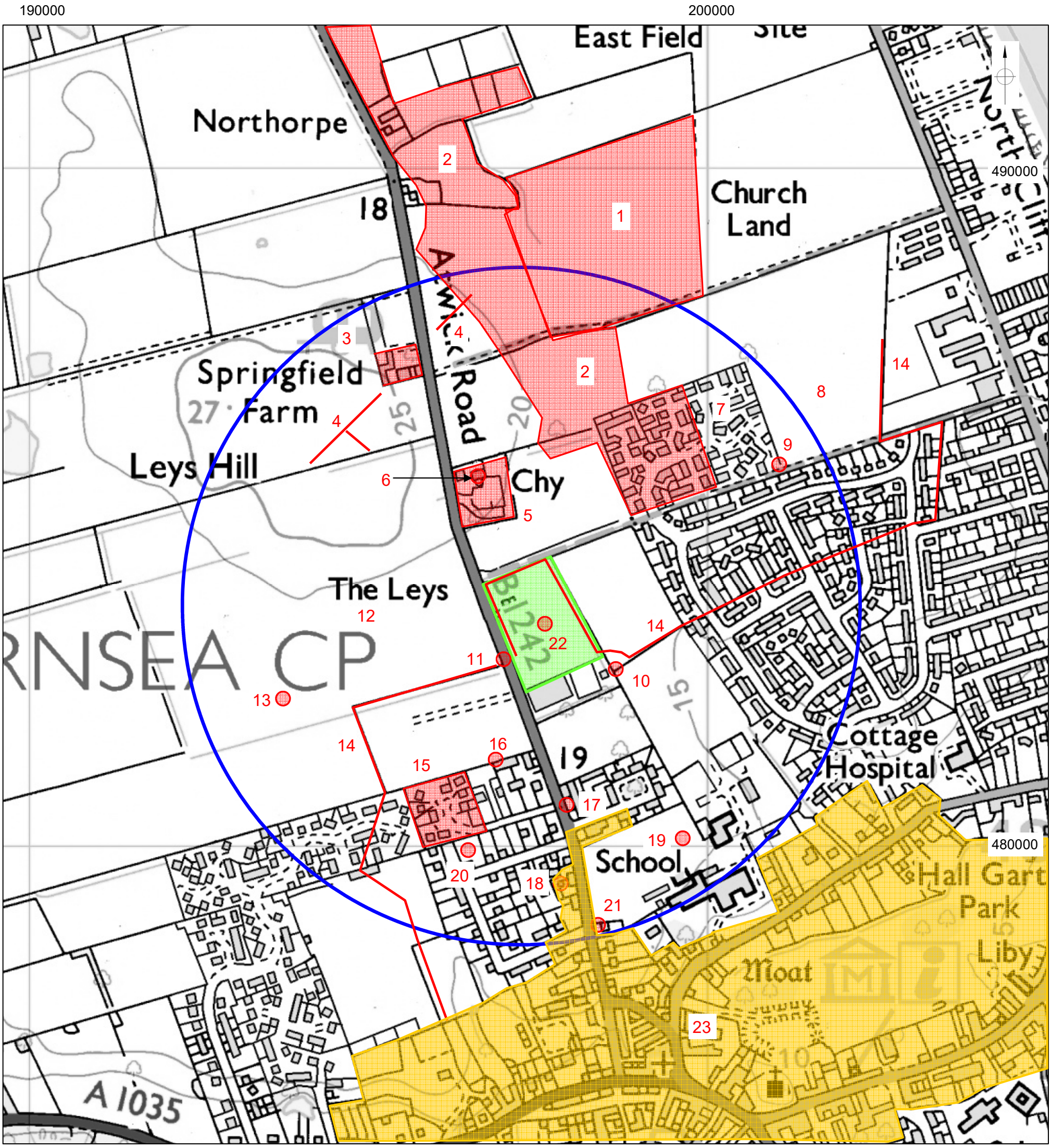


'Lozenge' pillbox

0 5m

Source: Kolonko 2018, 'Interpreting the Second World War Pillboxes at Reighton Sands'. *Forum: the Journal of Council for British Archaeology Yorkshire* vol 7, figures 4 & 5.

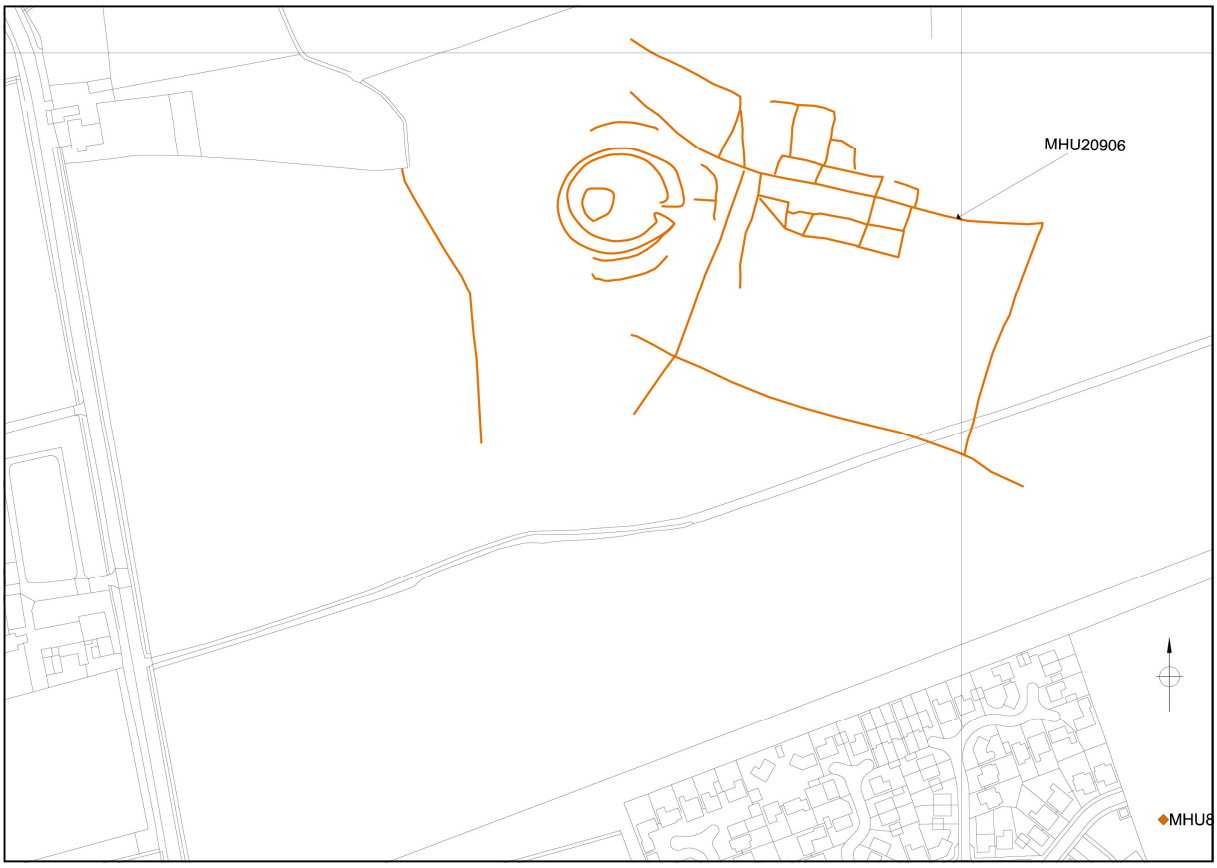
PROJECT: ATWICK ROAD, HORNSEA	
TITLE: PLANS OF PILLBOXES	
SCALE: AS SHOWN	DATE: MAY 2021
EDAS	FIGURE: 7



Study area shown in blue, development site in green, identified assets in red, Conservation Area (part of) in yellow.

0 500m

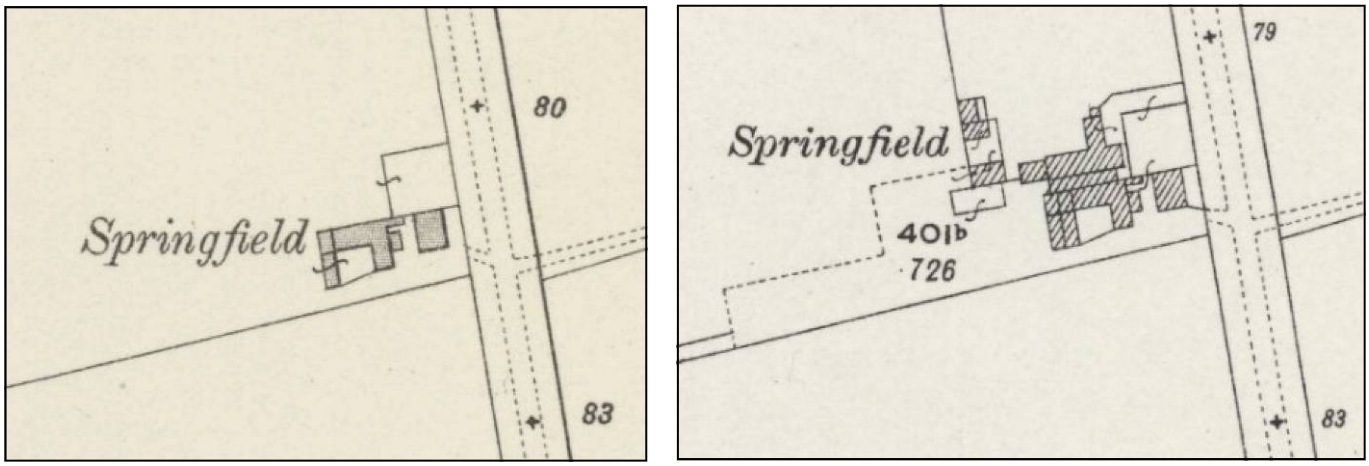
PROJECT: ATWICK ROAD, HORNSEA	
TITLE: IDENTIFIED ASSETS	
SCALE: AS SHOWN	DATE: MAY 2021
EDAS	FIGURE: 8



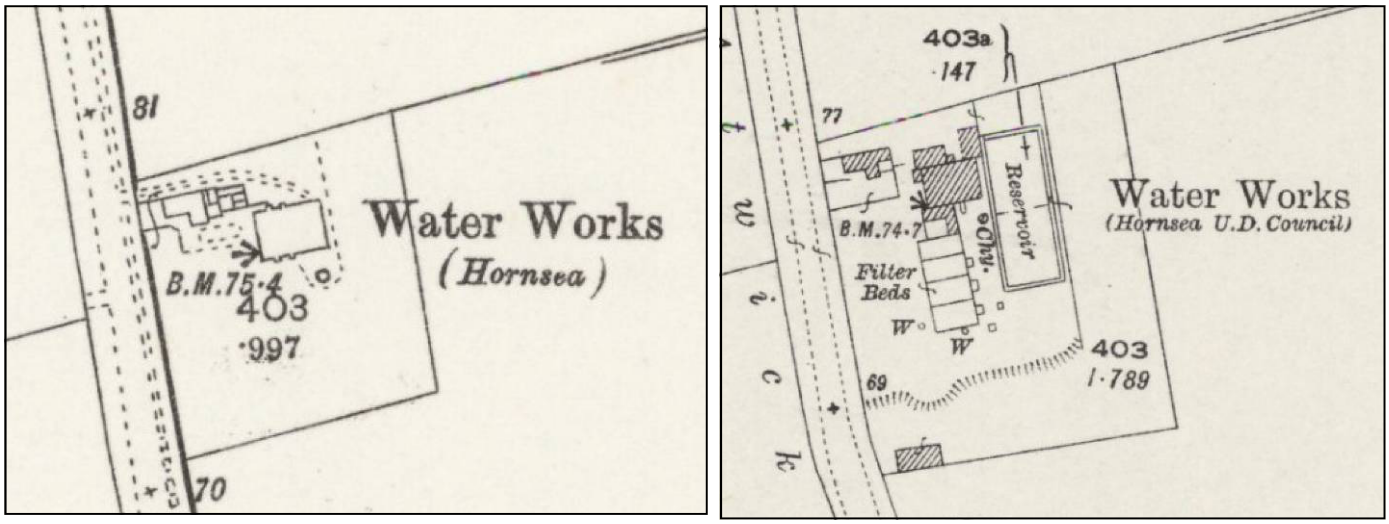
Top: Plot of cropmarks for MHU20906 (Site 1) (source: Humber HER).

Bottom: Geophysical anomalies in development site (Site 7) (source:GeoQuest Associates 2003 *Geophysical Survey of an area of land to the east of Atwick Road, Hornsea, East Riding of Yorkshire,* figure 4).

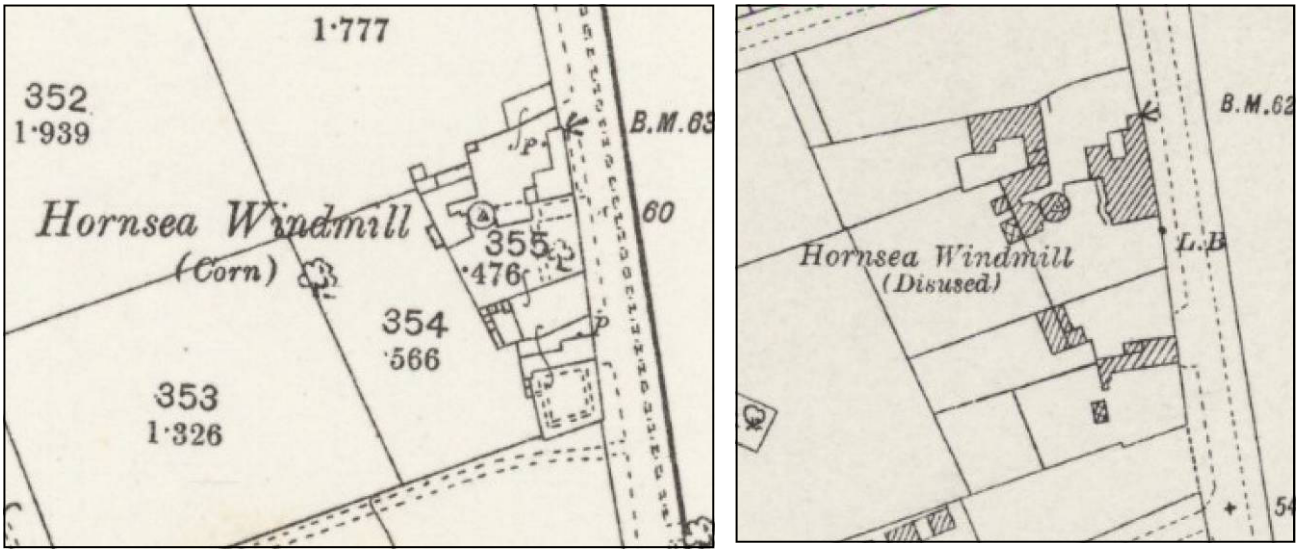
PROJECT: ATWICK ROAD, HORNSEA	
TITLE: SITES 1 AND 7	
SCALE: NTS	DATE: MAY 2021
EDAS	FIGURE: 9



Springfield Farm (Site 3), shown on Ordnance Survey maps of 1910 (left) and 1927 (right).



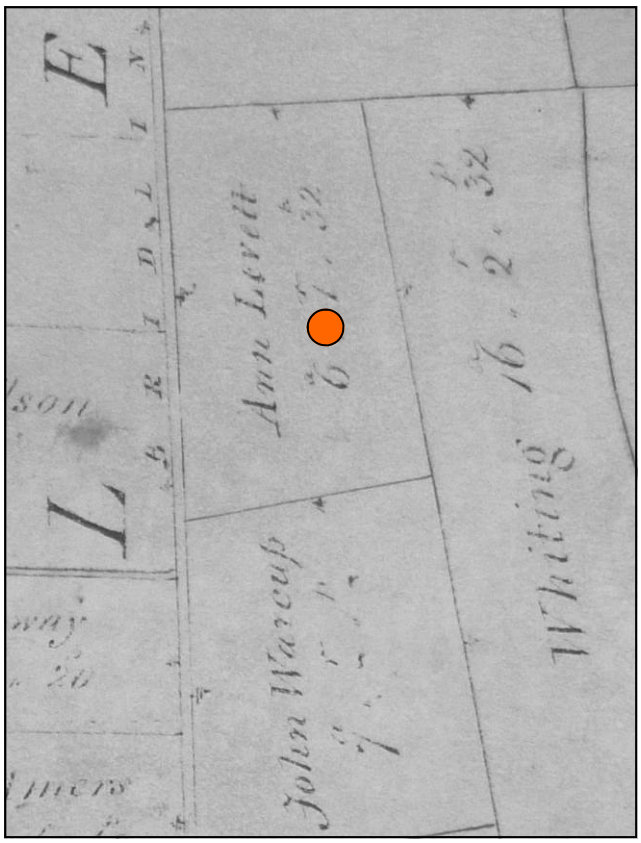
Hornsea water treatment works (Site 5), shown on Ordnance Survey maps of 1891 (left) and 1927 (right).



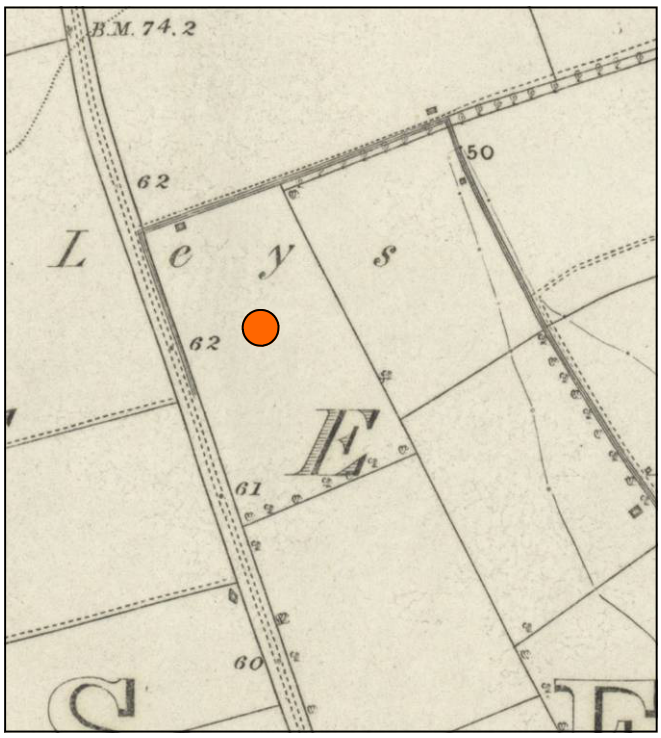
Hornsea windmill (Site 18), shown on Ordnance Survey maps of 1891 (left) and 1927 (right).

Sources: Ordnance Survey 25" maps of 1891, 1910 and 1927, Yorkshire sheets 197/3-4 surveyed 1890, revised 1908-09 and 1925-26 respectively.

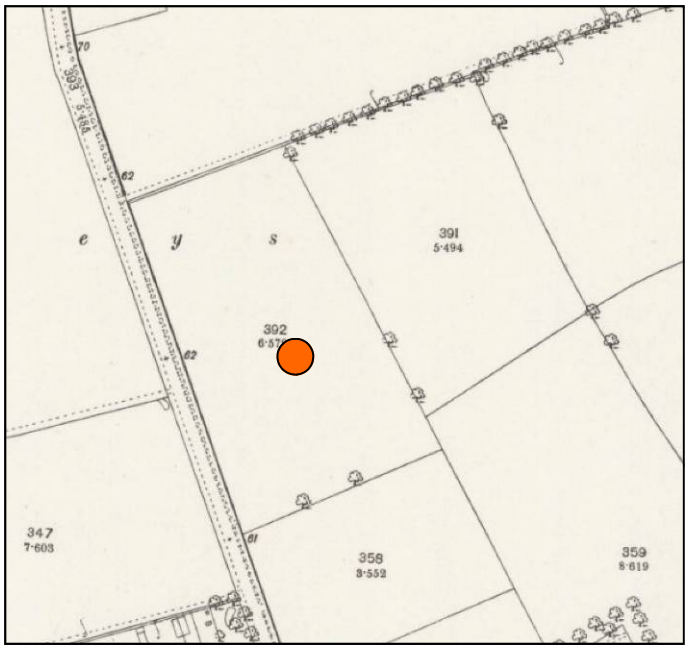
PROJECT: ATWICK ROAD, HORNSEA	
TITLE: SITES 3, 5 AND 18	
SCALE: NTS	DATE: MAY 2021
EDAS	FIGURE: 10



(A) 1809 Hornsea enclosure plan (ERAO IA 81).



(B) 1854 Ordnance Survey 6" map (Yorkshire sheet 197), surveyed 1852.

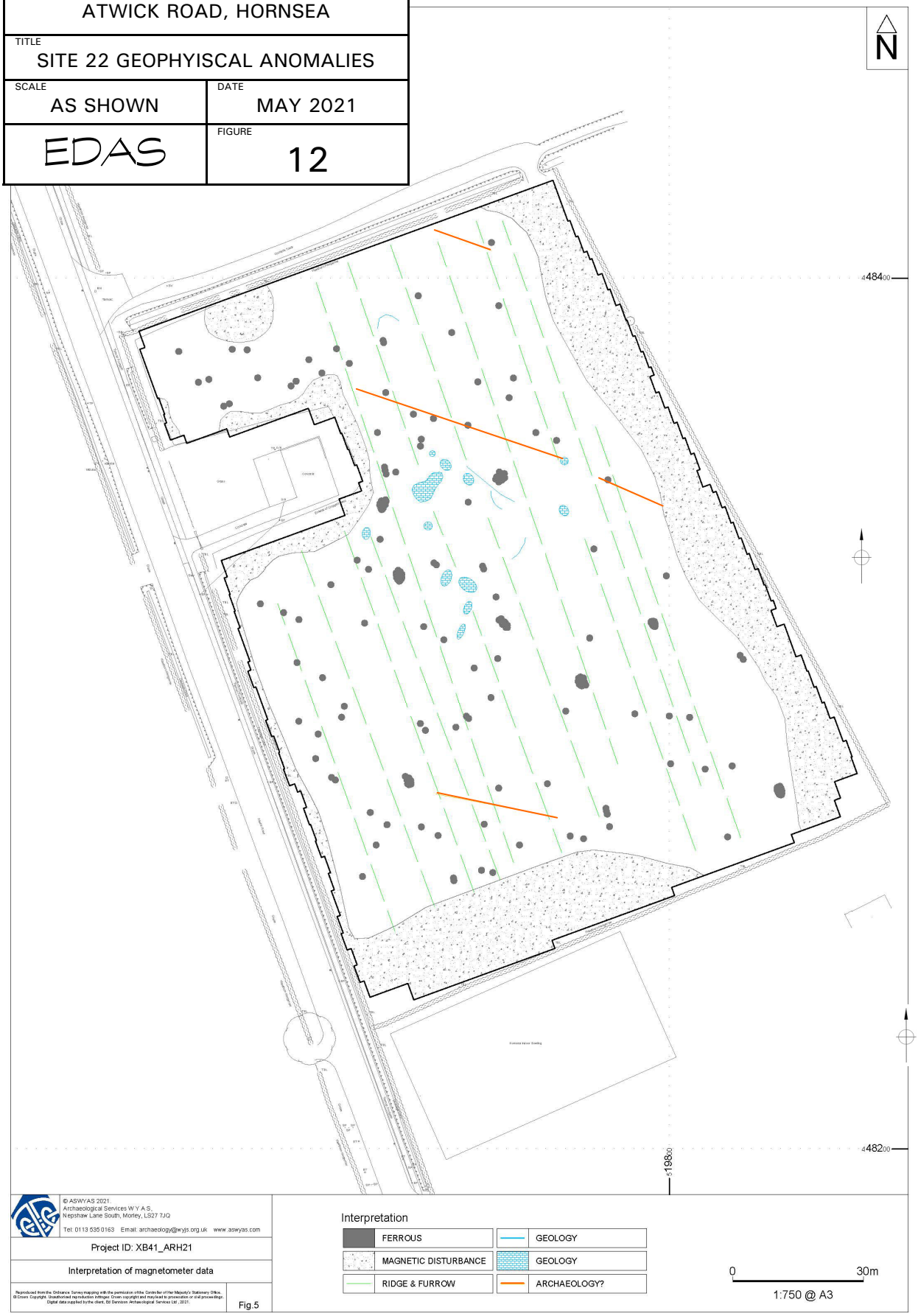


(C) 1891 Ordnance Survey 25" map (Yorkshire sheet 197/3-4), surveyed 1890.

(D) 1927 Ordnance Survey 25" map (Yorkshire sheet 197/3-4), revised 1925-26.

Development site shown by red dot.

PROJECT: ATWICK ROAD, HORNSEA	
TITLE: THE DEVELOPMENT SITE	
SCALE: NTS	DATE: MAY 2021
EDAS	FIGURE: 11



Source: Brunning, E 2021 *Atwick Road, Hornsea, East Riding of Yorkshire: Geophysical Survey* (unpublished ASWYAS report 3580), figure 5.

Plate 1: Former Hornsea Water Treatment Works building (rear) with incinerator and chimney to front (Site 5), looking NW.

Plate 2: Lozenge-type pillbox, north of Northgate (Site 9), showing entrance blast wall to west side, looking E.

Plate 3: North internal boundary of development site, along former anti-tank defences (Site 14), looking W.

Plate 4: General view of proposed development site, looking NW.

Plate 5: Modern structure within proposed development site, looking SE.

APPENDIX 1
METHODOLOGY FOR IMPACT ASSESSMENTS ON HERITAGE ASSETS

APPENDIX 1: METHODOLOGY FOR IMPACT ASSESSMENTS ON HERITAGE ASSETS

Based on Highways England 2019 Design Manual for Roads and Bridges LA106 'Cultural Heritage Assessment' and LA104 'Environmental Assessment and Monitoring', and in accordance with advice contained in the 2019 National Planning Policy Framework (NPPF).

Assessing the Significance of Heritage Assets

Value (Significance)	*Criteria*
Very High (International)	World Heritage Sites, Scheduled Monuments of exceptional quality, or assets of acknowledged international importance or can contribute to international research objectives. Other buildings and built heritage of exceptional quality and recognised international importance. Historic landscapes and townscapes of international value or sensitivity, whether designated or not, or extremely well preserved historic landscapes and townscapes with exceptional coherence, integrity, time-depth, or other critical factor(s).
High (National)	Scheduled Monuments, or undesignated archaeological assets of national quality and importance, or than can contribute significantly to national research objectives. Grade I and II* Listed Buildings, other built heritage assets that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in their listing grade. Conservation Areas containing very important buildings or with very strong character and integrity, undesignated structures of clear national importance. Grade I and II* Registered Parks and Gardens, Registered Battlefields and designated or non-designated historic landscapes and townscapes of outstanding interest, quality and importance, or well preserved historic landscapes which exhibit considerable coherence, integrity time-depth or other critical factor(s).
Medium (Regional)	Undesignated archaeological assets of regional quality and importance that contribute to regional research objectives. Grade II Listed Buildings, historic unlisted buildings that can be shown to have exceptional qualities in their fabric or historical associations. Conservation Areas containing buildings that contribute significantly to its historic character. Historic townscapes or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures). Designated special landscapes, undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value, and averagely well preserved historic landscapes with reasonable coherence, integrity, time-depth or other critical factor(s). Assets that form an important resource within the community, for educational or recreational purposes.
Low (Local)	Undesignated archaeological assets of local importance, assets compromised by poor preservation and/or poor survival of contextual associations, or assets of limited value but with potential to contribute to local research objectives. Locally listed buildings, historic (unlisted) buildings of modest quality in their fabric or historical association. Historic landscapes or built-up areas of limited historic integrity in their buildings or built settings (including street furniture and other structures). Robust undesignated historic landscapes, historic landscapes with importance to local interest groups, historical landscapes whose value is limited by poor preservation and/or poor survival of contextual associations. Assets that form a resource within the community with occasional utilisation for educational or recreational purposes.
Negligible	Archaeological assets with very little or no surviving interest. Buildings of no architectural or historical note. Landscapes and townscapes that are badly fragmented and the contextual associations are severely compromised or have little or no historical interest.
Unknown	The importance of the asset has not been determined. Buildings with some hidden (i.e. inaccessible) potential for historic significance.

Assessing Magnitude of Impact (Adverse or Beneficial)

Magnitude of Impact	*Typical Criteria Descriptors*
Major	*Adverse:* Impacts will damage or destroy cultural heritage assets; result in the loss of the asset and/or its quality and integrity; causes severe damage to key characteristic features or elements; almost complete loss of setting and/or context of the asset. The asset's integrity or setting is almost wholly destroyed or is severely compromised, such that the resource can no longer be appreciated or understood. *Beneficial:* The proposals would remove or successfully mitigate existing damaging and discordant impacts on assets; allow for the restoration or enhancement of characteristic features; allow the substantial re-establishment of the integrity, understanding and setting for an area or group of features; halt rapid degradation and/or erosion of the heritage resource, safeguarding substantial elements of the heritage resource.
Moderate	*Adverse:* Substantial impact on the asset, but only partially affecting the integrity; partial loss of, or damage to, key characteristics, features or elements; substantially intrusive into the setting and/or would adversely impact on the context of the asset; loss of the asset for community appreciation. The assets integrity or setting is damaged but not destroyed so understanding and appreciation is compromised. *Beneficial:* Benefit to, or restoration of, key characteristics, features or elements; improvement of asset quality; degradation of the asset would be halted; the setting and/or context of the asset would be enhanced and understanding and appreciation is substantially improved; the asset would be bought into community use.
Minor	*Adverse:* Some measurable change in assets quality or vulnerability minor loss of or alteration to, one (or maybe more) key characteristics, features or elements; change to the setting would not be overly intrusive or overly diminish the context; community use or understanding would be reduced. The assets integrity or setting is damaged but understanding and appreciation would only be diminished not compromised. *Beneficial::* Minor benefit to, or partial restoration of, one (maybe more) key characteristics, features or elements; some beneficial impact on asset or a stabilisation of negative impacts; slight improvements to the context or setting of the site; community use or understanding and appreciation would be enhanced.
Negligible	*Adverse:* Very minor loss or detrimental alteration to one or more characteristics, features or elements; minor changes to the setting or context of the site. *Beneficial:* Very minor benefit to or positive addition of one or more characteristics, features or elements; minor changes to the setting or context of the site.
No change	No discernible change in baseline conditions.

Identifying Significance of Effect (Adverse or Beneficial)

	Magnitude of Impact				
Value of Asset	*Major*	*Moderate*	*Minor*	*Negligible*	*No change*
Very High	Very Large	Large/ Very Large	Moderate/Large	Slight	Neutral
High	Large/ Very Large	Moderate/Large	Moderate/Slight	Slight	Neutral
Medium	Moderate/Large	Moderate	Slight	Slight/Neutral	Neutral
Low	Moderate/Slight	Slight	Neutral/Slight	Slight/Neutral	Neutral
Negligible	Slight	Neutral/Slight	Neutral/Slight	Neutral	Neutral

APPENDIX 2
ARCHAEOLOGICAL SERVICES WYAS 2021 GEOPHYSICAL SURVEY REPORT

WYAS Archaeological Services

Atwick Road
Hornsea
East Riding of Yorkshire

Geophysical Survey

Report no. 3580
May 2021

Client: Ward Homes Yorkshire

REGISTERED ORGANISATION CIfA

West Yorkshire Joint Services

Atwick Road,
Hornsea,
East Riding of Yorkshire

Geophysical Survey

Summary

A geophysical (magnetometer) survey was undertaken on approximately 1.9 hectares of land located on the east side of Atwick Road, Hornsea, East Riding of Yorkshire. Evidence for former ridge and furrow cultivation can be seen throughout the survey area. A handful of linear trends have also been recorded which may be of archaeological interest, possibly elements of a field system associated with a late Bronze Age enclosure which has been noted to the north of the site. Magnetic disturbance along the southern and eastern boundaries are due to an adjacent warehouse and high metal fencing. Based on the interpretation of the geophysical survey the archaeological potential of the Site is deemed to be low.

WYAS
Archaeological
Services

Report Information

Client:	Ward Homes Yorkshire
Address:	Village Farm, Main Street, Seaton, East Yorkshire, HU11 5RA
Report Type:	Geophysical Survey
Location:	Hornsea
County:	East Riding of Yorkshire
Grid Reference:	TA 1975 4833
Period(s) of activity:	Medieval / modern
Report Number:	3580
Project Number:	XB41
Site Code:	ARH21
OASIS ID:	archaeol11-501744
Date of fieldwork:	April 2021
Date of report:	May 2021
Project Management:	Emma Brunning BSc MCIfA
Fieldwork:	Jake Freeman BA
	Amy Chatterton BSc MA
Illustrations:	Emma Brunning
Photography:	Jake Freeman
Research:	Emma Brunning
Report:	Emma Brunning

Authorisation for distribution: ----------

Nepshaw Lane South, Morley, Leeds LS27 7JQ
Telephone: 0113 535 0163
Email: admin@aswyas.com

Document Issue Record

Ver	Author(s)	Reviewer	Approver	Date
1.0	EB	DW	DW	May 2021

Contents

List of Figures

List of Plates

1 Introduction

Archaeological Services ASWYAS were commissioned by Ed Dennison Archaeological Services Ltd (EDAS) on behalf of Ward Homes Yorkshire to undertake a geophysical survey on land at Atwick Road, Hornsea, East Riding of Yorkshire. This was undertaken in line with current best practice (CIfA 2014; Schmidt et al. 2015). The survey was carried out on the 21st April 2021 to provide additional information on the archaeological resource of the Site.

Site location, topography and land-use

The Site is located at TA 1975 4833 (approximate centre), comprising *c*. 1.9ha in a single field situated to the north of Hornsea (see Fig. 1).

The Site is situated on the east side of Atwick Road with land consisting of arable (Plates 1, 3 and 4). Part of the Site was unsuitable for survey as it consisted of rough ground and an abandoned garage (Plate 2). It is bounded to the north by an unmade track, to the east by arable land, to the south by Hornsea Bowling Club and to the west by Atwick Road. The Site is generally level, lying at 18m above Ordnance Datum (aOD).

Soils and geology

The recorded bedrock geology comprises Rowe Chalk Formation which is a chalk, sedimentary bedrock formed approximately 66 to 84 million years ago in the Cretaceous Period. Superficial deposits have been recorded as Till, Devensian, which formed up to 2 million years ago in the Quaternary Period (BGS 2021). Soils are described as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (Soilscape 18) (CSAI 2021).

2 Archaeological Background

The archaeological background below is taken from available online resources.

Approximately 400m to the northeast of the site lies a scheduled monument knows as East Field crop mark site (list entry number 1423379) and consists of a complex crop mark site within an arable field which was first identified in 2010. The focus of the scheduling is a clear circular feature that is interpreted as being a Neolithic henge. This is set within and respected by a field system, suggesting that the henge was reused in the late Bronze Age as a ringwork: a high status domestic enclosure, a site type also known as a Springfield style enclosure. The core of the surrounding field system is also included in the scheduling (HE 2021).

Within 500m of the Site, of an unknown precise location, ditches and a polygonal enclosure (HER number 3624) had been recorded. Also an Iron Age to Romano-British rectilinear enclosure (HER number 22095) also within 500m (HG 2021).

Approximately 240m to the northeast of the Site archaeological monitoring works recorded a World War II pillbox (HER number 18889). A further pillbox is located in the allotments, immediately west of the Site (HER number 18892) (HG 2021).

The fields to the north and north-east of the Site were also subject to a geophysical survey in 2003 (HER number 8851) in which north-south aligned ridge and furrow was detected, as well as several weak positive magnetic anomalies with a general WNW-ESE orientation which were interpreted as possible land drains or ditches (HG 2021; GeoQuest Associates 2003).

3 Aims, Methodology and Presentation

The aims and objectives of the programme of geophysical survey were to gather sufficient information to establish the presence/absence, character and extent, of any archaeological remains within the specific area and to inform an assessment of the archaeological potential of the site. To achieve this aim, a magnetometer survey covering all amenable parts of the Site was undertaken (see Fig. 2).

The general objectives of the geophysical survey were:

- to provide information about the nature and possible interpretation of any magnetic anomalies identified;
- to therefore determine the presence/absence and extent of any buried archaeological features; and
- to prepare a report summarising the results of the survey.

Magnetometer survey

The site grid was laid out using a Trimble VRS differential Global Positioning System (Trimble R6 model). The survey was undertaken using Bartington Grad601 magnetic gradiometers. These were employed taking readings at 0.25m intervals on zig-zag traverses 1.0m apart within 30m by 30m grids, so that 3600 readings were recorded in each grid. These readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation. Bespoke in-house software was used to process and present the data. Further details are given in Appendix 1.

Reporting

A general site location plan, incorporating the 1:50000 Ordnance Survey (OS) mapping, is shown in Figure 1. Figure 2 displays processed magnetometer data at a scale of 1:1000 whilst Processed and minimally processed data, together with interpretation of the survey results are presented in Figures 3 to 5 inclusive at a scale of 1:750.

Technical information on the equipment used, data processing and survey methodologies are given in Appendix 1. Technical information on locating the survey area is provided in Appendix 2. Appendix 3 describes the composition and location of the archive. A copy of the completed OASIS form is included in Appendix 4.

The survey methodology, report and any recommendations comply with guidelines outlined by the European Archaeological Council (Schmidt *et al*. 2015) and by the Chartered Institute for Archaeologists (CIfA 2014). All figures reproduced from Ordnance Survey mapping are with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

The figures in this report have been produced following analysis of the data in processed formats and over a range of different display levels. All figures are presented to most suitably display and interpret the data from this site based on the experience and knowledge of Archaeological Services staff.

4 Results and Discussion (see Figures 3 to 5)

Ferrous anomalies and magnetic disturbance

Ferrous anomalies, represented as individual 'spikes' or as large discrete areas, are typically caused by ferrous (magnetic) material, either on the ground surface or in the plough-soil. Little importance is normally given to such anomalies, unless there is any supporting evidence for an archaeological interpretation, as modern ferrous debris or material is common on rural sites, often being present as a consequence of manuring or tipping/infilling. There is no obvious pattern or clustering to their distribution in this survey to suggest anything other than a random background scatter of ferrous debris in the plough-soil.

Magnetic disturbance along the eastern limits of the Site are associated with high metal fencing, whilst the magnetic disturbance along the southern boundary has been caused by the warehouse of Hornsea Bowling Club. Disturbance along the western boundary can be attributed to the adjacent road and debris from the abandoned garage.

Geological anomalies

The survey has detected a handful of anomalies that have been interpreted as geological in origin. It is thought that the responses have been detected because of the variation in the composition and depth of the deposits of superficial material in which they derive.

Agricultural anomalies

Parallel linear trends can be seen throughout the dataset on a northwest to southeast alignment, parallel to the orientation of Atwick Road, and are associated with ridge and furrow cultivation. While these trends could be of medieval date a more recent origin cannot be ruled out. No other forms of agricultural anomalies have been recorded.

Possible archaeological anomalies

Anomalies of a possible archaeological origin have been recorded as a handful of magnetically weak trends. They lie on a northwest to southeast alignment and do not therefore reflect the modern field boundaries or ridge and furrow. It is noteworthy that the weak magnetic anomalies recorded by the 2003 geophysical survey in the fields to the north and north-east of the Site had a similar alignment (GeoQuest Associates 2003). Given the presence of the complex crop mark site just to the north, it is possible that these linear trends in the current survey area are of some archaeological interest, perhaps ditches associated with a former field system; the rectilinear field system associated with crop mark site was adjudged to be of late Bronze Age date (HE 2021). Their weak nature and lack of contrast with the underlying natural suggests that they are more likely to be field systems rather than associated with any settlement. Conversely, the linear anomalies do not form any coherent pattern and as such could be a result of modern activity.

5 Conclusions

The geophysical survey has detected magnetic anomalies associated with former ridge and furrow cultivation and potentially archaeological remains associated which may suggest elements of a former prehistoric field system.

Magnetic disturbance, recorded along the limits of the dataset are associated with metal fencing, a warehouse and adjacent road.

A handful of geological anomalies have been recorded due to variations within the soils. Based on the interpretation of the geophysical survey the archaeological potential of this Site is deemed to be low.

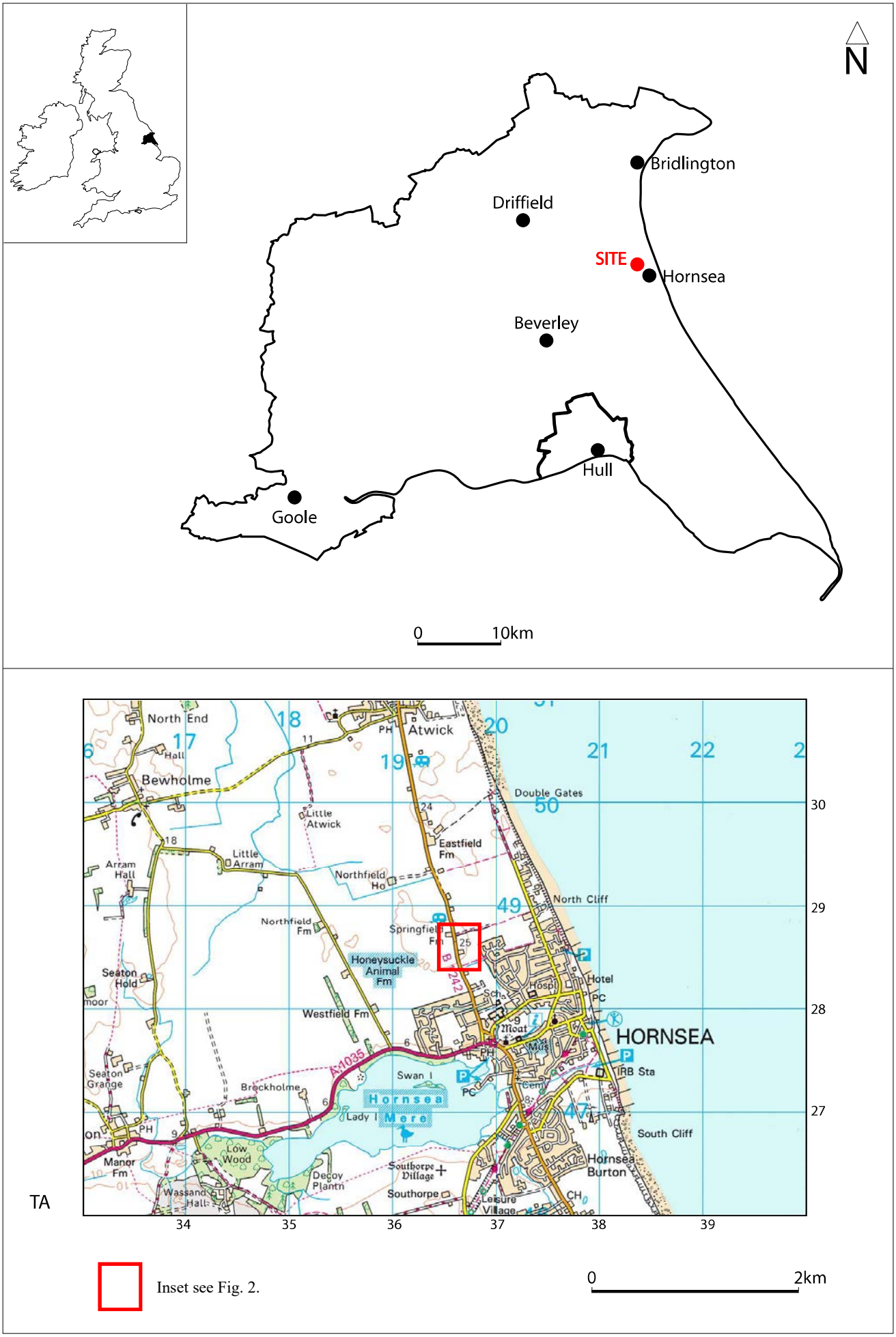


Fig. 1. Site location

N

4484 00

1

2

3

4

4482 00

5198 00

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB41_ARH21

Survey location showing processed magnetometer data

Fig.2

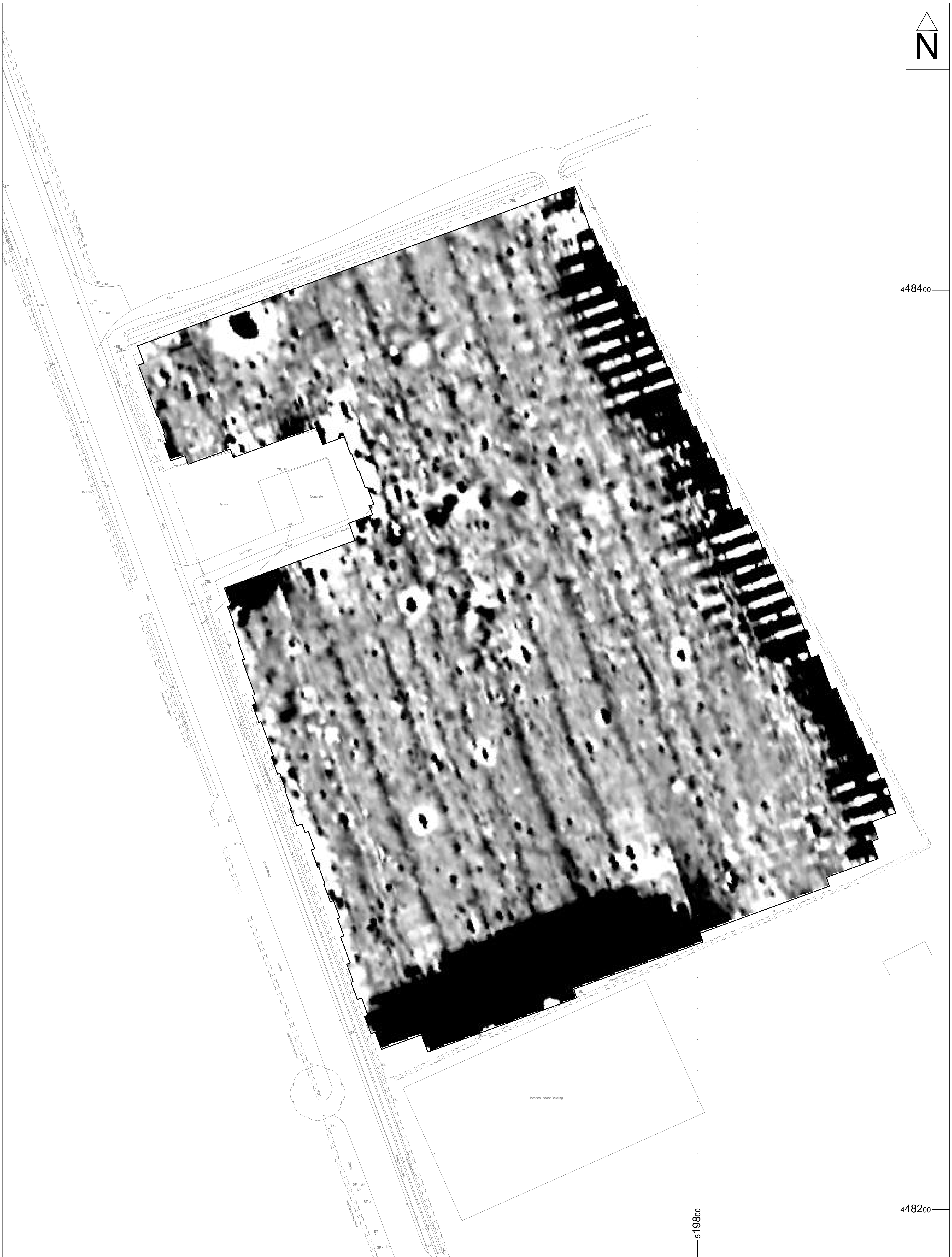
Title

	SURVEY AREA
	UNSUITABLE FOR SURVEY
1	PHOTO LOCATIONS

nT -1.0 2.0

0 30m

1:1000 @ A3



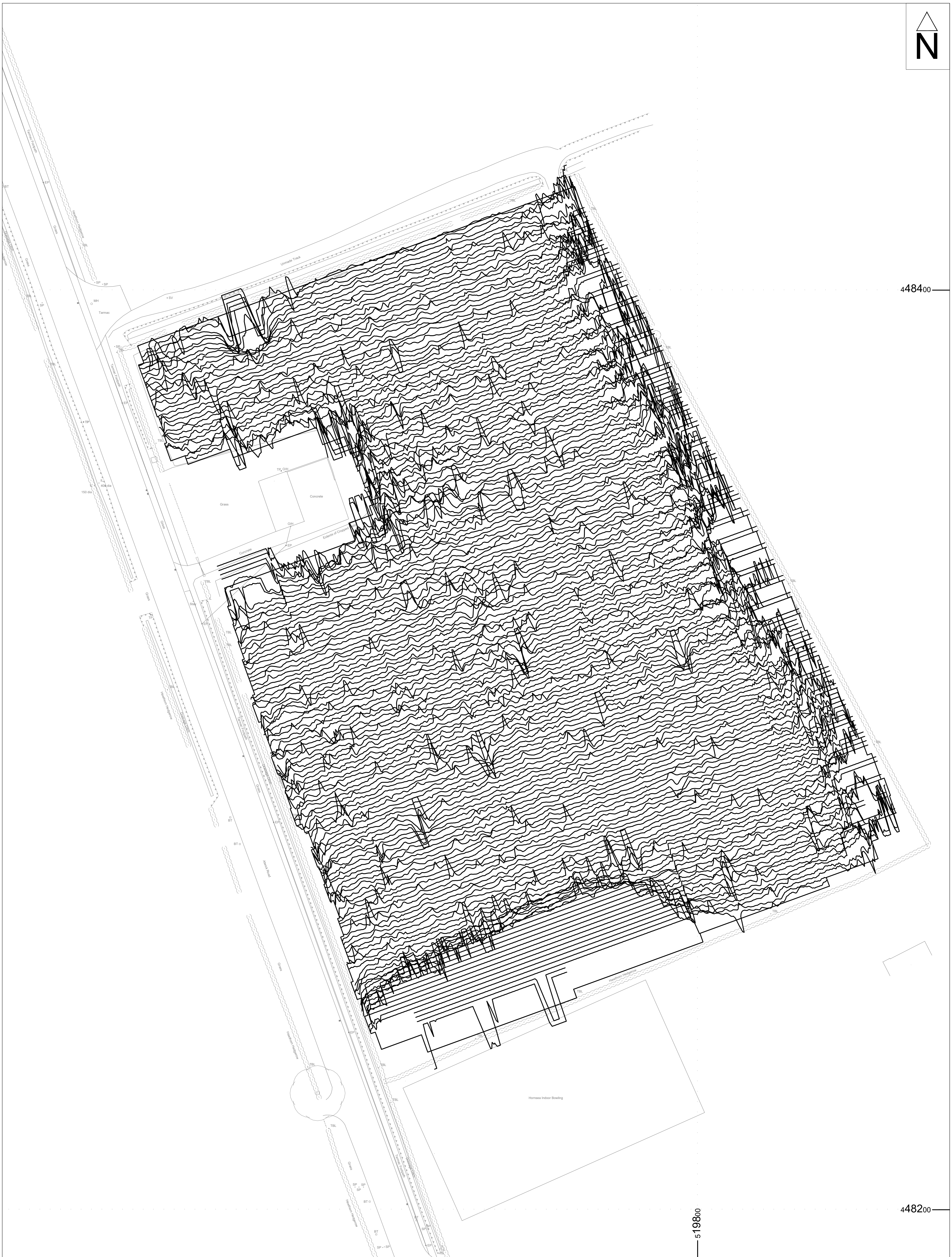
Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB41_ARH21

Processed magnetometer data

Fig.3



15.0 nT/cm

0 30m

1:750 @ A3

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB41_ARH21

XY trace plot of minimally processed magnetometer data

Fig.4

N

4484 00

4482 00

5198 00

Utilities Track

Hawthorn Hedgerow

Tarmac

Grass

Concrete

Ditch

Extents of Cropped Grass

Hornsea Indoor Bowling

Archaeological Services W Y A S,
Nepshaw Lane South, Morley, LS27 7JQ

Tel: 0113 535 0163 Email: archaeology@wyjs.org.uk www.aswyas.com

Project ID: XB41_ARH21

Interpretation of magnetometer data

Fig.5

Interpretation

FERROUS	GEOLOGY
MAGNETIC DISTURBANCE	GEOLOGY
RIDGE & FURROW	ARCHAEOLOGY?

0 30m

1:750 @ A3

Plate 1. General view of survey area, facing southwest

Plate 2. General view of survey area, facing northeast

Plate 3. General view of survey area, facing southwest

Plate 4. General view of survey area, facing northeast

Appendix 1: Magnetic survey - technical information

Magnetic Susceptibility and Soil Magnetism

Iron makes up about 6% of the Earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haemetite. These minerals have a weak, measurable magnetic property termed magnetic susceptibility. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms. Areas of human occupation or settlement can then be identified by measuring the magnetic susceptibility of the topsoil because of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently comes to fill features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of topsoils, subsoils and rocks into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected. The magnetic susceptibility of a soil can also be enhanced by the application of heat and the fermentation and bacterial effects associated with rubbish decomposition. The area of enhancement is usually quite large, mainly due to the tendency of discard areas to extend beyond the limit of the occupation site itself, and spreading by the plough.

Types of Magnetic Anomaly

In the majority of instances anomalies are termed 'positive'. This means that they have a positive magnetic value relative to the magnetic background on any given site. However some features can manifest themselves as 'negative' anomalies that, conversely, means that the response is negative relative to the mean magnetic background.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

It should be noted that anomalies interpreted as modern in origin might be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories that are used in the graphical interpretation of the magnetic data:

Isolated dipolar anomalies (iron spikes)

These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being present as a consequence of manuring.

Areas of magnetic disturbance

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.

Linear trend

This is usually a weak or broad linear anomaly of unknown cause or date. These anomalies are often caused by agricultural activity, either ploughing or land drains being a common cause.

Areas of magnetic enhancement/positive isolated anomalies

Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response on two or three successive traverses. In neither instance is there the intense dipolar response characteristic exhibited by an area of magnetic disturbance or of an 'iron spike' anomaly (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post-holes or by kilns. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

Linear and curvilinear anomalies

Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches.

Methodology: Gradiometer Survey

The main method of using the fluxgate gradiometer for commercial evaluations is referred to as ***detailed survey*** and requires the surveyor to walk at an even pace carrying the instrument within a grid system. A sample trigger automatically takes readings at predetermined points, typically at 0.25m intervals, on traverses 1m apart. These readings are stored in the memory of the instrument and are later dumped to computer for processing and interpretation.

During this survey a Bartington Grad601 magnetic gradiometer was used taking readings on the 0.1nT range, at 0.25m intervals on zig-zag traverses 0.5m apart within 30m by 30m square grids. The instrument was checked for electronic and mechanical drift at a common point and calibrated as necessary. The drift from zero was not logged.

The gradiometer data have been presented in this report in processed greyscale format. The data in the greyscale images have been interpolated and selectively filtered to remove the effects of drift in instrument calibration and other artificial data constructs and to maximise the clarity and interpretability of the archaeological anomalies.

Appendix 2: Survey location information

An initial survey station was established using a Trimble VRS differential Global Positioning System (Trimble R6 model). The data was geo-referenced using the geo-referenced survey station with a Trimble RTK differential Global Positioning System (Trimble R6 model). The accuracy of this equipment is better than 0.01m. The survey grids were then super-imposed onto a base map provided by the client to produce the displayed block locations. However, it should be noted that Ordnance Survey positional accuracy for digital map data has an error of 0.5m for urban and floodplain areas, 1.0m for rural areas and 2.5m for mountain and moorland areas. This potential error must be considered if co-ordinates are measured off hard copies of the mapping rather than using the digital co-ordinates.

Archaeological Services WYAS cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party.

Appendix 3: Geophysical archive

The geophysical archive comprises:-

- an archive disk containing compressed (WinZip 8) files of the raw data, report text (Microsoft Word 2000), and graphics files (Adobe Illustrator CS2 and AutoCAD 2008) files; and
- a full copy of the report.

At present the archive is held by Archaeological Services WYAS although it is anticipated that it may eventually be lodged with the Archaeology Data Service (ADS). Brief details may also be forwarded for inclusion on the English Heritage Geophysical Survey Database after the contents of the report are deemed to be in the public domain (i.e. available for consultation in the Humber Historic Environment Record).

Appendix 4: Oasis form

Summary for archaeol11-501744

OASIS ID (UID)	archaeol11-501744
Project Name	Geophysical Survey at Atwick Road, Hornsea
Activity type	Geophysical Survey, MAGNETOMETRY SURVEY
Project Identifier(s)	
Planning Id	
Reason For Investigation	Planning: Pre application
Organisation Responsible for work	Archaeological Services WYAS
Project Dates	21-Apr-2021 - 21-Apr-2021
Location	Atwick Road, Hornsea NGR : TA 19750 48330 LL : 53.917280501432, -0.17819671847182 12 Fig : 519750,448330
Administrative Areas	Country : England County : East Riding of Yorkshire District : East Riding of Yorkshire Parish : Hornsea
Project Methodology	The site grid was laid out using a Trimble VRS differential Global Positioning System (Trimble R6 model). The survey was undertaken using Bartington Grad601 magnetic gradiometers. These were employed taking readings at 0.25m intervals on zig-zag traverses 1.0m apart within 30m by 30m grids, so that 3600 readings were recorded in each grid. These readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation.

Project Results	A geophysical (magnetometer) survey was undertaken on approximately 1.9 hectares of land located on the east side of Atwick Road, Hornsea, East Riding of Yorkshire. Evidence for former ridge and furrow cultivation can be seen throughout the survey area. A handful of linear trends have also been recorded which may be of archaeological interest, possibly elements of a field system associated with a late Bronze Age enclosure which has been noted to the north of the site. Magnetic disturbance along the southern and eastern boundaries are due to an adjacent warehouse and high metal fencing. Based on the interpretation of the geophysical survey the archaeological potential of the Site is deemed to be low.
Keywords	
HER	Humber HER - unRev - STANDARD
HER Identfiers	
Archives	

Bibliography

BGS, 2021. www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html. British Geological Survey (viewed May 2021)

CIfA, 2014. *Standard and Guidance for Archaeological Geophysical Survey*. Chartered Institute for Archaeologists

CSAI, 2021. www.landis.org.uk/soilscapes Cranfield Soil and Agrifood Institute. Soilscapes map viewer (viewed May 2021)

GeoQuest Associates 2003 *Geophysical Survey of an area of land to the east of Atwick Road, Hornsea, East Riding of Yorkshire* (unpublished GeoQuest Associates report)

HE, 2021. https://historicengland.org.uk/listing/the-list/list-entry/1423379 (viewed May 2021)

HG, 2021. www.heritagegateway.org.uk (viewed May 2021)

MHCLG, 2019. *National Planning Policy Framework*. Ministry of Housing, Communities and Local Government.

Schmidt, A. Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A, and Fassbinder, J. 2015. *EAC Guidelines for the Use of Geophysics in Archaeology*. English Heritage