



POST-EXCAVATION ASSESSMENT
REPORT

HORNSEA LEISURE PARK
HORNSEA, EAST RIDING OF
YORKSHIRE

prepared for
Hornsea Leisure Ltd

NAA 21/98
November 2021

QUALITY ASSURANCE	
Project Number	2078
Report Number	21-98
Manager	Stuart Ross
Edit	Stuart Ross
Authorised	David W. Fell
<i>Issue 1</i>	24-11-2021

Disclaimer

This document has been prepared in good faith on the basis of information available at the date of publication without any independent verification for the exclusive use and benefit of the named client and for the sole purpose for which it is provided. Northern Archaeological Associates does not guarantee the accuracy, reliability, completeness, or currency of the content of this document nor its usefulness in achieving any purpose. This document is not intended to nor should it be relied upon by any third party. Northern Archaeological Associates accepts no responsibility nor liability should this document be used for any alternative purpose other than for which it is intended nor to any third party. Northern Archaeological Associates will not be liable for any loss, damage, cost, or expense incurred or arising by reason of any person using or relying on information in this document.

Authors Henry Atherden

Illustrations Dawn Knowles

Client Hornsea Leisure Ltd

Location Hornsea Leisure Park, Hornsea, East Riding of Yorkshire HU18 1EL

Planning Ref 20/00732/STPLF

Grid Ref TA 19799 49078

Dates of Fieldwork 6 May 2021 - 14 May 2021

**HORNSEA LEISURE PARK, HORNSEA, EAST RIDING OF YORKSHIRE
POST-EXCAVATION ASSESSMENT REPORT**

TABLE OF CONTENTS

Summary	
Introduction	1
Location, topography and geology	2
Summary archaeological and historical background	3
Aims and objectives	6
Methodology	7
Results	11
Discussion	18
Summary of the artefactual and environmental assessment	19
Statement of potential	22
Conclusions	22
Archive Deposition	23
References	24
Appendix A: Context catalogue	28
Appendix B: The lithics	29
Appendix C: The Handmade pottery	33
Appendix D: The Romano-British pottery	36
Appendix E: The metalworking residues	38
Appendix F: Assessment of the bioarchaeological potential of the palaeochannel	39
Appendix G: The biological remains	47

HORNSEA LEISURE PARK, HORNSEA, EAST RIDING OF YORKSHIRE

POST-EXCAVATION ASSESSMENT REPORT

Summary

This document presents the results of a programme of archaeological excavations carried out between the 6th and 14th of May 2021. The work was completed by Northern Archaeological Associates (NAA) on behalf of Hornsea Leisure Ltd as required by the Humber Archaeology Partnership (HAP) in advance of development extending the current leisure park.

The current works were undertaken within Area B of the development and include an area of strip, map and record excavation (North Trench) and an adjacent machine excavated trench through a known palaeochannel (South Trench). The second stage of this phase of mitigation required in Area A has yet to take place. This future work is currently unprogrammed and will be the subject of a separate report. The works were targeted in areas known to contain archaeological features identified during geophysical survey and trial trench evaluation of the site (NAA 2019a; 2020a). The investigations were requested by HAP in order to mitigate the loss of archaeological remains during the development of the park.

*A major objective of the work was to identify, characterise and assess the preservation of an enclosure ditch identified during the earlier trial trenching. The ditch (**5=13**) represented the only significant archaeological feature observed during excavations and is thought to have been a part of a wider field system visible in geophysical survey of the area. During the current work, the enclosure ditch was found to date to the Roman period and artefacts relating to nearby settlement were recovered from its fills. Other archaeological features identified included two gullies (**1** and **21**) and a pit (**19**). These features were associated with the enclosure ditch and thought to be part of the Romano-British phase of activity on site.*

*A poorly understood linear feature **3** that had previously been identified as an early iteration of ditch **5=13** was found to be later and unrelated to the ditch. It is now thought to relate to known medieval ridge and furrow field systems across the area and is therefore part of a later phase of activity.*

Artefacts recovered from site included prehistoric worked flint, pre-Roman Iron Age pottery, Roman period pottery, and industrial waste in the form of fired clay and slag. Some animal bone was also recovered but this, and the paleoenvironmental remains recovered from site, were less well preserved and yielded largely indeterminate results.

Excavation of the palaeochannel and the recovery of column samples from its fills was undertaken in consultation with Historic England's Scientific Advisor. Unfortunately, the results of this work were uninformative as the sampled deposits were largely organically sterile.

1.0 INTRODUCTION

- 1.1 This document presents the results of archaeological strip, map and record excavations carried out on land to the south of Hornsea Leisure Park, Hornsea, East Riding of Yorkshire (NGR TA 19799 49078; Fig. 1). The work was undertaken between the 6th and 14th of May 2021 by Northern Archaeological Associates (NAA) on behalf of Hornsea Leisure Ltd. It represented part of the final phase of mitigation required by Humber Archaeology Partnership (HAP) in accordance with planning consent granted for the extension of the current leisure park (Planning Ref: 20/00732/STPLF).
- 1.2 The final phase of mitigation includes archaeological investigation of two areas (Area A and B). Area A is situated within the footprint of the current park and is currently in use as amenity grassland at the western entrance to the leisure park (Fig. 2). Area B is located to the south of the current leisure park. The results described in this report detail work undertaken exclusively in Area B. The second stage of this phase of mitigation required in Area A has yet to take place. This future work is currently unprogrammed and will be the subject of a separate report.



Figure 2: Google Earth extract showing Area A and Area B. Image © Google Earth 7/01/2018.

- 1.3 Work in Area B was informed by earlier evaluation of the proposed development area (PDA) by geophysical survey and trial trenching (NAA 2019a; 2020a). Area B comprised two trenches, the North Trench and the South Trench (Fig. 3). The North Trench was

targeted over known archaeological features in order to better understand the character, chronology and significance of the features. The South Trench was sited to expose the course of a known palaeochannel and following its excavation, recover environmental samples from its fills.

- 1.4 All work was carried out in accordance with a Written Scheme of Investigation (WSI) prepared by NAA in October of 2020 (NAA 2020b) and approved by the HAP Development Management Archaeologist and Historic England Scientific Advisor. The WSI was compliant with all relevant standards, guidance and best practice published by Historic England (2015a and 2015b), the Chartered Institute for Archaeologists (CIfA 2014a, 2014b and 2014c) and English Heritage (1995 and 2008).

2.0 LOCATION, TOPOGRAPHY AND GEOLOGY

Location

- 2.1 Hornsea Leisure Park is approximately 1.6km north of the centre of Hornsea, in the East Riding of Yorkshire (Fig. 1). The PDA, within which Area B was located, was situated to the south of the current park (Fig. 2).
- 2.2 The PDA comprises two adjacent fields. The area is bordered to the north by the southern boundary of the current leisure park, to the west by Northorpe Farm, to the south by arable farmland and to the east by Cliff Road. Area B is located centrally within the easternmost of the two fields (Fig. 3).

Topography and land use

- 2.3 The PDA is set on a gentle south-east-facing slope. The highest part of the site is located to the north-west and is at c.18m above Ordnance Datum (aOD). The lowest area is to the south-east, which lies at c.17m aOD. The whole PDA was under pasture at the time of excavations, but has until recently been under cultivation as arable farmland.

Geology

- 2.4 The solid geology comprises sandstone of the Rowe Chalk Formation, and superficial deposits largely comprise Devensian till (BGS 2021). The soils are mapped as Holderness Association (SSEW 1983). Holderness Association is largely composed of slowly permeable fine loamy and moderately permeable coarse loamy soils on chalky till and glaciofluvial drift (Jarvis *et al.* 1984, 273).

3.0 SUMMARY ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Prehistoric to Roman period

- 3.1 A probable henge monument known as the East Field cropmark is located to the south of the PDA (Historic England National Heritage List for England (NHLE) 1423379, Fig. 3). The monument is roughly circular, measuring c.50m in diameter, and is defined by three ditches, each c.6–8m in width. A break in the circuit of ditches is present on the south-east side, which most likely forms an entrance. At the centre of the enclosure is a circular feature measuring c.15m in diameter, which may be a related ritual building or structure. The henge probably dates to the Late Neolithic period (c.2800–2000BC). No evidence of Neolithic activity was identified during the earlier trial trenching or the current excavations.
- 3.2 The henge is thought to have been repurposed as a ringwork enclosure in the Late Bronze Age (c.1000–750BC) with associated co-axial field system established at around the same time. The field system was set on a south-east to north-west alignment and comprised two large rectangular fields defined by substantial ditches, one of which enclosed the henge monument (Fig. 3). The cropmark evidence suggests the northern field boundary deviates to accommodate the henge, indicating that the Neolithic structure was present when the field system was first introduced.
- 3.3 Very limited evidence of prehistoric activity was identified across the PDA during trial trenching in 2019 (NAA 2020a). Two partial ring-gullies (**50** and **54**) were recorded towards the centre of Area A, potentially related to settlement. In Area B, three pieces of worked flint were recovered, dated typologically to the Early Bronze Age. One of these, a primary flake, was recovered from the tertiary fill (**77**) of ditch **75** exposed in Trench 8, which occupied the site of the current North Trench (Fig. 3). However, ditch **75** also contained a fragment of 1st-century AD pottery, demonstrating that the flint was residual, and the feature had been infilled during the Early Roman period.
- 3.4 Evidence of Iron Age and Roman activity within the area is sparse; principally, it comprises pottery sherds and metalwork collected by the Morfitt family in the early 20th century, together with the recovery of several complete Roman greyware pots that had eroded from the cliff at Atwick. Two Iron Age coins were found on the beach near Hornsea, and a probable Iron Age chariot burial has been excavated in the town (Harrison 2005, 53–9).

Early medieval

- 3.5 Little evidence of early medieval activity has been recorded in the immediate vicinity of the PDA. During construction of the Hydro Hotel in Hornsea, a 6th-century Anglo-Saxon cemetery (HAP Historic Environment Record (HER) 3547) was identified, and a bone comb of similar date was found on the beach (HAP HER 3548).

Later medieval

- 3.6 The former medieval hamlet of Northorpe (HAP HER 8893) lay on the east side of Atwick Road to the west of the PDA. The township of Torp (Thorpe) was first recorded in the 1086 Domesday Survey, although it is uncertain whether 'Torp' refers to Northorpe or Southorpe both of which are within the vicinity. The first reference to Northorpe itself appears in 1198. In 1377, the poll-tax register lists seven taxpayers at Northorpe, 28 tenants at Southorpe and 264 at Hornsea, indicating a small hamlet on the outskirts of the township.
- 3.7 The extent and layout of Northorpe can be inferred from the 1809 enclosure map (ERALS IA/82). The map shows a series of small irregularly shaped plots set along and slightly back from Atwick Road, with large rectangular fields adjoining to the east. Archaeological excavations undertaken in 2015 identified a series of medieval plot boundaries associated with the former medieval hamlet, and evidence of medieval/post-medieval agriculture to the east and within Area A (NAA 2015 and 2019a). The latter suggests that the site has been under periodic arable cultivation from at least the medieval period.
- 3.8 Area B was part of the 'East Field' of the Hornsea townfield system. The adjacent North Field (later West Field) on the opposite side of Atwick Road is also shown on early maps of the area. The East Field extended to the cliff edge, as shown on the 1809 enclosure map, with small strips of land along the cliff top. Documentary evidence records a considerable amount of land erosion into the sea over time, with 240 yards (219m) allegedly having been lost between 1547 and 1609, and a further 100–200 acres (40–80ha) lost by 1637 (VCH 2002).

Post-medieval and modern

- 3.9 There are no documentary references to Northorpe after the 17th century, when the settlement seems to have been largely abandoned. Notably, there are no buildings shown on the 1809 enclosure map, although Poulson writes that local people recall

'stones being dug up...which seemed to be part of buildings' in the early 19th century (Poulson 1840, 340).

- 3.10 By the publication of the First Edition Six-inch Ordnance Survey (OS) map in 1852 (not reproduced), most of the now deserted medieval garths associated with Northorpe had disappeared, with only two plots surviving, both immediately east of Area B. The most southerly of these formed part of a large block of land noted as 'Church Land' on later OS maps. This included the field containing the East Field henge and was probably glebe land. There is no indication that there was ever a church or chapel associated with Northorpe.
- 3.11 Northorpe Farm was constructed sometime between 1852 and 1890 and was a courtyard farm in the High Victorian tradition. A smaller farmstead—Northorpe Cottage—was built to the south. The associated field layout remained little altered over the following years until the leisure park was established in the 1970s. The 1971 OS map (not reproduced) shows an electricity substation in the south-east corner of Area B (at NGR TA 20239 49185).

Geophysical survey

- 3.12 The PDA has been subject to two separate phases of geophysical survey during 2013 and 2019 (PSI 2013; NAA 2019).
- 3.13 The 2013 geophysical survey was carried out in the north-eastern part of the PDA and in the vicinity of Area A (Fig. 2 and 3). It identified several linear anomalies and trends to the west of Area A. These were thought to represent features relating to the known medieval village of Northorpe, as several matched the alignments of garths visible in historic mapping.
- 3.14 The 2019 geophysical survey was undertaken in the southern part of the PDA and covered the site of Area B. It recorded trends thought to represent the extension of a Late Bronze Age coaxial field system, which has been observed as cropmarks within the field to the south of the PDA.
- 3.15 The results of these geophysical surveys informed the previously undertaken programme of trial trench evaluation requested by HAP and carried out by NAA in 2019 (NAA 2020a), and the current strip, map and record works at Area B.

4.0 AIMS AND OBJECTIVES

4.1 The aims and objectives of the work undertaken in Area B are described in two categories. Those relating to the strip, map and record excavation in the North Trench and those relating to the paleoenvironmental sampling of the palaeochannel in the South Trench.

Strip, map and record

4.2 The main aim of the archaeological strip, map and record excavation was to identify the presence and location of archaeological remains, and to sample and record any such remains in order to achieve their 'preservation by record'.

4.3 The objectives of the archaeological work were to:

- establish the presence, nature, extent, preservation and significance of a ditch that had been identified during the trial trench evaluation (NAA 2020);
- establish the presence, nature, extent, preservation and significance of any other archaeological remains within the immediate vicinity of the above;
- provide a detailed record of any such archaeological remains;
- recover and assess any associated structural, artefactual and environmental evidence;
- undertake a programme of investigation that meets with national and regional standards (Historic England 2015a; ClfA 2014a–d); and,
- prepare an illustrated report on the results of the archaeological investigations to be deposited with the Humber HER.

Paleoenvironmental sampling

4.4 The aim of the paleoenvironmental sampling was to provide a greater understanding of environmental change over time, as it relates to activity on the site and the wider ecological history of the area (Campbell *et al.* 2011).

4.5 The objectives of the sampling strategy were to:

- formulate and conduct a sampling strategy in accordance with current best practice and professional guidelines (Campbell *et al.* 2011; English Heritage 2008b and 2010);

- to have any charcoal, cereal grains, pollen, molluscs and macro-environmental material analysed by an environmental specialist;
- prepare a report detailing the results of the palaeoenvironmental sampling to be included with the main mitigation report and deposited with the Humber HER.

5.0 METHODOLOGY

5.1 The methodology was compiled in consultation with HAP and Historic England with reference to *Yorkshire, the Humber and the North-East: A Regional Statement of Good Practice for Archaeology in the Development Process* (SYAS 2018).

Standards and guidelines

5.2 The following methodology is based on NAA's previous experience of undertaking similar work and with reference to the following published standards and guidelines of practice:

- Standard and Guidance for Archaeological Excavation (ClfA 2014d);
- NPPF Planning Practice Guidance: Conserving and Enhancing the Historic Environment (MHCLG 2019);
- Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (ClfA 2014a);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England 2015a);
- Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (Campbell *et al.* 2011);
- A Strategy for the Care and Investigation of Finds (English Heritage 1995);
- Conservation Principles, Policies and Guidance: For the sustainable management of the historic environment (English Heritage 2008a); and
- First Aid for Finds (Watkinson and Neal 2001).

5.3 Research objectives were set out in accordance with the regional research agenda (Roskams and Whyman 2007). The fieldwork at Hornsea Leisure Park was thought to have the potential to inform the following research priorities:

- 2.3, The Neolithic period – including landscape, settlements and monuments in the eastern Yorkshire and wider relations between Yorkshire and regions beyond.

- 2.4, The Bronze Age – including landscape enclosure and intensification of agriculture; settlement pattern and subsistence reflected in material culture; transition/continuity between the Bronze and Iron Age.
- 2.8, The High Medieval Period – relationship of agriculture to settlement; nature of the medieval agricultural landscape. Material culture: ceramics.

Machine excavation

- 5.4 All mechanical excavation was carried out using a back-acting excavator fitted with a toothless ditching bucket under the direct supervision of a monitoring archaeologist.
- 5.5 Overburden, comprising topsoil and subsoil, was removed down to a level at which significant archaeological deposits were identified or down to natural subsoil deposits, whichever was exposed first.
- 5.6 Topsoil and subsoils were stored separately to facilitate reinstatement after archaeological recording.

Scale and scope of the strip, map and record excavation

- 5.7 Strip, map and record excavation was required in two areas (Area A and B) to fulfil the terms of the planning condition placed upon the development. The current report details the results of investigations within Area B. Work in Area A will be completed at a later date, the timing of which will be determined by the overall development plan of the leisure park, with the provision that archaeological work would be completed before development commences in that area.
- 5.8 Area B comprised two trenches, the North Trench and the South Trench. The North Trench was c.15m by 35m (525m²) in area and targeted the course of an enclosure ditch. The South Trench was c.10m by 15m in area and aimed to facilitate paleoenvironment sampling of a known palaeochannel which crossed the area.
- 5.9 Provision was made in the WSI for an expansion of the stripped areas if significant remains were identified in order to suitably investigate, sample and record any features and deposits (NAA 2020b).
- 5.10 It stipulated that variation to strategy may be required if:
- a feature varied from the course/form anticipated;
 - a feature formed part of a larger field system or enclosure;

- a dense concentration of significant archaeological features was exposed; or
- evidence of burial, ritual or settlement activity was exposed (e.g., human remains, structures, concentrations of domestic waste or monuments).

5.11 Archaeological remains identified in Area B did not fulfil the criteria for a revised mitigation strategy.

Hand excavation

5.12 After overburden had been removed by machine, all excavation within the North Trench was undertaken by hand. In the first instance, features and deposits were cleaned and assessed to characterise their extent, nature and potential significance so that a suitable excavation strategy could be determined.

5.13 Where structures, finds, features or layers of archaeological interest were exposed, they were excavated by hand to characterise the site's archaeology and ensure recovery of any artefactual and environmental evidence. In particular, excavations concentrated on intersections of features to help determine phasing. A representative sample of the archaeological features and deposits were excavated as specified by HAP. This comprised:

- a minimum 20% sample of all field boundary ditches up to 5m in length;
- a minimum 10% sample of linear features greater than 5m in length;
- a minimum 20% sample of all enclosure ditches along the length exposed, or 100% if warranted for dating purposes;
- all junctions / intersections and corners of linear features (where exposed) and all ditch terminals;
- a 50% sample of pits with a diameter of up to 1.5m;
- a minimum 25% sample of pits with a diameter of over 1.5m, to include a complete section across the feature to recover a full profile, and
- 100% sample of funerary contexts, buildings, industrial features, and stake holes. Ditches around barrows and round-houses, subject to initial sample excavation, with the potential to then be fully excavated.

Column sampling of the palaeochannel

5.14 To mitigate against any potential loss of palaeoenvironmental information (e.g., charcoal, cereal grains, pollen, molluscs and macro-environmental material) environmental samples were taken from the palaeochannel present in the South Trench.

- 5.15 Following removal of overburden, the palaeochannel fills were removed mechanically. This comprised a 2m by 15m trench which exposed a section through the feature and facilitated the recovery of column samples, and recording of the features section. It should be noted that the natural water table in the area was at such a level that water pumps were needed to facilitate excavation and sampling of the trench.
- 5.16 Monolith samples were collected in tins from the vertical section on opposing section faces. One monolith sample was assessed for palaeoenvironmental potential and a report produced, which is included as 'Appendix F' within this report. The second sample has been retained to facilitate sub-sampling for different paleoenvironmental proxies and full analysis, if required (Campbell *et al.* 2011; English Heritage 2008b and 2010). The strategy for this work was agreed in consultation with the HAP, the Historic England Regional Science Advisor (Yorkshire) and the Client in advance of work commencing.
- 5.17 Excavation and sampling of the palaeochannel was carried out as part of the overall programme of mitigation in Area B and in conjunction with the excavation of the North Trench.

Recording

- 5.18 A full written, drawn and photographic record was made for all work, using NAA's standard pro-forma record sheets. Accurate scale plans and section drawings were produced at 1:50, 1:20 and 1:10 scales as appropriate.
- 5.19 The location of any archaeological features, together with the edges of the excavated areas, was surveyed by sub-centimetre accurate GPS.
- 5.20 A photographic record of all contexts was taken in digital format at a minimum resolution of 12 megapixels. Photos included a clearly visible, graduated metric scale. All photography was carried out in accordance with current guidance (Historic England 2015b).

Finds recording

- 5.21 Animal bones and other finds were recovered, processed, and stored in accordance with established guidelines (English Heritage 1995; Watkinson and Neal 2001; Baker and Worley 2019). Significant objects, such as flint tools, worked bone and metal objects that would require a three-dimensional recording of their findspot were not

encountered. Finds have been appropriately recorded and processed using the NAA system and submitted for post-excavation assessment, the results of which are included in this report.

Environmental sampling

- 5.22 Soil samples were taken from appropriate deposits. The processed material was submitted to the named specialist for assessment of the environmental potential for inclusion in this report. Recovery and sampling of environmental remains was in accordance with published guidelines (Campbell *et al.* 2011; English Heritage 2008b and 2010).
- 5.23 Where animal bone was identified, it was collected by hand. No large assemblages of bone were present.

Date-sampling

- 5.24 Secure contexts will be sampled (as sub-samples of processed bulk samples) for radiocarbon (C-14) dating as appropriate following post-excavation assessment. Samples will be processed in accordance with published guidelines (English Heritage 1998).

6.0 RESULTS

- 6.1 The following presents the results of excavations carried out within two trenches located within Area B. Two pits and a series of linear features were exposed in the North Trench, which included a previously identified enclosure ditch. The South Trench contained a palaeochannel, and excavations were undertaken to assess the palaeoenvironmental potential of its fills.

Area B: The North Trench

- 6.2 The North Trench was 15m by 35m (525m²) in area and was orientated north to south (Fig. 4). The trench was located on a gradual south-facing slope. The excavated area targeted known archaeological remains that had previously been identified during trial trenching (NAA 2020a). These comprised two intercutting ditches that were thought to represent subsequent iterations of the same substantial boundary. The ditches were further investigated during the current programme of work as features **3** and **5=13**. This has allowed re-evaluation of the function and phasing of the features.

- 6.3 The natural subsoil (**8=28**) was encountered c.0.3m below ground level and at a height of c.17.8m aOD at the north end of the trench, and c.16.92m aOD to the south. The natural subsoil (**8=28**) comprised mid-yellowish brown, slightly sandy clay with occasional sub-rounded and sub-angular stone inclusions.
- 6.4 Stratigraphically, the earliest feature was an area of disturbed natural subsoil (**20**) that was identified in the centre of the stripped area (Fig. 4). It differed from the surrounding natural subsoil (**8=28**) and had resulted from heavy localised root disturbance. Deposit **20** had been cut to the east by a gully (**21**).



*Plate 1: Oblique shot of north-facing section through gully **21**, pit **18** and ditch **5=13**; 1m and 2m scales shown.*

- 6.5 Gully **21** (Fig. 4; Plate 1) was aligned north-west to south-east and was c.10m long. It had a shallow U-shaped profile that was 0.95m wide and 0.23m deep (Fig. 5, Section 8). The single fill (**22**) of gully **21** was a mid-yellowish brown, slightly sandy, clay silt with frequent sub-angular stone inclusions. It contained four sherds of handmade pottery that may date from the Pre-Roman Iron Age (PRIA) or Roman period, all of which were derived from the same vessel. Gully **21** had been cut to the north-east by ditch **5=13**, which had removed any continuation of the gully to the south-east or north-west. Ditch **5=13** had also cut a pit (**18**) to the east.
- 6.6 Pit **18** (Fig. 4; Plate 2) was lozenge shaped in plan and measured c.1.5m north-east to south-west by c.0.5m north-west to south-east. It was up to 0.15m deep with a U-shaped profile (Fig. 5, Section 8). Pit **18** was filled by mid-greyish brown, clay silt with

occasional charcoal fragments and sub-angular stone (**19**). Charcoal fragments were recovered from fill **19**, although wood species could not be identified.



Plate 2: North-west-facing section through pit 18; 1m scale shown.

- 6.7 Ditch **5=13** had been identified during earlier trial trenching (NAA 2020a). During the current phase of investigations, ditch **5=13** was exposed for c.25m and displayed a north-west to south-east alignment (Fig. 4). It was up to c.3.1m wide at its south-east end and narrowed to c.0.8m wide to the north-west. The variation of width most likely resulted from a greater level of truncation by later ploughing on the higher ground to the north. Ditch **5=13** (Plate 3; Fig. 5, Sections 2, 7 and 8) had a wide V-shaped profile with a maximum depth of 0.9m. It had cut a deposit (**12=30**) that was associated with the palaeochannel investigated in the South Trench (discussed below). Ditch **5=13** was filled by two deposits. Primary fill **6=14=24** and secondary fill **7=15=23**, which were present in all interventions made through the ditch. The secondary/upper fill of ditch **5=13** had been cut by linear feature **3**.
- 6.8 The primary fill (**6=14=24**) of ditch **5=13** comprised mid-yellowish brown, slightly sandy clay silt with occasional charcoal and coal inclusions that was up to 0.43m thick. There was little variation in the composition of the primary fill over the length of the feature. No artefacts were recovered from the primary fill (**6=14=24**); however, charcoal fragments collected from the base of the deposit were identified as oak (*quercus*), and further fragments of coal, cinder, and indeterminate charcoal were also recovered (Appendix G).



Plate 3: North-facing section through ditch 5=13 cut by linear feature 3; 2m scale shown.

- 6.9 The secondary/upper fill (7=15=23) of ditch 5=13 consisted of mid-yellowish brown, slightly sandy clayey silt with occasional charcoal flecking and infrequent sub-angular stone inclusions. The deposit was not more than 0.5m thick. Fill 7=15=23 contained a possible Mesolithic flint bladelet (Appendix B); 17 sherds of handmade pottery that may date to the PRIA or Roman period (Appendix C); two sherds of Roman period greyware (Appendix D); 23 fragments of fired clay (Appendix E); 5 pieces of iron slag (Appendix E) and 19 fragments of animal bone (Appendix G). Two of the animal bones had been burnt. The deposit also contained unidentifiable charcoal, coal and cinder (Appendix G). Fill 7=15=23 was truncated by linear feature 3.
- 6.10 Gully 1 was located in the north-east corner of the trench (Fig. 4). It was aligned north-west to south-east and was broadly parallel with ditch 5=13 at a distance of c.8m. The gully (1) was c.16.5m long within the stripped area and was up to 0.68m wide. It had a U-shaped profile that was 0.23m deep and was filled by a single homogenous deposit of mid-brown clay silt with rare charcoal flecking and occasional sub-angular stone inclusions (1; Fig. 5, Section 5). The only finds recovered from the fill (1) were occasional fragments of charcoal, coal, and cinder. Gully 1 had been cut centrally by linear feature 3.
- 6.11 Stratigraphically, north-south linear feature 3 was the latest feature of archaeological significance (Fig. 4; Plate 4). It was c.33m long and continued beyond the northern trench edge. To the south, the feature had been completely removed by modern ploughing 2m from the southern edge of excavation where it overlay the north edge of

a deposit (12=30) associated with the palaeochannel investigated in the South Trench (discussed below). The linear feature (3) was 3.3m wide with a shallow concave profile to a depth of 0.17m with an uneven base (Fig. 5, Section 1). It was filled with mid-yellowish brown, slightly sandy clay silt (4) with frequent sub-angular and infrequent charcoal inclusions that contained three worked stone objects. These included a single unfinished *petit tranchet* style arrowhead that may date to the Late Neolithic period, and a chronologically undiagnostic flint flake and unclassified fragment (Appendix B). All three of these flints are thought to be residual given the known chronology of the underlying stratigraphic sequence. Fill 4 also contained indeterminate charcoal, coal, and a single charred wheat (cf. *Triticum*) grain (Appendix G).



Plate 4: South-facing section through linear feature 3; 1m scale shown.

- 6.12 The linear feature (3) could conceivably represent either a narrow trackway or wide plough furrow. Its alignment corresponded with that of the known medieval field system that was fossilised in the field boundaries located to the east and was broadly consistent with a short section of furrow exposed c.6m to the east in Trial Trench 8 of the earlier evaluation (Fig. 4). Linear feature 3 had an uneven base, which may have resulted from plough action or perhaps rutting associated with the movement of vehicles.

- 6.13 The linear feature **3** was truncated by a modern north-south field drain (**29**), which was in turn sealed by a modern subsoil (**17=27**). Subsoil **17=27** comprised mid-brown clayey silt with occasional sub-angular and sub-rounded stones that was up to 0.45m thick. It was present across the southern two thirds of the trench.
- 6.14 Topsoil **16=26** sealed all features and deposits. It comprised mid-greyish brown clayey silt with infrequent sub-angular stone inclusions. No finds were recovered from this deposit.

Area B: The South Trench

- 6.15 The South Trench measured 10m by 15m (150m²) in area (Fig. 3). It was excavated to expose a palaeochannel (**11**) that had been identified during earlier of trial trenching (NAA 2020a).
- 6.16 The natural subsoil (**8=28**) was encountered c.0.5m below ground level and at a height of c.16.55m above Ordnance Datum (aOD) at the northern end of the trench. It comprised mid-yellowish brown and light grey sandy clay with occasional sub-rounded and sub-angular stone inclusions. The natural subsoil (**8=28**) was cut by palaeochannel **11** for the full length of the trench.
- 6.17 Palaeochannel **11** was aligned north-west to south-east. It was over c.25m wide and continued beyond the limit of the trench in all directions. The northern edge of the palaeochannel was identified in the North Trench. Palaeochannel **11** was c.1.3m deep with a wide V-shaped profile. It was filled by three deposits (**32**, **25=31** and **12=30**).
- 6.18 The primary fill (**32**) of palaeochannel **11** was a light brownish grey clayey silt that was up to c.0.2m thick. Deposit **32** had most likely formed naturally during the gradual accumulation of water borne silt at the base of the channel. It was sealed by deposit **25=31**.
- 6.19 The secondary fill (**25=31**) consisted of mottled light brownish grey, slightly clayey silt with uneven mid-orange brown patches throughout. Fill **25=31** was no more than c.0.45m thick with rare, rounded stone and decayed root inclusions. It was sealed by deposit (**12=30**).



*Plate 5: Column sampling of west-facing section through palaeochannel **11**; no scale shown.*

- 6.20 The tertiary palaeochannel fill (**12=30**) was a mottled light brownish grey, slightly clayey silt with occasional mid-orange brown patches. It was up to c.0.7m thick with occasional rooting and rare coal inclusions. Deposit **12=30** was the upper fill of the palaeochannel (**11**) within the South Trench. This deposit was also identified during excavations in the North Trench demonstrating the palaeochannel was extensive across the area (Fig. 4). In the North Trench deposit **12=30** was cut by ditch **5=13** and linear feature **3**. The material may have represented a subsoil that had accumulated at the upper level of palaeochannel **11** when the feature survived as a slight earthwork. In the South Trench, deposit **12=30** was sealed by the topsoil (**16=26**).
- 6.21 No finds were recovered from any of the fills of palaeochannel **11**. Column samples were taken from the exposed sections of the feature (Plate 5; Fig. 5, Sections 9 and 10) and submitted for assessment to ascertain the ecological potential of the fills. The deposits sampled were judged to be largely ecologically sterile and therefore of little interpretive value. The few macrofossils that were recovered from the deposits comprised rush capsules and some possible marsh cinquefoil. These were considered consistent with the expected immediate environment of a palaeochannel but of no value with regard to the wider environment (Appendix F).

7.0 DISCUSSION

- 7.1 Investigations in the North Trench identified two phases of activity which, although the dating evidence is weak, most likely date from the Romano-British and medieval periods.
- 7.2 The earliest phase of activity was characterised by four features including ditch **5=13**, gullies **2** and **1**, and pit **19**. Ditch **5=13** had been recorded by earlier geophysical survey (Fig. 3) and appeared to represent part of a field system visible as both anomalies upon the results of the survey, and as crop marks to the south. Stratigraphically, the earliest significant feature was gully **2**, which had been recut by ditch **5=13**. Of these features, gully **21** and ditch **5=13** contained fragments of handmade pottery of a type that may date from the pre-Roman Iron Age to the Roman period; however, the presence of Romano-British greyware in the upper fill of ditch **5=13** suggests all features date to this period. Gully **1** was located parallel and to the north-east of ditch **5=13**. It contained no chronologically diagnostic finds; however, the alignment of the gully may suggest it is also probably of Roman origin and represents part of the same phase of land division defined by ditch **5=13**. An undated pit (**19**), which contained fragments of charcoal consistent with fuel waste, may also have been contemporary with the ditches.
- 7.3 There was little indication of the function of the land apportioned by the linear features during this early phase of activity. The presence of iron slag and fired clay may suggest iron smithing was being undertaken in the vicinity, with the pottery representing domestic occupation associated with this industry. It is also noted that some of the charcoal exhibits signs of vitrification, further suggesting industrial activity in the area. A single Mesolithic flint bladelet was residual in this context but does demonstrate earlier activity in the area.
- 7.4 Linear feature **3** was stratigraphically the latest significant feature present in the North Trench. It represented a second phase of activity in the area. No chronologically diagnostic material was recovered to date the feature, other than a residual Late Neolithic flint arrowhead. However, its alignment was clearly at odds with the stratigraphically earlier Romano-British features and was consistent with the known medieval field system recorded during the earlier evaluation and fossilised within the field boundaries to the east. The function of linear feature **3** was not clear. It had a shallow and uneven base that may have resulted from plough action, suggesting it was

a furrow. However, it is conceivable that the feature was a trackway, and the base was formed by rutting associated with the movement of vehicles.

- 7.5 Investigations in the South Trench confirmed the presence of palaeochannel **11**. The northern edge of deposits associated with the palaeochannel were present at the south end of the North Trench (**12=30**). Unfortunately, the column samples recovered from the fills of the feature proved to be uninformative. The sampled material was found to be largely ecologically sterile and what few remains were identifiable were of little qualitative value. Species identified such as rush (*Juncus*) capsules and some remains thought to represent marsh cinquefoil (*Potentilla palustris*) might be expected in an immediate wetland environment and provide little information as to the wider ecological history of the area.

8.0 SUMMARY OF THE ARTEFACTUAL AND ENVIRONMENTAL ASSESSMENT

The lithics (J. Shoemark)

- 8.1 A total of 4 lithics recovered from the site derived from two contexts. A small bladelet thought to potentially be Mesolithic in date was retrieved from context **7**, the upper fill of ditch **5=13**. The remainder of the assemblage—including an unfinished *petit tranchet* arrowhead thought to date to the Neolithic period—came from context **4**, the fill of a track or furrow (**3**). All the lithics were thought to be residual in the contexts they came from.

Archaeological potential

- 8.2 This small assemblage is not recommended for further analysis, the early date of the bladelet potentially extends the established prehistoric chronology of the area but is otherwise uninformative.

Recommendations

- 8.3 It is recommended that the two fragments of debitage be discarded, but the bladelet and arrowhead retained and deposited with the site archive.

The handmade pottery (C. G. Cumberpatch)

- 8.4 The assemblage comprised 21 sherds of handmade pottery from two contexts. Four sherds were found in deposit **22**, the fill of gully **21**. The remainder of the assemblage was recovered from the upper fill (**7=15=23**) of ditch **5=13**. Only one rim sherd was present, it was considered to be a fragment of a Vertical-rim Jar which is thought to date

to between the 4th century BC and the 4th century AD. Due to the long date ranges associated with handmade pottery it is currently unclear whether the production of this type of jar extended into the post-Roman period.

Archaeological potential

- 8.5 Though small, the assemblage contributes to the growing overall body of information on the production and circulation of handmade pottery in East Yorkshire.

Recommendations

- 8.6 It is recommended that the assemblage be deposited with the rest of the site archive for future reference.

The Romano-British pottery (C. Britton)

- 8.7 A total of 2 sherds of wheel thrown Roman period pottery were recovered from Area B. The sherds were recovered from the upper fill (7=15=23) of ditch 5=13, which was also found to contain handmade pottery sherds. Both sherds were common indeterminate greywares, the forms of which could not be further identified. The sherds could only be dated broadly to the Roman period.

Archaeological potential

- 8.8 This very small assemblage has limited archaeological potential, the sherds are undiagnostic and are moreover highly typical of the region and period.

Recommendations

- 8.9 No further study is required, and it is recommended that the assemblage be discarded.

The metalworking residues (R. Mackenzie)

- 8.10 A total of 23 fragments of fired clay and 5 fragments of slag were retrieved from context 7=15=23 the upper fill of ditch 5=13. The assemblage of fired clay weighed c.190g and comprised fragments between 1cm and 8cm in length. The fired clay was similar to a type found in a traditional clay-lined blacksmiths hearth and some of the pieces of fired clay were observed to have a slag layer adhering to the surface of the clay. The slag fragments weighed approximately 127g and were thought to relate to iron smithing.

Archaeological potential

- 8.11 The assemblage is not recommended for further analysis, but it does indicate possible iron smithing activity in the vicinity of the site.

Recommendations

- 8.12 The assemblage is recommended for discard.

Assessment of the bioarchaeological potential of the palaeochannel (J. Carrott, J. Barker and C. England)

- 8.13 Two column samples comprising four half metre monolith tins were taken from opposing sections across deposits filling palaeochannel **11** and assessed for their bioarchaeological potential.

Archaeological potential

- 8.14 The deposits recovered within the samples from palaeochannel **11** were found to be largely devoid of organic or artefactual remains. They were therefore of negligible interpretive value to reconstructing the ecological history of the site.

Recommendations

- 8.15 No further study is recommended due to the limited nature of the biological macro- and micro-fossil remains recovered. It is recommended that all material including the second unprocessed sample be discarded.

The biological remains (J. Carrott)

- 8.16 The remains from six processed sediment samples, some hand collected charcoal and animal bone were assessed for their bioarchaeological potential. Remains recovered from the sediment samples comprised small quantities of unidentifiable charcoal and a single charred wheat grain from context **4**, fill of linear feature **3**. Three fragments of hand collected charcoal recovered from context **6=14=24** and at the base of ditch **5=13**, were identified as oak (*Quercus*). The 19 fragments of animal bone submitted for assessment were recovered from the secondary fill (**7=15=23**) of the same ditch (**5=13**). Of these, two burnt long bone fragments were thought to have come from a medium or large sized mammal that could not be identified more specifically. The rest of the vertebrate assemblage was found to be totally indeterminate.

Archaeological potential

- 8.17 The palaeoecological assemblage was considered limited in its archaeological potential. The assemblage was too small to have significant interpretive value and none of the charcoal, charred grain or animal bone were adequate candidates for radiocarbon dating.

Recommendations

- 8.18 The remains are thought to have no further interpretive value and are recommended for discard.

9.0 STATEMENT OF POTENTIAL

- 9.1 The stratigraphic, artefactual and environmental record resulting from excavations in Area B of the development at Hornsea Leisure Park have no potential for further analysis. The flint bladelet and arrowhead, and the handmade pottery assemblage should be retained with the rest of the archive. The remainder of the finds may be discarded.

- 9.2 The results of the current work should be considered in conjunction with those of any further investigations undertaken in Area A and be detailed in a final report that synthesises the results of all stages of archaeological work undertaken at the leisure park.

10.0 CONCLUSIONS

- 10.1 The archaeological works undertaken within Area B at Hornsea Leisure Park sought to identify the presence and location of known (and unknown) archaeological remains, and to sample and record any such remains in order to assess their significance and achieve their 'preservation by record'. This was achieved by a programme of strip, map and record excavation within the North Trench. A second objective was to gain a greater understanding of environmental change over time, as it relates to activity on the site and the wider ecological history of the area by the excavation and sampling of a known palaeochannel within the South Trench.

- 10.2 The work undertaken in the North Trench identified Roman and medieval period activity. The Roman phase of activity included ditches that most likely formed part of wider enclosure or field system. The features were probably associated with agriculture, although some evidence for iron working was present, suggesting smithing was being undertaken in the vicinity. The second phase of activity represented a reordering of the landscape during the medieval period. The remains included a single linear feature that may have represented a trackway or a plough furrow that was aligned consistently to the known medieval field layout recorded by geophysical survey and fossilised in the existing field boundaries to the east of the site. The presence of prehistoric flint artefacts residually within the fills of these chronologically later features indicates occupation of the site during the Mesolithic and Late Neolithic periods.

- 10.3 Investigations in the South Trench confirmed the presence of the palaeochannel. However, samples recovered from the deposits filling the feature were organically sterile, and were therefore uninformative as to the ecological history of the immediate, or wider area.
- 10.4 A second stage of archaeological mitigation required in Area A (Fig. 2) has yet to take place. This future work is currently unprogrammed and will be the subject of a separate report.

11.0 ARCHIVE DEPOSITION

- 11.1 The full recovered during the archaeological investigations, including the written and drawn record, photographs, digital data and finds recommended for inclusion with the site archive, will be deposited with the East Riding Museum upon completion of the project. Copies of all reports will be deposited with the Historic Environment Record (HER) held by HAP.

REFERENCES

- Archaeology Data Service/Digital Antiquity (2011) *Guides to Good Practice*. York: Archaeology Data Service, University of York.
- Baker, P. and Worley, F. (2019) *Animal Bones and Archaeology: Recovery to archive*. Historic England Handbooks for Archaeology. Swindon: Historic England.
- British Geological Survey (BGS) (2020) *Geology of Britain Viewer*. [Online] Available at: <https://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html> (accessed on 24/09/2021).
- Brown, D. H. (2011) *Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer and Curation*. Second Edition. Reading: Institute for Archaeologists, on behalf of the Archaeological Archives Forum (AAF).
- Campbell, G., Moffett, L. and Straker, V. (2011) *Environmental Archaeology. A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-Excavation* (second edition). Swindon: English Heritage.
- Chartered Institute for Archaeologists (CIfA) (2014a) *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*. Reading: Chartered Institute for Archaeologists.
- Chartered Institute for Archaeologists (CIfA) (2014b) *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives*. Reading: Chartered Institute for Archaeologists.
- Chartered Institute for Archaeologists (CIfA) (2014c) *Code of Conduct*. Reading: Chartered Institute for Archaeologists.
- Chartered Institute for Archaeologists (CIfA) (2014d) *Standard and Guidance for Archaeological Excavation*. Reading: Chartered Institute for Archaeologists
- DCMS (2008) *The Treasure Act Code of Practice* (2nd revision). [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/77532/TreasureAct1996CodeofPractice2ndRevision.pdf (accessed on 24/09/2021).

- English Heritage (1995) *A Strategy for the Care and Investigation of Finds*. London: English Heritage.
- English Heritage (1998) *Dendrochronology: Guidelines on producing and interpreting dendrochronological dates*. London: English Heritage.
- English Heritage (2008a) *Conservation Principles, Policies and Guidance: For the sustainable management of the historic environment*. London: English Heritage.
- English Heritage (2008b) *Guidelines for the curation of waterlogged macroscopic plant and invertebrate remains*. London: English Heritage.
- English Heritage (2010) *Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood*. Swindon: English Heritage.
- Federation of Archaeological Managers and Employers (FAME) (2010) *Manual of Health and Safety in Field Archaeology*. London: Federation of Archaeological Managers and Employers.
- Harrison, S. (2005) *The History of Hornsea, East Yorkshire, from Earliest Times to the Year 2005*. Pickering: Blackthorn Press.
- Historic England (2015a) *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide*. Swindon: Historic England.
- Historic England (2015b) *Digital Image Capture and File Storage: Guidelines for Best Practice*. Swindon: Historic England.
- Historic England (2015c) *Archaeometallurgy: Guidelines for best practice*. Swindon: Historic England.
- Historic England (2018) *The Role of the Human Osteologist in an Archaeological Fieldwork Project*. Swindon: Historic England.
- Historic England (2020) National Heritage List [Online] Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1423379> (accessed on 24/09/2021).

Jarvis, R. A., Bendelow, V. C., Bradley, R. I., Carroll, D. M., Furness, R. R., Kilgour, I. N. L. and King, S. J. (1984) *Soils and their Use in Northern England*. Harpenden: Soil Survey of England and Wales Bulletin No. 10. Harpenden: Rothamsted Experimental Station.

McKinley, J. and Roberts, C. (1993) *Excavation and post-excavation treatment of cremated and inhumed human remains*. Institute of Field Archaeologists Technical Paper 13. Reading: Chartered Institute for Archaeologists.

Ministry of Housing, Communities and Local Government (MHCLG) (2019) *NPPF Planning Practice Guidance: Conserving and Enhancing the Historic Environment*. [Online] Available at: <https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment> (accessed on 24/09/2021).

Northern Archaeological Associates (NAA) (2012) *Hornsea Leisure Park, Hornsea, East Riding of Yorkshire: Archaeological Appraisal*, NAA unpublished report 12/119.

Northern Archaeological Associates (NAA) (2015) *Hornsea Leisure Park, Hornsea, East Riding of Yorkshire: Archaeological Excavation Report*. NAA Unpublished Report No. 15/25.

Northern Archaeological Associates (NAA) (2019a) *Geophysical Survey for Hornsea Leisure Park, Hornsea, East Riding of Yorkshire*. Unpublished Report No. 19–75.

Northern Archaeological Associates (NAA) (2019b) *Archaeological Trial Trenching Written Scheme of Investigation for Hornsea Leisure Park, Hornsea, East Riding of Yorkshire* Unpublished Report No. 19/97.

Northern Archaeological Associates (NAA) (2020a) *Land to the south of Hornsea Leisure Park, Hornsea, East Riding of Yorkshire; Archaeological Evaluation Report*. Unpublished Report No. 20/10.

Northern Archaeological Associates (NAA) (2020b) *Programme of Archaeological Mitigation Written Scheme of Investigation*. Unpublished Report No. 20/88.

Poulson, G. (1840) *The History and Antiquities of the Seignior of Holderness*. Vol 1

Phase Site Investigations (2013) *Hornsea Leisure Park – Archaeological geophysical survey*. Unpublished report no. ARC/929/341

Roskams, S. and Whyman, M. (2007) *Yorkshire Archaeological Research Framework: research*

agenda. [Online] Available at: <https://historicengland.org.uk/images-books/publications/yorks-arch-res-framework-agenda/yorkshire-research-agenda/> (accessed on 24/09/2021).

Soil Survey of England and Wales (SSEW) (1983) *Soils of England and Wales 1:250 000 Map Sheet 1: Northern England*. Southampton: Ordnance Survey.

South Yorkshire Archaeology Service (SYAS) (2018) *Yorkshire, The Humber and the North East: A Regional Statement of Good Practice for Archaeology in the Development Process*. [Online] Available at: <https://www.sheffield.gov.uk/content/dam/sheffield/docs/planning-and-development/archaeology/Good Practice Guide Rev Nov 18.pdf> (accessed on 24/09/2021).

Victoria County History (2002) *History of the County of Yorkshire, East Riding*. VCH series vol 7, 273–295.

Watkinson, D. and Neal, V. (2001) *First Aid for Finds*. Hertford: Rescue/UKICAS.

Cartographic references

1809 Enclosure map: A plan of the Township of Hornsea in the County of York (ERALS IA/82)

1852 Ordnance Survey First Edition Six-inch Series, Sheets 180 and 197

**APPENDIX A:
CONTEXT CATALOGUE**

Context	Equal to	Interpretative description	Finds information
1		Cut of gully	
2		Fill of gully 1	
3		Cut of linear feature	
4		Fill of linear feature 3	3 x worked flint (1 x petit tranchet arrowhead, 2x debitage);
5	13	Cut of ditch	
6	14, 24	Primary fill of ditch 5	
7	15, 23	Secondary fill of ditch 5	1 x worked flint (bladelet); 17 x handmade pottery frags; 2 x Roman period pottery; 23 x fired clay frags; 5 x Fe slag frags;
8	28	Natural geology	
9		Void	
10		Void	
11		Cut of palaeochannel	
12	30	Fill of palaeochannel 11 (upper)	
13	5	Cut of ditch	
14	6, 24	Primary fill of ditch 13	
15	7, 23	Secondary fill of ditch 13	1 x worked flint (bladelet); 17 x handmade pottery frags; 2 x Roman period pottery; 23 x fired clay frags; 5 x Fe slag frags;
16	26	Topsoil	
17	27	Subsoil	
18		Cut of pit	
19		Fill of pit 18	
20		Disturbed natural geology	
21		Cut of gully	
22		Fill of gully 21	4 x handmade pottery frags:
23	7, 15	Secondary fill of ditch 5	1 x worked flint (bladelet); 17 x handmade pottery frags; 2 x Roman period pottery; 23 x fired clay frags; 5 x Fe slag frags;
24	6, 14	Primary fill of ditch 5	
25	31	Fill of palaeochannel 11 (lower)	
26	16	Topsoil	
27	17	Subsoil	
28	8	Natural geology	
29		Number allocated for field drain	Field drain x 1
30	12	Fill of palaeochannel 11 (upper)	
31	25	Fill of palaeochannel 11 (lower)	
32		Fill of palaeochannel 11 (base)	

APPENDIX B:

THE LITHICS

Julie Shoemark

INTRODUCTION

A total of four struck lithics (Table B1) were recovered during the course of archaeological mitigation works. This report should be read in conjunction with the accompanying lithics catalogue (Table B3). It presents an assessment of the finds, followed by a consideration of the archaeological significance of the assemblage and makes suggestions for any further work that may be required.

Table B1: quantification of struck lithics.

Context	Weight (g)	Bladelet (L = > 2xW; W <12mm)	Flake (>10mm L<2xW)	Petit tranchet arrowhead	Unclassified	Total
7	1.2	1				1
4	0.92		1			1
4	7.7				1	1
4	1.4			1		1
Total	11.22	1	1	1	1	

METHOD

A total of 83 lithics were submitted for assessment. The material was hand collected during excavation and recovered from environmental samples during post-excavation processing. The finds were assessed by eye between the 26th and 28th of July 2021. The artefacts seem to be in relatively good condition, with few exhibiting evidence of post-depositional breakage. Metric assessment was carried out after the methodology of Saville (1980) and classification after Clark (1934), Green (1984) and Ballin (2021).

Of the assemblage recovered, 79 were unworked stone. These exhibited extensive evidence of frost-cracking, starch fractures, crushing and other environmental damage which can frequently resemble worked lithics. These are quantified in Table B2 at the end of this report and are recommended for discard. They will not be discussed further in this report.

OUTLINE OF THE ASSEMBLAGE

Four pieces of struck flint were recovered, three of which came from fill **4** of track/furrow **3**. Two of the lithics from this context were debitage: a possible core rejuvenation flake which had

evidence of extensive post-depositional damage and a short flake with a hinge termination at one end which may have been mis-struck. Both were struck from a banded orange-brown and grey-brown flint. The third piece from fill **4** was a possibly unfinished *petit tranchet* derivative arrowhead with features corresponding to Clark's (1934) Type B (Green's 1984 chisel type). The artefact was manufactured from a semi-cortical blade which had then had the proximal and distal ends snapped off to create a trapezoidal shape. The proximal end exhibits fine, abrupt retouch to create a blunt edge and there is possible short, scaled retouch along the cutting edge.

A piece of debitage in the form of a soft hammer struck bladelet with no retouch was recovered from fill **7** of ditch **5**.

DISCUSSION

The struck flint recovered during this phase of mitigation extends the existing evidence for prehistoric activity in the area around Hornsea as evidenced in previous phases of work (see: Bishop 2020) and potentially pushes the previously established chronology of Late Neolithic to Early Bronze Age activity into the Mesolithic. The bladelet from fill **7** of ditch **5** is of a form generally dated to the Mesolithic. The scars on the distal surface indicated that multiple bladelets had been struck from the same core previously, although no others were found during archaeological investigation. The *petit tranchet* arrowhead is of a type generally dated to the Late Neolithic. The small flake and the unclassified fragment from fill **4** of track/furrow **3** are undiagnostic and may date from one or more phases of activity.

As Bishop (*ibid*) notes, the evidence is sparse and probably derives from multiple phases of temporary occupation. By itself it provides little information for the type of activities carried out.

RECOMMENDATIONS

The assemblage is extremely small, and this assessment is adequate for the purposes of reporting and archiving. No further analysis is required. It is recommended that the assemblage be discarded in its entirety. The blade and *petit tranchet* arrowhead would be useful additions to a handling or reference collection, so could be included in the archive deposition, however, neither is a high priority for retention otherwise.

Table B2: Unworked lithics designated for discard.

Context	Quantity	Collective weight (g)
7	41	263
23	3	26.3
6	13	28.4
4	22	68.7
Total	79	386.4

REFERENCES

Ballin, T. B. (2021) *Classification of Lithic Artefacts from the British Late Glacial and Holocene Periods*. Oxford: Archaeopress.

Bishop, B. (2019) 'Lithics Assessment' Land at Hornsea Leisure Park, Hornsea, East Riding of Yorkshire. Archaeological Evaluation Report, Barnard Castle: Northern Archaeological Associates.

Clark, J. G. D. (1934) 'Derivative forms of the petit tranchet in Britain', *Archaeological Journal*, XC1, 32–58.

Green, S. (1984) 'Flint arrowheads: typology and interpretation', *Lithics*, Vol. 5, 19–39.

Saville, A, 1980, "On the Measurement of Struck Flakes and Flake Tools, *Lithics*, Vol. 1, 16–20.

Table B3: Lithics catalogue.

Context	Weight (g)	Bladelet (L = > 2xW; W < 12mm)	Flake (> 10mm L < 2xW)	Unclassified	Colour	Cortex	Condition	Suggested dating	Comments	Length	Thickness	Width
7	1.2	1			Translucent orange-brown	<5%	Good	Meso?	Soft hammer struck; no retouch	37.9	2.1	9.3
4	0.92		1		Opaque banded orange-brown and grey-brown	0%	Good	Meso - EBA	Short flake; hinge termination at distal end; mis-struck?	14.9	4.3	11.1
4	7.7			1	Banded translucent orange brown and opaque grey-brown	0%	Good	Unclassified	Incomplete; possibly natural; two bulbs of percussion; one on each face and opposed directions. Several hinged flake scars on distal surface; evidence of edge crushing. Possibly rejuvenation flake? Extensive post-depositional damage noted.	34.9	10.2	27.1
4	1.4			1	Mid-grey semi-translucent	70%	Good	Neo?	Unfinished petit tranchet arrowhead? Proximal and distal ends of blade snapped off - bulb of percussion removed. Proximal edge exhibits fine, abrupt retouch to create blunt edge. Distal edge remains unworked. One mesal edge has short, scaled retouch. Clark's (1934) class B? Green's (1984) chisel type.	25.6	3.2	18.1

**APPENDIX C:
THE HANDMADE POTTERY**

C. G. Cumberpatch

INTRODUCTION

The pottery assemblage recovered from Hornsea Leisure Park was examined by the author on the 6th and 8th August 2021. It consisted of twenty-three sherds of pottery weighing 141 grams representing a maximum of eighteen vessels. Of this total, two sherds (context **23**; weighing 33 grams) were identified as of Roman type and are the subject of a separate report. The remaining sherds were of pre-Roman Iron Age (PRIA) type but could date to the Roman period as the manufacture of indigenous types of pottery persisted through and possibly beyond, the period of Roman occupation.

METHOD

The pottery was classified with reference to recent work on Iron Age and Roman-period pottery from East Yorkshire using the scheme developed by the author (based on the work of Peter Didsbury) and in particular to the Easington to Ganstead gas pipeline (Cumberpatch 2016), Westermost Rough (Leary and Cumberpatch 2016) and the Humber Gateway project (Cumberpatch 2018). Fabric and vessel types were recorded and dated according to the type series set out in these reports which include detailed descriptions and full discussion of regional parallels.

OUTLINE OF THE ASSEMBLAGE

The assemblage is outlined in the accompanying catalogue (Table C1). The fabrics were all of the H2 type (non-calcareous inclusions) with two principal sub-divisions; H2 Quartz and H2 Rock and further sub-divisions based upon the presence of other inclusions (biotite and muscovite) and the size grade of rock fragments. It seems unlikely, based upon the best available data, that such variation has any chronological significance although the extent to which it relates to the inter-site or intra-regional circulation of pottery is unclear. Traditionally it has been assumed that handmade pottery production in eastern Yorkshire was essentially local in nature, but it can be shown that such assumptions rest upon highly ethnocentric and profoundly sexist predicates rather than on robust evidence in the form of petrological and geological data.

Only one rim sherd was present in the assemblage (context **7**). This was part of a Vertical-rim Jar, a type which appears to date to the period between the 4th century BC and the 4th century AD although whether production continued into the post-Roman period is currently unclear.

DISCUSSION

The assemblage is too small to permit any far-reaching conclusions although it makes a useful contribution to the growing body of evidence pertaining to the production and circulation of handmade pottery in eastern Yorkshire. The presence, in context **7**, of a broadly datable rim fragment suggests a later prehistoric or Roman period date for the assemblage which is consistent with the presence of two sherds of wheel-thrown greyware in context **23**.

The absence of sherds tempered with calcareous inclusions is of interest, although as with any small pottery assemblage the effect of chance factors on its composition should be noted.

RECOMMENDATIONS

Once the project is complete the pottery assemblage should be deposited in the appropriate local museum or finds depository where it will be available for further research in the future.

REFERENCES

Cumberpatch, C.G. (2016) 'Later prehistoric hand-made pottery' In Glover, G., Flintoft, P. and Moore, R. (eds.) *'A mersshy contree called Holderness' Excavations on the route of a National Grid pipeline in Holderness, East Yorkshire*. Oxford: Archaeopress Publishing Ltd, 103-166.

Cumberpatch, C.G. (2018) 'The hand-made pottery' In Daniel, P. (ed.) *Easington to Salt End: the archaeology of the Humber Gateway onshore cable route* East Riding Archaeologist 17, 1-113

Leary, R.S. and Cumberpatch, C.G. (2016) 'The Iron Age and Romano-British pottery' In Williams, D. (ed.) *Excavations of the Onshore Cable Route for the Westernmost Rough Offshore Wind-farm* East Riding Archaeologist 15, 39-86

Table C1: handmade pottery catalogue

Context	Type	No	Wt. (grams)	ENV*	Part	Form	Decoration	Date range	Notes
7	H2 Quartz	1	16	1	Rim	Vertical-rim Jar	Smoothed int surface (abraded ext.)	C4 th BC – C4 th AD	Densely tempered w/ abundant round quartz up to 0.5mm, occ small sub-round to round rock frags
7	H2 Rock	1	14	1	BS	Hollow ware	U/Dec	PRIA – Roman	Prominent, poorly sorted sub-angular quartz-rich rock frags up to 4mm in a fine grey matrix w/ sparse fine muscovite; pot disc; 43mm diam
15	H2 Quartz & biotite	2	3	2	BS	Hollow ware	U/Dec (heavily abraded)	PRIA – Roman	Grey core w/ bright orange ext margin; common angular quartz up to 2mm, mainly <1mm w/ fine biotite; probably one sherd
15	H2 Quartz & muscovite	4	2	4	Flakes	U/ID	U/Dec (abraded flake)	PRIA – Roman	Shattered flakes w/ fine quartz & sparse muscovite <0.5mm; one sherd?
22	H2 Quartz	4	25	1	BS	Hollow ware	U/Dec	PRIA – Roman	Common angular to sub-angular quartz 0.2mm – 2mm; dull grey fabric w/ oxidised int margin
23	Greyware	2	33	2	BS	Hollow ware	U/Dec	Roman	Abraded; See separate report
23	H2 Coarse rock	2	28	2	BS	Hollow ware	Smoothed surfaces	PRIA – Roman	A black to dull buff body w/ common fine quartz background & large, poorly sorted quartz-rich rock frags up to 6mm
23	H2 Quartz	2	2	1	BS	Hollow ware	U/Dec	PRIA – Roman	Moderate, poorly sorted sub-angular quartz up to 1mm in a black matrix; fresh break
23	H2 Quartz & rock	5	18	4	BS	Hollow ware	U/Dec	PRIA – Roman	Black body w/ orange ext margin; fine quartz background w/ sparse sub-angular rock up to 4mm

*ENV = Estimated Number of Vessels.

**APPENDIX D:
THE ROMANO-BRITISH POTTERY**

Charlotte Britton

INTRODUCTION

This report discusses the Romano-British pottery recovered from Area B during the 2021 archaeological excavations at Hornsea Leisure Park, Hornsea, East Riding of Yorkshire (NGR TA 19833 49243). Two fragments (33.2g) of pottery, dating to the Roman period, were recovered from the site.

METHOD

The assessment work undertaken as part of this report was carried out on 20th August 2021. The pottery was assessed by eye and examined in accordance with Barclay *et al.* (2016). The material was organised by stratified deposit (context) and quantified by count and weight. Forms, wares, and date were identified where possible, and fabrics were described as per the National Roman Fabric Reference Collection Handbook (Tomber and Dore 1998).

OUTLINE OF THE ASSEMBLAGE

Two fragments (33.2g) of coarseware pottery was recovered that dated to the Roman period. The assemblage represented two separate vessels and the sherds recovered were in a good condition, although were slightly abraded. The pottery present was British in origin and probably produced within the local region. The wares identified were highly typical of the period and encompassed solely gritty greywares. As the wares were common indeterminate greywares, a fabric code from the National Roman Fabric Reference Collection could not be attributed.

One of the sherds recovered (14.5g) displayed a mid-grey, hard, rough fabric that had moderate mica, and sparse, fine, angular, ill-sorted quartz inclusions. The second sherd (18.7g) had a mid-grey to brown core, with light grey margins. The fabric was also hard and rough, with moderate mica and sparse, fine, angular, ill-sorted quartz inclusions. It also displayed common voids in the fracture. Both fragments were from wheel-thrown hollow ware vessels, although the forms could not be further determined, and they were not dateable beyond being Roman.

PROVENANCE OF OBJECTS

Both sherds were recovered from fill **23** of ditch **5=13** which was also found to contain handmade pottery that may also date to the Roman period.

DISCUSSION

The wares present in the Romano-British coarseware pottery assemblage comprised solely utilitarian wares and were probably associated with settlement located on or around the site, during the Roman period. They may have originated from a local production centres with the ware being common to the period and area. The abraded condition of the sherds suggests they may be residual. Although the evidence is sparse, Roman activity has been previously implied in the area through the 'recovery of several complete Roman greyware pots eroding from the cliff

at Atwick' (NAA 2021a, 12). The similarity in the wares recovered throughout the area, and the commonality of the fabrics, indicated that there was a Roman community in the area.

RECOMMENDATIONS

The Romano-British coarseware pottery recovered was limited. It could tell us very little about the site at Hornsea, beyond indicating there was a Roman presence in the area. Moreover, the wares were highly typical of the region and period. No further study is therefore recommended, and the finds are recommended for discard.

REFERENCES

Barclay, A., Knight, D., Booth, P., Evans, J., Brown, D. H. and Wood, I. (2016) *A Standard for Pottery Studies in Archaeology*. Prehistoric Ceramics Research Group, Study Group for Roman Pottery & Medieval Pottery Research Group.

NAA (2021a) Land at Hornsea Leisure Park, Hornsea, East Riding of Yorkshire Programme of Archaeological Mitigation Written Scheme of Investigation. Report number: 20-088

NAA (2021b) *Hornsea Leisure Park, Hornsea, East Riding of Yorkshire. Specialist Background Information*. Unpublished report.

Tomber, R and Dore, J. (1998). *The National Roman Fabric Reference Collection. A Handbook*. MoLAS Monograph 2. London.

**APPENDIX E:
THE METALWORKING RESIDUES**

R. Mackenzie

INTRODUCTION

The main aims of this assessment have been to identify and quantify any potential metal production residues in the assemblage and determine whether scientific analysis could provide additional information about metalworking at the site. All of the macro fragments in the assemblage have been visually examined and, in some cases, small areas carefully cleaned to aid identification.

It should be noted that, as no chemical or microscopic analysis has been carried out, the findings of this assessment should be regarded as provisional.

OUTLINE OF THE ASSEMBLAGE

The assemblage contains 23 fragments of fired clay weighing approximately 190g in total. The pieces range in size from sub 1cm³ to around 8cm³, all of these pieces were recovered from context **23**. The clay ranges in colour from orange-brown to dark grey and some pieces have a dark grey-black coloured slag layer adhering to parts of their surface

The assemblage also contains 5 fragments of slag weighing approximately 127g in total, and these were all found in context **7**. The fragments of slag are graphite grey in colour and have a heterogeneous density and abundance of vesicles.

DISCUSSION

The 5 fragments of slag appear to relate to iron production and the fragments of clay are very similar to those one might expect to find in a traditional clay-lined blacksmiths hearth. From the material in the assemblage and their archaeological contexts, it is impossible to be definite, but the lack of any evidence of iron smelting suggests that the slag is more likely to relate to iron forging (smithing).

It is worth noting that the morphologies of iron production slags are often not reliable indicators of their process origin or age, and supporting archaeological evidence is usually required to enable a date to be attributed to the material.

RECOMMENDATIONS

The metal production residues present in the assemblage have very limited potential for further research or scientific analysis. However, the presence of the residues, and that of possible iron smithing in the area is worthy of note.

No further work is recommended on the possible metallurgical slag or ironstone in the assemblage, and this material can be discarded.

APPENDIX F:

ASSESSMENT OF THE BIOARCHAEOLOGICAL POTENTIAL OF THE PALAEOCHANNEL

John Carrott, Jane Barker and Charlotte England

INTRODUCTION

Archaeological mitigation works were carried out by Northern Archaeological Associates Ltd (NAA), at Hornsea Leisure Park, Hornsea, East Riding of Yorkshire (approximate NGR TA 19833 49243), during May 2021.

Amongst the features identified by an earlier evaluation (NAA 2020a) was a palaeochannel. The specification of the mitigation works included investigation of the palaeochannel to provide, potentially, information regarding the past landscape in the vicinity of the 'East Field cropmark'; a designated Scheduled Monument (Historic England NHLE 1423379), described as a circular cropmark, and believed to be the remains of a Neolithic henge monument, subsequently re-used as a Bronze Age ringwork with associated coaxial field system.

To this end, two column samples through the deposits encountered in palaeochannel **11** were collected by Palaeoecology Research Services Ltd (PRS), Kingston upon Hull (with the assistance of NAA staff and the machine operators on site), on the 7th of May 2021, and subsequently assessed for their bioarchaeological potential.

METHOD

Sampling (on site)

Two column samples (monolith samples *sensu* English Heritage 2011), each of two overlapped half metre column tins, were collected from the deposits within palaeochannel **11** – one from the east-facing section (Column Sample 1) and one from the west-facing section (Column Sample 2).

Sediment-descriptions (off site)

The sequence of deposits in the column samples was recorded by visual inspection (off site) following a standard *pro forma*, together with notes on any inclusions present.

Column Sample 1 was subsequently resealed and retained against the possibility of a requirement for further analysis post-assessment (as specified in the Written Scheme of Investigation (WSI); NAA 2020b).

A particular consideration during recording (both during the initial visual inspection and the later recording of remains recovered after processing of sediment subsamples) was the identification of suitable remains (if present) for possible submission for radiocarbon dating by standard radiometric technique or Accelerator Mass Spectrometry (AMS).

Microfossil assessment (off site)

A series of ten microfossil 'squash' subsamples (of ~1 ml) was taken through the deposit sequence in Column Sample 2 (from the approximate centre of the column tins). These were examined using the 'squash' technique of Dainton (1992), originally designed specifically to assess the

content of eggs of intestinal parasitic nematodes; however, this method routinely reveals the presence of other microfossils, such as pollen and diatoms, which were the focus of the investigations here. The assessment slides were scanned at x150 magnification and at x600 where necessary. The abundances of microfossil remains were recorded on a five-point semi-quantitative scale: 1 – few/rare, up to 3 individuals/items; 2 – some/present, 4 to 20 items; 3 – frequent/common, 21 to 50; 4 – many/abundant, 51 to 200; and 5 – very many/super-abundant, over 200 items/individuals.

In the event, no interpretatively valuable microfossils were positively identified – in particular, there were no pollen grain/spores, diatoms or intestinal parasite eggs present.

Macrofossil assessment (off site)

After the deposits had been subsampled for microfossil investigation, Column Sample 2 was divided into seven 'GBA' (*sensu* Dobney *et al.* 1992) samples (following stratigraphic changes with subdivisions of longer sediment units). All seven were then processed for the recovery of plant, invertebrate and vertebrate remains (macrofossils), broadly following the techniques of Kenward *et al.* (1980), producing a residue for each and washovers for four; the three lowermost gave no separate washover fractions.

The deposits did not appear to contain ancient uncharred organic remains preserved by anoxic waterlogging and the washovers were dried prior to examination for macrofossils using a low-power microscope (x7 to x45 magnification).

The residues were primarily mineral in nature and were dried prior to the recording of their components; the weights and descriptions of the residues were recorded after sorting. The residues were separated into fractions (using 1mm, 4mm and 10mm sieves) to facilitate recording. Data acquired refer to the larger items which have been extracted; smaller fragments remain in the residues and details of these are not included. All biological remains (including charcoal, shell, bone) and artefactual materials (e.g., pottery, slag) were sorted to 1mm; residue less than 1mm was retained unsorted. The residue fractions (including the less than 1mm fraction) were scanned for magnetic material.

The processed sample fractions (washovers and residues) were scanned until no new remains were observed and a sense of the abundance of each taxon or component was achieved and these were recorded either as counts or using a five-point semi-quantitative scale as: 1 – few/rare, up to 3 individuals/items or a trace level component of the whole; 2 – some/present, 4 to 20 items or a minor component; 3 – many/common, 21 to 50 or a significant component; 4 – very many/abundant, 51 to 200 or a major component; and 5 – super-abundant, over 200 items/individuals or a dominant component of the whole. The abundance of recovered organic and other remains within the sediments as a whole may be judged by comparing the washover volumes/weights and the quantities of remains recovered from the residues with the size of the processed sediment samples.

Plant macrofossil identifications were attempted by comparison with modern reference material (where possible), and the use of published works (e.g. Cappers *et al.* 2006). Remains were identified to the lowest taxon possible or necessary to achieve the aims of the project and nomenclature follows Stace (1997).

No charcoal fragments greater than 4mm in at least one dimension were recovered and no species identifications were attempted.

No mollusc or vertebrate remains were recovered. The very few other invertebrate remains present were recorded in brief and a basic (family level) identification of adult beetle remains was attempted with reference to Crowson (1956).

RESULTS

The results of the assessment are presented below.

Column Sample 1 (east-facing section)

The description of the 0.93 metres of deposit sequence (the combined length of the two column tins was 1.00 metre but there was 70mm of overlap) was as follows, with the base point at 15.86m aOD:

0 to 100mm from base (Unit 1.1; Context 25=31): Moist, light brown and light grey (mottled at mm- and cm-scales) with patches of mid orange-brown (to 20mm – perhaps from decayed organics?), firm (working soft and slightly plastic), ?slightly clay, silt. No obvious inclusions.

100mm to 880mm from base (Unit 1.2; Context 12=30): Moist, light brown and light grey (mottled at a mm-scale) with patches of mid orange-brown (to 5mm – perhaps from decayed organics?), firm (working soft and slightly plastic), ?slightly clay, silt. Inclusions were occasional flecks of fine coal (to 2mm) at 270-300 from base, a little rootlet trace (voids) at 430-470mm from base, and a few stones (to 20mm) at 160-180mm, 620-640mm and 780-830mm from base.

880mm to 930mm from base (Unit 1.3; Context 16=26): Moist, light to light/mid brown and light grey (mottled at a mm-scale) with patches of mid orange-brown (to 5mm – perhaps from decayed organics?), firm (working soft and slightly plastic), ?slightly clay, slightly sandy silt. Rootlets were present throughout.

Column Sample 2 (west-facing section)

The description of the 0.95 metres of deposit sequence (the combined length of the two column tins was 1.00 metre but there was 50mm of overlap) was as follows, with the base point at aOD 15.78m:

0 to 25mm from base (Unit 2.1; natural below palaeochannel 8=28): Moist, light/mid blue-grey, sticky with occasional crumbly (somewhat ?indurated) lumps (working soft and somewhat plastic), clay silt. No obvious inclusions.

25mm to 100mm from base (Unit 2.2; Context 32): Moist light brown and light grey-brown (mottled at a mm-scale), firm (working soft), silt. No obvious inclusions.

100mm to 520mm from base (Unit 2.3; Context 25=31): Moist, light brown and light grey (mottled at mm- and cm-scales) with patches of mid orange-brown (to 15mm – perhaps from decayed organics?), firm (working soft and slightly plastic), ?slightly clay, silt. Inclusions were a large rounded pebble (to 130mm) and a trace of rootlet both at 355-430mm from base.

520mm to 875mm from base (Unit 2.4; Context 12=30): Moist, light brown and light grey (mottled at a mm-scale) with patches of mid orange-brown (to 5mm – perhaps from decayed organics?), firm (working soft and slightly plastic), ?slightly clay, silt. Inclusions were traces of rootlet at 590-670mm from base and a small piece of coal (to 15mm) at 630-645mm from base.

875mm to 950mm from base (Unit 2.5; Context 16=26): Moist, light brown and light grey (mottled at a mm-scale) with patches of mid orange-brown (to 5mm – perhaps from decayed organics?), firm (working soft and slightly plastic), ?slightly clay, slightly sandy silt. Rootlets were present throughout.

Microfossil subsamples

The sequence of ten microfossil ‘squash’ subsamples was extracted at 10mm, 75mm, 120mm, 200mm, 300mm, 450mm, 600mm, 750mm, 825mm and 925mm from the base of Column Sample 2. The results are presented below.

Subsample at 10mm from base (Unit 2.1; natural below palaeochannel 8=28): The ‘squash’ was almost entirely inorganic, with the barest trace of organic detritus (<1%). No microfossil remains were present.

Subsample at 75mm from base (Unit 2.2; Context 32): The ‘squash’ was almost entirely inorganic, with the barest trace of organic detritus (<1%). No microfossil remains were present.

Subsample at 120mm from base (Unit 2.3; Context 25=31): The ‘squash’ was almost entirely inorganic, with a trace of organic detritus (~1%). A few fragments of fungal hyphae (score 1) were noted but no interpretatively valuable microfossil remains were present.

Subsample at 200mm from base (Unit 2.3; Context 25=31): The ‘squash’ was almost entirely inorganic, with a trace of organic detritus (~1%). A few fragments of fungal hyphae (score 1) were noted but no interpretatively valuable microfossil remains were present.

Subsample at 300mm from base (Unit 2.3; Context 25=31): The ‘squash’ was almost entirely inorganic, with a trace of organic detritus (~1%). There were a few records (all score 1) of fungal hyphae, indeterminate invertebrate cuticle, possible ?phytolith (cf. plant silica) fragments and black flecks of microscopic ?coal/charcoal/cinder, but there were no concentrations of interpretatively valuable microfossils.

Subsample at 450mm from base (Unit 2.3; Context 25=31): The ‘squash’ was almost entirely inorganic, with a trace of organic detritus (~1%). A few fragments of fungal hyphae and black flecks of microscopic ?coal/charcoal/cinder (both score 1) were noted, but there were no interpretatively valuable microfossils present.

Subsample at 600mm from base (Unit 2.4; Context 12=30): The ‘squash’ was almost entirely inorganic, with a little organic detritus (~5%). A few fragments of fungal hyphae and black flecks of microscopic ?coal/charcoal/cinder (both score 1) were noted, but no interpretatively valuable microfossils were present.

Subsample at 750mm from base (Unit 2.4; Context 12=30): The ‘squash’ was almost entirely inorganic, with a trace of organic detritus (~1%). Some fragments of fungal hyphae (score 2) were noted but there were no interpretatively valuable microfossil remains present.

Subsample at 825mm from base (Unit 2.4; Context 12=30): The ‘squash’ was almost entirely inorganic, with a trace of organic detritus (~1%). A few fragments of fungal hyphae (score 1) were noted but no interpretatively valuable microfossil remains were present.

Subsample at 925mm from base (Unit 2.5; Context 16=26): The ‘squash’ was almost entirely inorganic, with a little organic detritus (~5%). Some fragments of fungal hyphae and black flecks

of microscopic ?coal/charcoal/cinder (both score 2) were noted, but there were no interpretatively valuable microfossils present.

Macrofossil subsample

The results from dividing the deposit sequence within Column Sample 2 into seven 'GBA' samples (designated GBA 1-7) for macrofossil assessment are presented below:

GBA 1 (0 to 25mm from base; Unit 2.1; natural below palaeochannel 8=28): 250g of sediment sieved to 300 microns gave no washover fraction and a tiny residue (dry weight 6.5g) which was mostly sand (abundance score 5), with a few stones (to 19mm; score 1). There was no magnetic component to the residue.

GBA 2 (25mm to 100mm from base; Unit 2.2; Context 32): 730g of sediment sieved to 300 microns gave no washover fraction and a very small residue (dry weight 22.0g) which was mostly sand (score 5), with occasional stones (to 9mm; score 2) and four small pieces of coal (to 5mm; <0.1g). There was no magnetic component to the residue.

GBA 3 (100mm to 355mm from base; Unit 2.3 – below large rounded pebble; Context 25=31): 3.00kg of sediment sieved to 300 microns gave no washover fraction and a small residue (dry weight 199.4g) which was mostly sand and stones (to 16mm) – both score 5 – with three tiny pieces of coal (to 2mm; <0.1g) and a trace of fine rootlet (score 1). There was no magnetic component to the residue.

GBA 4 (355mm to 520mm from base; Unit 2.3 – above and including large rounded pebble; Context 25=31): 4.31kg sieved to 300 microns gave a minute washover (<1ml; dry weight ~0.1g) which was mostly rootlets (score 5), with frequent sand (score 3), three small pieces of indeterminate wood/'woody' root (to 7mm; <0.1g), a few 'scraps' of invertebrate cuticle (to 1mm; score 1) and a few uncharred 'seed' fragments (score 1 – including ?cinquefoil (cf. *Potentilla* sp.) achenes).

The largest individual component of the substantial residue (total dry weight 1845.7g) was the large rounded pebble (to 130mm; 1614.4g) and there was a piece of ?shale (to 40mm; 7.2 g), some other smaller stones (to 19mm; score 2) and frequent sand (score 3). Minor residue components were fine rootlet (<0.1g; score 1), twelve pieces of coal (to 12mm but all bar two less than 4mm; 0.3g) and one piece of ?cinder (to 28mm; 3.5g). There was no magnetic component to the residue.

GBA 5 (520mm to 670mm from base; Unit 2.4 – incorporating rootlet and coal inclusions; Context 12=30): 1.76kg sieved to 300 microns gave a minute washover (<1ml; dry weight ~0.1g) which was mostly rootlets (score 5), with frequent sand (score 3) and fine coal (to 2mm; score 3), a few 'scraps' of invertebrate cuticle (to 1mm; score 1 – including an indeterminate beetle (Coleoptera) wing case (elytron) fragment) and some uncharred 'seeds'/'seed' fragments (score 2 – most, if not all, of cinquefoil (?marsh cinquefoil; cf. *Potentilla palustris* (L.) Scop.) achenes and rush (*Juncus*) capsules, both score 2).

The small residue (dry weight 137.8g) was mostly stones (to 15mm; score 5 – including one piece of ?shale (to 10mm; <0.1g)), with frequent sand (score 3), a little fine rootlet (score 1) and 11 small pieces of coal (to 3mm; <0.1g). Note: the larger piece of coal (to 15mm) noted during visual inspection had clearly broken into smaller fragments during processing. There was no magnetic component to the residue.

GBA 6 (670 to 875mm from base; Unit 2.4 – part within which no inclusions were apparent to visual inspection; Context **12=30**): 2.57kg sieved to 300 microns gave a tiny washover (~2ml; dry weight 2.4g) which was mostly sand (score 3), with abundant small ‘crumbs’ of undisaggregated sediment (to 2mm but mostly less than mm; score 4), frequent rootlet (score 3), a little fine coal (to 2mm; score 2) and one earthworm (*Oligochaeta*) egg capsule.

The small residue (dry weight 324.5g) was mostly sand (score 5), with frequent stones (to 60mm; score 3), a trace of fine rootlet (<0.1g; score 1) and 15 pieces of coal (to 8mm; 0.1 g). There was no magnetic component to the residue.

GBA 7 (875 to 950mm from base; Unit 2.5; Context **16=26**): 1.50kg sieved to 300 microns gave a minute washover (~1ml; dry weight ~0.1g) which was mostly rootlet (score 5), with frequent sand (score 3) a little fine coal (to 1mm; score 2) and one small indeterminate charcoal fragment (to 3mm; <0.1g).

The small residue (dry weight 170.7g) was mostly sand (score 5) and stones (to 25mm; score 4), with a trace of fine rootlet (<0.1g), 18 pieces of coal (to 7mm; <0.1g) and seven pieces of ?cinder (to 10mm; 0.3g). There was no magnetic component to the residue.

DISCUSSION

The deposits encountered within palaeochannel **11** (and also from the natural clay silt **8=28** immediately below) were largely devoid of organic and artefactual remains and, consequently, of no interpretative value with regard to reconstruction of the ecological history of the site or past human activity.

The only macrofossils of any potential value were a small number of ?cinquefoil (cf. *Potentilla* sp.) achene fragments from the upper part of sediment Unit 2.3 (355mm to 520mm from base (at 15.78m aOD); Context **25=31**) and slightly larger numbers from the immediately overlying lower part of sediment Unit 2.4 (520mm to 670mm from base; Context **12=30**) where some of the remains were of ?marsh cinquefoil (cf. *Potentilla palustris* (L.) Scop.) and there were also occasional rush (*Juncus*) capsules (and a single indeterminate fragment of beetle (Coleoptera) elytron). The rush and, if confirmed, marsh cinquefoil remains would certainly be consistent with the environment at the margins of a palaeochannel and may be sufficient for radiocarbon dating (via AMS – perhaps requiring micro-sample techniques). No other remains for radiocarbon dating were recovered from the sediment sequence.

The only possible ‘artefactual’ remains recovered were occasional pieces of ?cinder from the upper part of sediment Unit 2.3 (355mm to 520mm from base; Context **25=31** – one piece) and the uppermost sediment Unit 2.5 (875mm to 950mm from base; Context **16=26** – seven pieces). However, with the exception of a single small indeterminate charcoal fragment (also from sediment Unit 2.5), there were no other remains that might indicate human activity in the form of fuel waste; occasional small pieces of coal recorded from throughout the sediment sequence (other than from the lowermost sediment Unit 2.1 which represented the natural, below palaeochannel **11**) most likely represent a minor component of the superficial (drift) geology.

The large rounded pebble (to 130mm) recorded approximately halfway through sediment Unit 2.3 (at 355mm–430mm from base) was a rather curious inclusion. Smaller stones were recorded from the other subsamples of the sediment sequence but these measured no more than 60mm and most were 25mm or less. If additional larger stones had also been present then they might represent a significant, high-energy, flooding event or deliberate placement to consolidate wet

ground at the edge of the palaeochannel (to facilitate access to drinking water for grazing animals, for example) but, in isolation, the large pebble is something of an anomaly.

Microfossils were similarly few and uninformative – there were a few ?phytolith fragments in the subsample examined at 300mm from the base of the sequence (within Unit 2.3; Context **25=31**) but, even if the tentative identification were confirmed, these were too few to be of any significant interpretative value.

RECOMMENDATIONS

No further study of the extremely limited biological macro- and micro-fossil remains from the deposits reported here is warranted.

Retention and disposal

Column Sample 1 (east-facing section) is currently retained pending a decision regarding any further investigations to be undertaken. However, in light of the dearth of evidence from Column Sample 2, further study is not required, and it is recommended that Column Sample 1 may be discarded.

ARCHIVE

All material is currently stored by Palaeoecology Research Services (Unit 4, National Industrial Estate, Bontoft Avenue, Kingston upon Hull), pending return to the excavator or permission to discard, along with paper and electronic records pertaining to the work described here.

REFERENCES

- Cappers, R. T. J., Bekker, R. and Jans J. E. A. (2006). *Digitale Zadenatlas van Nederland*. Groningen Archaeological Studies 4. Groningen: Barkhuis Publishing and Groningen University Library.
- Crowson, R. A. (1956). *Coleoptera: Introduction and Keys to Families. Handbooks for the identification of British insects* **4** (1). London: Royal Entomological Society of London.
- Dainton, M. (1992). A quick, semi quantitative method for recording nematode gut parasite eggs from archaeological deposits. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 58-63.
- Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* **9** (for 1991), 24-6.

English Heritage (from 1 April 2015 Historic England) (2011). *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Postexcavation (2nd Edition)*. Swindon: English Heritage Publishing.

Kenward, H. K., Hall, A. R. and Jones, A. K. G. (1980). A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* **22**, 3-15.

Northern Archaeological Associates (NAA) (2020a). *Land to the south of Hornsea Leisure Park, Hornsea, East Riding of Yorkshire; Archaeological Evaluation Report*. Unpublished Report No. 20/10.

Northern Archaeological Associates (NAA) (2020b). *Archaeological Trial Trenching Written Scheme of Investigation for Hornsea Leisure Park, Hornsea, East Riding of Yorkshire*. Unpublished Report No. 20/88.

Stace, C. (1997). *New flora of the British Isles: 2nd edition*. Cambridge: Cambridge University Press.

**APPENDIX G:
THE BIOLOGICAL REMAINS**

John Carrott

INTRODUCTION

Archaeological mitigation works were carried out by Northern Archaeological Associates Ltd (NAA), at Hornsea Leisure Park, Hornsea, East Riding of Yorkshire (approximate NGR TA 19799 49078), between the 6th and the 14th of May 2021.

The works (strip, map and record) were targeted on a ditch that crossed the area which had been identified during an earlier phase of trial trenching in the field; a trench was also machine excavated through a previously identified palaeochannel to the immediate south of the excavation area and the deposits encountered subject to a separate assessment (Appendix F).

Archaeological features identified during the strip, map and record exercise comprised five cut features – the aforementioned ditch, two gullies, a trackway/furrow (possibly of medieval date if the latter) and a shallow pit.

Material sorted from the residues from the processing of six bulk sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992), representing five deposits (single fills of a gully, the pit and the track/furrow, and the primary and secondary fills of the ditch), and small quantities of hand-collected charcoal (from 'natural geology') and vertebrate remains (also from the secondary ditch fill), were submitted to Palaeoecology Research Services Limited, Kingston upon Hull (PRS), for an assessment of their bioarchaeological potential.

METHOD

Sediment samples

The samples were processed by NAA following their standard methodology. Samples were processed in-house using a 'Siraf' style flotation tank (Williams 1973), with 500 microns mesh employed for the retention of both the residue and the flot.

Remains sorted from the dried residues from six samples (representing five contexts) were submitted for assessment and these were examined using a low-power microscope (x7 to x45 magnification).

All of the components of the remains sorted from the sample residues were recorded either as counts or using a five-point semi-quantitative scale. The abundance scale employed was: 1 – few/rare, up to 3 individuals/items or a trace level component of the whole; 2 – some/present, 4 to 20 items or a minor component; 3 – many/common, 21 to 50 or a significant component; 4 – very many/abundant, 51 to 200 or a major component; and 5 – super-abundant, over 200 items/individuals or a dominant component of the whole. The abundance of recovered organic and other remains within the sediments as a whole may be judged by comparing the quantities of remains recovered from the residues with the size of the processed sediment samples.

Plant macrofossil identifications were attempted by comparison with modern reference material (where possible), and the use of published works (e.g. Cappers *et al.* 2006; Jacomet 2006).

Remains were identified to the lowest taxon possible or necessary to achieve the aims of the project – no species level identifications were possible for cereal remains.

Charcoal identifications were attempted for a small number of larger fragments (all over 4mm). The fragments were broken to give clean cross-sectional surfaces for anatomical structures to be initially examined using a low-power binocular microscope (x7 to x45) and subsequently (where necessary) at higher magnifications (x60 to x600). Identifications were attempted by comparison with modern reference material where possible, and with reference to published works (principally Hather 2000 and Schoch *et al.* 2004).

No other classes of ‘ancient’ biological remains were present amongst the submitted material.

Hand-collected charcoal

The small quantity of hand-collected ‘charcoal’ recovered from Context **8** (‘natural geology’) was examined and recorded as described for the remains from the sediment samples (see previous section).

Hand-collected vertebrate remains

Identification of vertebrate material recovered from the sediment samples to species or species group was attempted using the PRS modern comparative reference collection and published works (e.g. Schmid 1972; Hillson 1990). Remains which could not be identified to species were described as the ‘indeterminate’ fraction, within which fragments were grouped by size (where possible): large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid (sheep/goat), pig or small cervid), and wholly unidentifiable (indeterminate). Other information, such as fragment size and evidence of burning, was noted, where applicable.

RESULTS

The results of the assessment are presented in Tables G1 to G3.

DISCUSSION

The small quantities of remains recovered from the six sediment samples and by hand-collection were of no significant interpretative value.

Charred plant remains from the sediment samples and the hand-collected material from Context **6** (=14=24; primary fill of ditch **5** (=ditch **13**)) were predominantly sediment encrusted, rectilinear charcoal fragments, with one small ‘twig’ fragment from each of Contexts **2** (fill of gully **1**) and **7** (=15=23; secondary fill of ditch **5** (=ditch **13**)) and a single ?wheat (cf. *Triticum*) grain from Context **4** (fill of track/furrow **3**).

None of the charcoal from the samples could be identified to species but some could be partially identified as ring-porous (or ?ring-porous) and the tiny ‘twig’ fragment from Context **2** was diffuse-porous and represented a single year of wood growth. Three of the hand-collected charcoal fragments from Context **6** (=14=24; primary fill of ditch **5** (=ditch **13**)) were identifiable and were all oak (*Quercus*). All of the charcoal presumably represents a ‘background’ level of fuel waste within the deposits (there were also traces of cinder from all of the samples except that from Context **4**) but the small quantities of coal recorded are more likely to derive from a minor

component of the superficial (drift) geology (as also noted from the earlier assessment of the deposits within a palaeochannel at this site; Appendix F). The three oak charcoal fragments from Context **6** and some of the fragments from the samples from Contexts **2**, **7** and **19** (fill of pit **18**) exhibited a somewhat vitrified appearance which, in the past, has been taken to reflect burning at high temperatures (in excess of 1000 degree Centigrade). However, experimental work by McParland *et al.* (2010) suggests it is likely to reflect a more moderate charring temperature of 310-530 degrees Centigrade which is readily achievable within a small domestic/camp fire.

The single charred wheat grain (Context **4**) probably represents food or crop processing waste – having been burnt accidentally during one or other process – but is of no interpretative value in isolation.

The vertebrate remains hand-collected from Context **23** (=7=15; secondary fill of ditch **5** (=ditch **13**)) were extremely poorly preserved. There were 19 fragments in total, two of which were burnt long bone shaft fragments from a medium-sized or large mammal but could not be identified more closely. The remaining 17 fragments were unburnt, heavily eroded, pieces of bone and/or tooth which were wholly indeterminate – their poor condition does indicate that ground conditions at the site have been extremely hostile to the preservation of uncharred vertebrate remains, however. The burnt fragments presumably represent food waste but, again, are of no further interpretative value in isolation.

Although sufficient charcoal was recovered from each of the samples (and by hand-collection from Context **6**) for radiocarbon dating (via AMS) to be attempted, this material cannot be recommended for the purpose. All bar a single tiny 'twig' fragment from Context **2** were of an indeterminate number of years of wood growth and, consequently, the associated 'old wood' problems could result in a radiocarbon date significantly earlier (by an unknown amount but potentially several hundreds of years in the case of long-lived species such as oak) than the charring event being returned. The 'twig' fragment from Context **2** is probably too small for AMS dating and, even if this were not the case, the tiny proportion of charred material within this deposit would cast considerable doubt on the validity of extending any date returned to the fill as a whole – given the possibility of displacement of individual small remains from their original point of deposition by, for example, bioturbation. Similar concerns would apply to the only good candidate material for radiocarbon dating recovered – the charred wheat grain from Context **4** – and this also cannot be recommended for submission for dating of the deposit.

RECOMMENDATIONS

No further study of the extremely limited quantities of, in general, very poorly preserved biological remains reported here is warranted.

The remains reported here are of no further interpretative value and may be discarded.

ACKNOWLEDGEMENTS

The author is grateful to Julie Shoemark, of NAA, for providing the material and the supporting archaeological information.

REFERENCES

- Cappers, R. T. J., Bekker, R. and Jans J. E. A. (2006). *Digitale Zadenatlas van Nederland*. Groningen Archaeological Studies 4. Groningen: Barkhuis Publishing and Groningen University Library.
- Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* **9** (for 1991), 24-6.
- Hather, J. G. (2000). *The identification of the Northern European Woods: a guide for archaeologists and conservators*. London: Archetype Publications.
- Hillson, S. (1990). *Teeth*. Cambridge: Cambridge University Press.
- Jacomet, S. (2006). *Identification of cereal remains from archaeological sites*. Second Edition. Basel: IPAS, Basel University.
- McParland, L. C., Collinson, M. E., Scott, A. C., Campbell, G. and Veald, R. (2010). Is vitrification in charcoal a result of high temperature burning of wood? *Journal of Archaeological Science* **37** (10), 2679-2687.
- Schmid, E. (1972). *Atlas of animal bones*. Amsterdam: Elsevier.
- Schoch, W. H., Heller, I., Schweingruber, F. H. and Kienast, F. (2004). *Wood anatomy of central European Species*. Online version: www.woodanatomy.ch
- Williams, D. (1973). Flotation at Siraf, *Antiquity* **47** (Issue 188), 288-92.

Table G1. Hornsea Leisure Park, Hornsea, East Riding of Yorkshire: Details of remains recovered from the dried residues from the processing of six bulk sediment samples (from five contexts) by NAA. Key: 'CN' = context number; 'S' = sample designation; '*' = information supplied by NAA.

CN	S	Context description*	Sediment description*	Sample size kg/l*	Weight of sorted material submitted /g*	Notes
2	AA	Fill of gully 1	Mid yellow-brown, firm, clay sand	22/20	0.56	33x items (to 8mm; 0.56g) comprising: 5x rectilinear charcoal fragments (to 8mm) the largest of which was of a ring-porous species, and somewhat vitrified and mineral impregnated. 1x tiny charcoal 'twig' fragment (to 4mm; diameter to 1mm) of a diffuse-porous species and representing one year of wood growth. 22x small pieces of coal (to 7mm). 4x small pieces of cinder (to 4mm). 1x small stone (to 3mm).
	AB			24/20	1.19	53x items (to 7mm; 1.19g) comprising: 7x indeterminate rectilinear charcoal fragments (to 5mm) – 2x fragments examined for attempted identification both crumbled and remained indeterminate. 1x charred ?root/rhizome fragment (to 4mm; diameter to 2mm). 11x small pieces of coal (to 6mm). 3x small pieces of cinder (to 7mm). 11x small stones (to 7mm). 4x modern rootlet fragments with adhering sediment. 16x indeterminate items. Note: occasional sand grains (abundance score 2) also present but discarded.
4	AA	Fill of track/furrow 3	Mid yellow-brown, firm, clay sand	25/20	3.00	72x items (to 16mm; 3.00g) comprising: 1x charred ?wheat (cf. Triticum) grain (to 3mm) – heavily sediment encrusted. 4x heavily sediment encrusted, indeterminate rectilinear charcoal fragments (to 9mm) – 2x fragments examined for attempted identification both crumbled and remained indeterminate. 60x small pieces of coal (to 16mm). 4x small stones (to 4mm). 1x small undisaggregated sediment 'crumb' (to 7mm). 2x modern rootlet fragments with adhering sediment.
6 (=14=24)	AA	Primary fill of ditch 5 (=ditch 13)	Mid yellow-brown, firm, clay sand	25/20	0.46	42x items (to 5.5mm; 0.46g) comprising: 10x indeterminate rectilinear charcoal fragments (to 3mm). 23x small pieces of coal (to 5.5mm). 4x small pieces of cinder (to 5mm). 4x small stones (to 4mm). 1x indeterminate item.

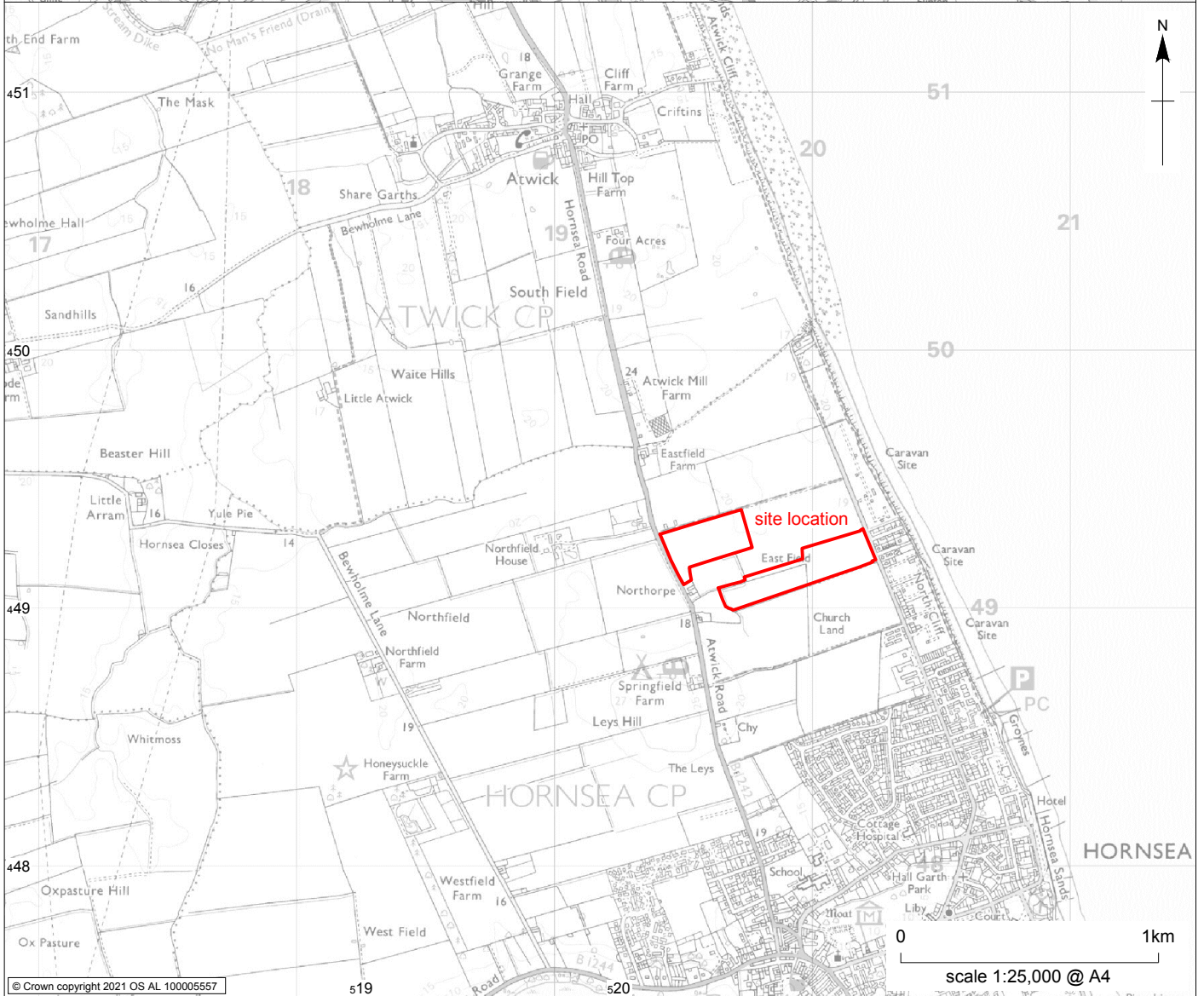
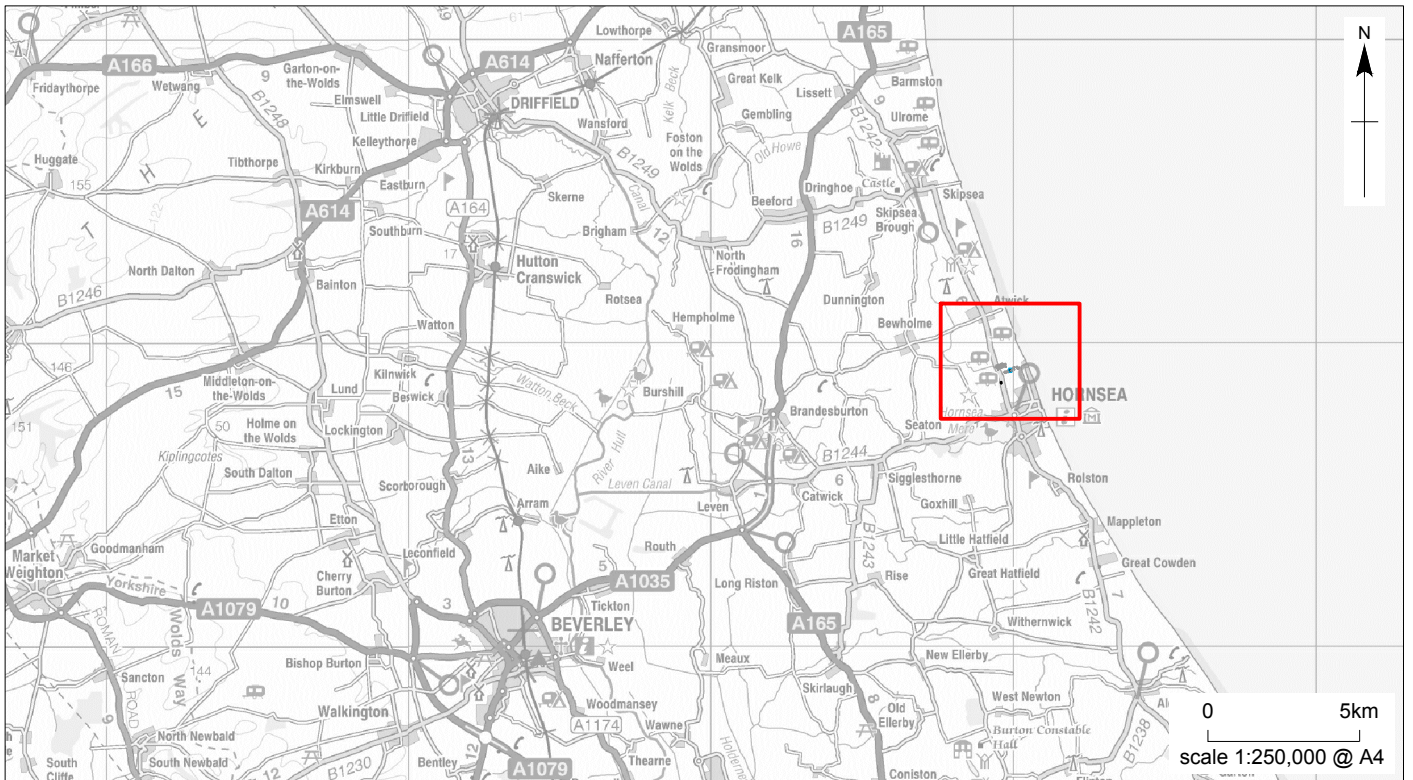
CN	S	Context description*	Sediment description*	Sample size kg/l*	Weight of sorted material submitted /g*	Notes
7 (=15=23)	AA	Secondary fill of ditch 5 (=ditch 13)	Mid yellow-brown, firm, clay sand	24/21	1.42	53x items (to 15mm; 1.42g) comprising: 44x rectilinear charcoal fragments (to 15mm but mostly <4mm) the largest of which was of a ?ring-porous species, and somewhat vitrified and mineral impregnated; two other fragments examined more closely both crumbled and remained indeterminate. 1x tiny charcoal ?'twig' fragment (to 3mm; diameter to 1mm); species indeterminate and no bark or waney edge in evidence (and so number of years of wood growth not determinable). 4x small pieces of coal (to 4mm). 1x small piece of cinder (to 5mm). 3x small stones (to 8mm).
19	AA	Fill of pit 18	Mid yellow-brown, firm, clay sand	4/4	1.23	361x items (to 9mm; 1.23g) comprising: 350x rectilinear charcoal fragments (to 9mm but mostly <4mm) – somewhat sediment encrusted and predominantly represented by thin 'slivers' (even the larger fragments were usually only >4mm in one linear dimension). Six fragments were examined for attempted species identification and all of these were somewhat vitrified and approximately half were slightly mineral impregnated – two fragments were ring-porous and another three ?ring-porous but the sixth crumbled and remained indeterminate. 3x small pieces of coal (to 4mm). 1x small piece of cinder (to 3mm). 5x small stones (to 4.5mm). 1x undisaggregated sediment 'crumb' (to 5mm) – with embedded modern rootlet fragment. 1x modern rootlet fragment. Note: occasional sand grains (abundance score 2) also present.

Table G2. Hornsea Leisure Park, Hornsea, East Riding of Yorkshire: Hand-collected 'charcoal'. Key: 'CN' = context number; 'S' = sample designation; '*' = information supplied by NAA.

CN	Context description*	Weight of sorted material submitted /g*	Notes
6 (=14=24)	Primary fill of ditch 5 (=ditch 13)	0.70	11x items (to 16mm; 0.70g) comprising: 8x heavily sediment encrusted, rectilinear charcoal fragments (to 16mm) the largest of which and two others were oak (Quercus) – all slightly vitrified. 1x very small stone (to 2mm). 2x undisaggregated sediment 'crumbs' (to 4mm).

Table G3. Hornsea Leisure Park, Hornsea, East Riding of Yorkshire: Hand-collected vertebrate remains. Key: 'CN' = context number; 'S' = sample designation; '*' = information supplied by NAA.

CN	Context description*	Weight of material submitted /g*	Notes
23 (=7=15)	Secondary fill of ditch 5 (=ditch 13)	36.10	Two bags of material submitted. Smaller bag (7.10g*): 2x burnt indeterminate medium-sized or large mammal long bone shaft fragments (to 44mm; 5.8g) – predominantly black in colour with small areas of blue-grey and fully calcined to white. 1x unburnt, very heavily eroded, indeterminate bone or tooth fragment (to 30mm; 1.3g). Larger bag (29.00g*): 16x unburnt, very heavily eroded, indeterminate bone or tooth fragments (to 51mm).

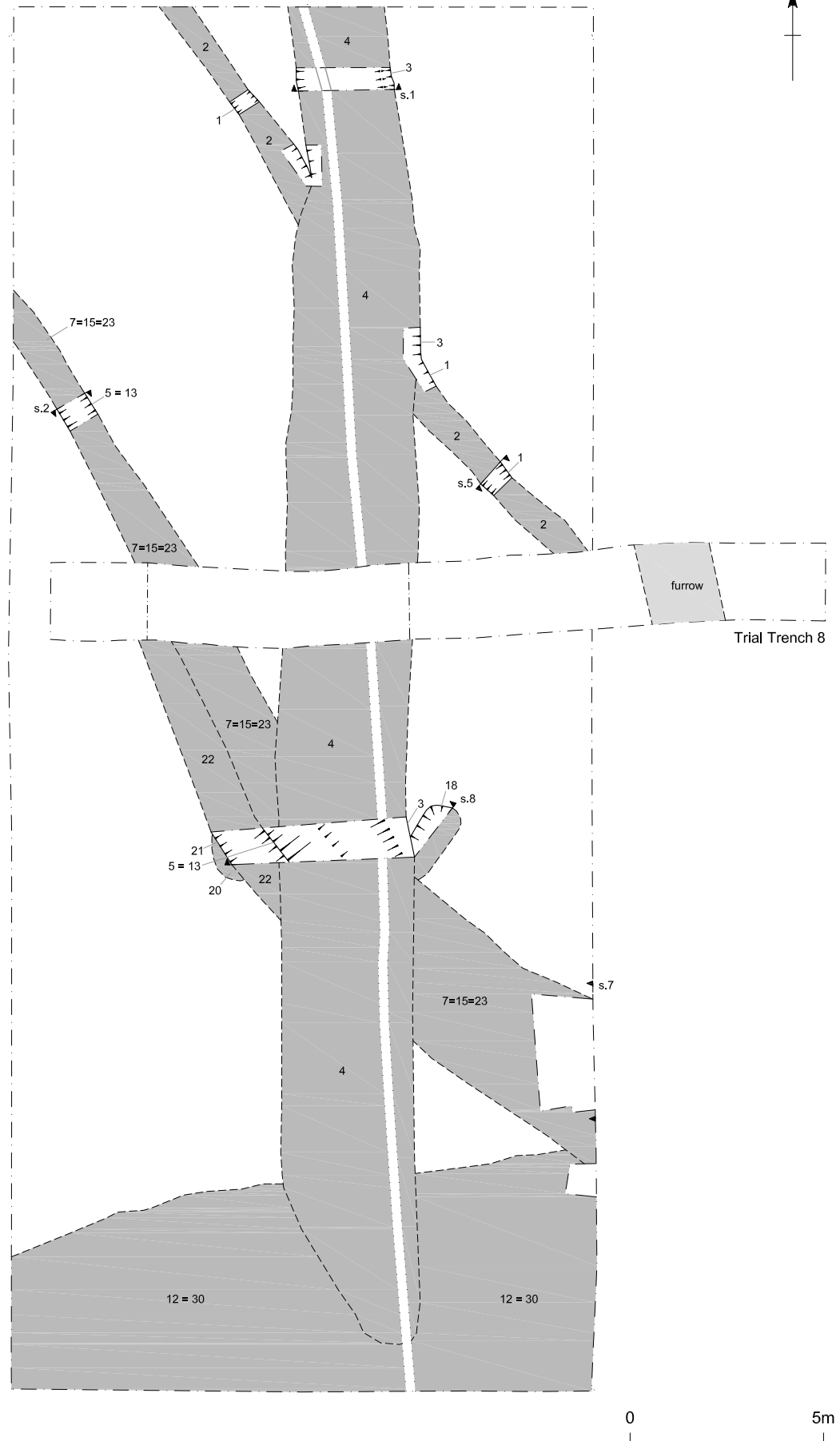


© Crown copyright 2021 OS AL 100005557
©NAA 2021

Hornsea Leisure Park, Hornsea, East Riding of Yorkshire: site location

Figure 1

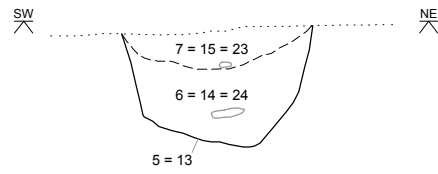




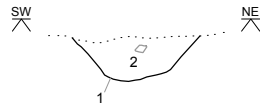
section 1



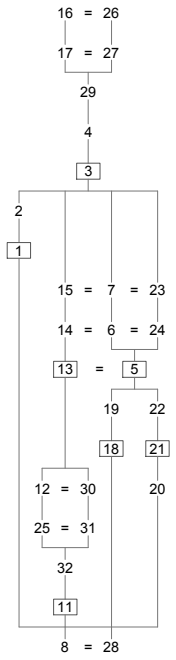
section 2



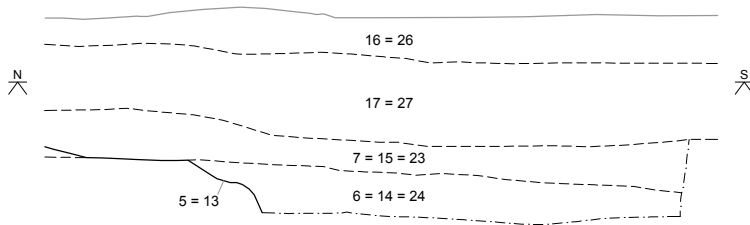
section 5



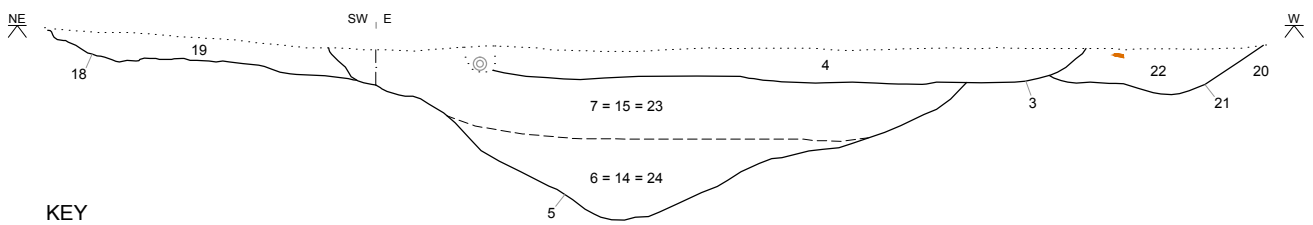
matrix



section 7

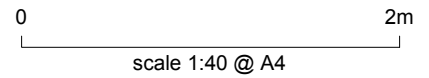


section 8

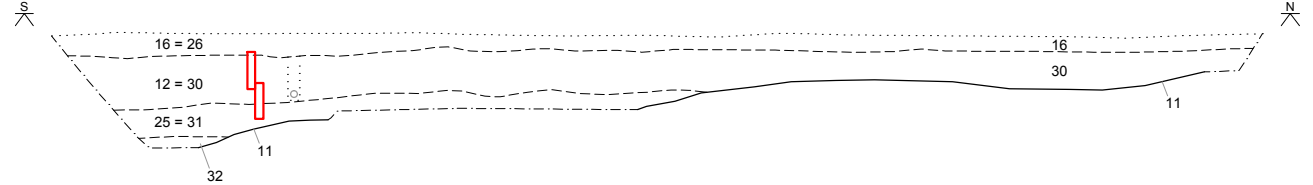


KEY

- pottery
- sample location



section 9



section 10

