

COUNTY FARM, LONG LANE, WOODMANSEY,
EAST YORKSHIRE

ARCHAEOLOGICAL INVESTIGATIONS



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On behalf of

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EXECUTIVE SUMMARY

In November 2017, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Philip Hagyard and Yasmin Clappison of 'The Beverley Barn' to undertake a programme of archaeological investigations during groundworks associated with the creation of a wedding venue and hospitality facility, at the former County Farm, Long Lane, Woodmansey, East Yorkshire, HU17 0RN (NGR TA 0487 3685 centred).

The archaeological work was made a condition of full planning permission, granted by East Riding of Yorkshire Council on 19th December 2017 (application DC/17/01885/PLF/EASTSE). A geophysical survey of the proposed development area was undertaken in November 2017, and the subsequent investigations were defined by a 'Written Scheme of Investigation'. An access road and car parking areas were subject to a 'strip map and record' exercise, the depth of excavation (typically 0.30m) being governed by the development proposals, while groundworks for a septic tank and associated drainage and soakaway trenches were subject to a watching brief.

A small number of prehistoric features were identified, some of which correlated with the results of the geophysical survey and the cropmarks plotted around the site. Based on the ceramic evidence, a pit [122] was considered to be of possibly Bronze Age but more likely Iron Age date while a pit or ditch [127] contained Iron Age pottery. Other potential pits or ditches [130 and 133] did not contain dating material. Two intersecting gullies [104 and 106] possibly delineated former prehistoric land divisions.

A former, presumed medieval, hedge line [110] was also noted together with contemporary furrows [113, 114 and 115]. The earlier features were overlain or partially overlain by a layer of subsoil (108), which probably represented the ploughed-out remains of ridges associated with the earlier ridge and furrow agriculture. Modern agricultural activity was also visible as plough scars (103) in the northern end of the access road.

1 INTRODUCTION

- 1.1 In November 2017, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Philip Hagyard and Yasmin Clappison of 'The Beverley Barn' to undertake a programme of archaeological investigations during groundworks associated with the creation of a wedding venue and hospitality facility, at the former County Farm, Long Lane, Woodmansey, East Yorkshire, HU17 0RN (NGR TA 0487 3685 centred).
- 1.2 The archaeological work was made a condition of full planning permission, granted by East Riding of Yorkshire Council on 19th December 2017 (application DC/17/01885/PLF/EASTSE). The condition (number 10) stated that: "No development shall take place until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a Written Scheme of Investigation which has been submitted to, and approved in writing, by the Local Planning Authority". This pre-commencement condition was imposed "in accordance with policy ENV3 of the East Riding Local Plan and in order to provide a reasonable opportunity to record the history of the site which site [sic] lies within an area of archaeological interest".
- 1.3 A geophysical survey of the proposed development area was undertaken in November 2017 (see below), and a 'Written Scheme of Investigation' was subsequently produced by EDAS (see Appendix 3). This was approved by East Riding of Yorkshire Council on 9th May 2018 (application DC/18/30051/CONDET/EASTSE) following advice from the Humber Archaeology Partnership (ref: SMR/PA/CONS/25872).

2 SITE LOCATION AND DESCRIPTION

- 2.1 The development site lies off the south side of Long Lane, in open countryside some 2.65 km south-south-east from Beverley Minster (see figure 1). The site comprises a grassed field, formerly part of a larger arable field, and a small farm complex. The site is relatively flat at 7.00 metres above Ordnance Datum (AOD), and the farm buildings are centred at NGR TA 04870 36850 (see figure 2).

3 FIELDWORK METHODOLOGY

- 3.1 The archaeological investigations were defined by the approved 'Written Scheme of Investigation' (see Appendix 3). More general advice produced by the Chartered Institute for Archaeologists in relation to field evaluation, excavation and watching briefs (CIfA 2014a; 2014b; 2014c) was also considered.
- 3.2 After consultation with the Humber Archaeology Partnership, four separate phases of archaeological work were carried out, the results of each phase defining the parameters for the subsequent phase. Initially, the route allocated for an access road was subject to an archaeologically-controlled topsoil strip, using a 360 mechanical excavator with a straight-edged toothless bucket, followed by the detailed cleaning and recording of exposed surfaces and the selected excavation of any identified deposits or features - this is traditionally known as a "strip, plan and record" project (Phase 1a). Once archaeological features or deposits were identified, and if these were deemed to be significant and would be destroyed or otherwise affected by the development, further work was undertaken to achieve "preservation by record", i.e. the detailed excavation of selected features followed by an appropriate level of post-excavation analysis and publication of results (Phase 1b). In all cases, the amount of topsoil and subsoil stripping was governed by the depth

of excavation required for the development proposals; in some cases, this meant that some archaeological features were not fully investigated, as they would remain preserved below the construction levels. Other parts or specific areas of the site were subject to an archaeological watching brief (Phase 2a), followed by further work as necessary to achieve “preservation by record” (Phase 2b).

3.3 The objectives of the Phase 1a “strip, plan and record” investigations were defined as follows:

- to determine the presence/absence of all archaeological deposits and features within the areas allocated for the access road alignment;
- to identify and record in plan all the archaeological deposits and features within the areas allocated for the access road alignment; and
- to provide an assessment of the potential and significance of any identified archaeological deposits and features within a local and regional context.

3.4 Once the Phase 1a work was completed, an informed decision was made regarding the extent of any further archaeological work that might be required prior to or during development (Phase 1b work) to achieve “preservation by record”. The objectives of the Phase 1b detailed work were to:

- identify and appropriately record through excavation all archaeological deposits and features within the areas allocated for the access road alignment;
- determine the extent, condition, function, relationships, character, quality of survival, importance and date of any identified archaeological deposits and features within the areas allocated for the access road alignment; and
- recover an adequate sample of the deposits and related artefactual and ecofactual materials to allow the determination of (i) the chronology of the site, its components and detailed phases, (ii) the inter-relationships between the various components of the site, (iii) the function of the various components of the site, and (iv) the potential co-existence or succession of sites in the immediate vicinity, so as to achieve “preservation by record”.

3.5 The on-site archaeological investigations were undertaken between 16th and 21st April 2018. The nature of the remains, and the timing of the project, were such that there was no separation or time division between the Phase 1a and Phase 1b work.

3.6 The Phase 1 “strip map and record” element of the project covered the construction of an access road and car parking areas (see figure 8). The 5.8m wide road ran south-west from Long Lane for a distance of 105m before turning south-east for another 30m (see plate 1). The car parking area covered a maximum area of 40m by 35m, and was investigated by three connecting trenches measuring between 30m-35m long and 5m wide; these trenches corresponded to the roadways (see plate 2). Depth of excavation was typically only 0.30m for the access roads. The Phase 2a watching brief work covered the excavation of a septic tank, measuring 5.0m long by 3.0m wide by 0.90m deep, and its associated drains, and four soakaway trenches measuring 0.90m wide and 1.20m deep (see figure 8). Two of the soakaway trenches were 45m long but the other two turned through a right angle and extended for 70m along the outer edges of the access road.

3.7 Following standard archaeological procedures, each discrete stratigraphic entity (e.g. a cut, fill or layer) was assigned an individual three digit context number and detailed information was recorded on *pro forma* context sheets. A total of 134 contexts were recorded (see Appendix 1); deposits or layers are identified by the

use of round brackets while cuts are signified by square brackets. In-house recording and quality control procedures ensured that all recorded information was cross-referenced as appropriate. The positions of the monitored groundworks were recorded on site plans at a scale of 1:100 or as measured sketches, and representative section drawings were made at a scale of 1:10 or 1:20 as appropriate; a general site plan at 1:500 scale was also produced. All sections and plans include spot-heights related to Ordnance Datum in metres correct to two decimal places; an Ordnance Survey spot height on Long Lane was used to calculate levels. A digital photographic record was also kept, supplemented by black and white, and colour, 35mm photography of selected features.

- 3.8 A small pottery assemblage (56 sherds) was recovered from the investigations, and other collected artefacts comprised a 15 pieces of flint, one piece of shell and two fragments of burnt stone; these were examined and reported on by Peter Didsbury and Sophie Tibbles respectively. Additional specialist advice on the prehistoric pottery was sought from Terry Manby. Seven 'bulk' sediment samples were also collected for their palaeo-environmental potential, and these were analysed by John Carrot of Palaeoecology Research Services of Hull. The various unedited specialist reports appear in Appendix 2. Only the pottery was considered for retention, and this was added to the rest of the project archive which was deposited with the East Riding of Yorkshire Museum Service (site code CFW 18; accession number ERYMS (BAG) 2018.47).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 4.1 Information from the Humber Historic Environment Record shows that the proposed development site lies within an important archaeological landscape, with cropmarks of an Iron Age and/or Romano-British field system running through the proposal site itself (see figure 3). These features have been identified on aerial photographs and further enhanced by the Hull Valley Mapping Project, which identified further ditches and enclosures. The field system appears to extend to the north and north-east of County Farm, therefore suggesting that the features are contemporary with each other. In addition to the above, there are also at least five Bronze Age round barrows in the vicinity of the application site. It is likely, therefore, that any groundworks in this area would affect heritage assets dating to the prehistoric and Romano-British periods.
- 4.2 During the medieval period, the area of the proposed development lay within the wider Beverley Parks, a medieval deer park belonging to the archbishops of York (Neave 1991, 20). The first documentary record of the park occurs in 1258, and from the 1260s onwards there are frequent accounts of trespassing and poaching. A survey made in 1388 notes that "400 beasts, counting by the short hundred, can be fed in the park over and above the sustenance of game", and a reference from 1554-55 suggests that it was by then six miles in circumference and contained over 2,200 acres. Although the park was primarily reserved for the archbishop's deer and other game, it also included areas of arable (155 acres in the 1530s), meadow and pasture as well as some woodland; relict ridge and furrow has been recorded in several areas.
- 4.3 In 1573 Beverley Parks was leased to Michael Warton, and a year later the deer park was disparked. In 1672, a later Michael Warton had a modest two-hearthed house at Beverley Parks, the remnants of an earlier hunting lodge, but in the 1670-80s he built a much grander house called New Lodge, together with outbuildings and walled gardens. The main house was demolished sometime after 1775, although the brick-built service wing, converted into the present Old Hall

farmhouse, remains as well as some outbuildings, gatepiers and walled gardens (Dennison 1992, 36-54).

- 4.4 From the late 17th century, the Wartons let much of Beverley Parks out to tenants, and by 1775 the area had been divided into some 96 holdings, two-thirds of which were of less than ten acres, and mainly consisted of closes of meadow or pasture. Fifteen tenants farmed more than 50 acres, of whom ten had farms of more than 100 acres (Allison 1989, 276). This led to a phase of enclosure and building within the former medieval deer park, although most of the farmhouses mentioned in the 1775 survey have now been demolished or rebuilt - houses which may date from the late 17th century or early 18th century survive at Poplar Farm and Halfway House Farm (Allison 1989, 274). In 1775 Beverley Parks became the property of Charles Anderson Pelham of Brocklesby in Lincolnshire, later the first Lord Yarborough, and the subsequent division of his estate in the early 19th century created further landholdings in the Parks; one of the largest was owned by the Denton family of Beverley, who acquired Hampston Hill farm, Old Hall farm and Vinegar Hill farm. Charlotte Denton sold Old Hall farm in 1916 to Thomas Weatherill and in 1919 he sold it to the East Riding County Council to create agricultural holdings (Allison 1989, 274). County Farm was created by amalgamating two of these smallholdings (nos 302 and 303), and the farmhouse and outbuildings were built in December 1959, for the sum of £5,156; the original contract and drawings still survive (ERA CCER/2/8/7/21).
- 4.5 In order to assess the archaeological implications of the proposed development, and to determine whether any of the above mentioned field system elements extend into the development area, a geophysical magnetometer survey was undertaken of the pasture field to the immediate west and south of the existing farm buildings. This survey was carried out on 27th November 2017 by On Site Archaeology (On Site Archaeology 2017a).
- 4.6 The survey area of c.1.00ha was divided into 30m by 30m grids and tied in to known Ordnance Survey points using appropriate GPS equipment. Data collection was carried out using two Bartington Grad 601-2 fluxgate gradiometers, and samples were recorded on an interval of 0.25m by 1m in accordance with current archaeological guidelines, yielding 3,600 measurements per 30m square.
- 4.7 The survey results show a strong correlation between magnetic anomalies and cropmark evidence, pointing to some potential archaeological activity (see figure 4). Of note are several positive linear responses. The clearest run parallel to one another, suggesting a possible trackway (Feature D) aligned east-north-east/west-south-west and forming part of the surrounding late prehistoric and Romano-British landscape. Adjacent anomalies, such as an area of magnetic noise (Feature F) and a small rectilinear feature (Feature G) may be associated with the trackway. Further low linear responses (Feature B) may represent part of a sub-divided field system, although they may also be associated with nearby farm buildings. Feature H presents as an isolated anomaly and may prove to be archaeological feature such as a pit or similar. Other anomalies are modern features or disturbance from adjacent farm buildings.
- 4.8 It is of note that several of the potential archaeological features identified as cropmarks were not identified by the geophysical survey. This may suggest that the site has suffered truncation from recent agricultural activity, since the aerial photographs that recorded the cropmarks were taken. However, it should also be noted that a previous geophysical survey on a development site at Woodmansey

recorded no archaeological features, although some ditches were subsequently noted by field investigation (On Site Archaeology 2017b).

5 RESULTS FROM THE INVESTIGATIONS

Access Road and Car Park (see figures 5 and 6)

- 5.1 The natural, which varied from an orange-brown sand with chalk gravel and fragmented flint inclusions (102) to chalk gravel (109), was encountered at 0.23m below ground level (BGL) (6.79m AOD) adjacent to Long Lane, rising to 0.26m BGL (7.22m AOD) 80m to the south, 0.27m BGL (7.34m AOD) on approaching the area of the car park and 0.3m BGL (between 7.22-7.34m AOD) in the area of the car park.

Natural Features

- 5.2 Four cut features [117, 118, 119 and 121] were encountered in the southern extent of the area of the car park, cut into the natural chalk (109). They were sub-circular or more pointed in plan, and generally less than 0.20m deep with a sterile loose light brown silty sand. All proved to be of natural origin, and were small probably tree boles or natural depressions.

Undated/Prehistoric?

- 5.3 Approximately 80m from the northern end of the access road, the natural (109) had been cut by a north-east/south-west aligned gully [106], 0.59m wide and up to 0.12m deep (see plates 3 and 4). The cut had concave sides and base creating a bowl-shaped profile (see Section 3 on figure 5). It contained a firm grey-brown silt sand fill (107) with occasional chalk gravel inclusions, and was devoid of any dating evidence. The results from the environmental sample taken (S1) from the fill were limited. Aside from modern intrusions/contaminants (e.g. earthworm egg capsules and frequent uncharred 'seeds'), probable 'ancient' biological remains included occasional charred orache/goosefoot seeds, frequent cinder and fragments of terrestrial molluscs including *Vallonia ?excentrica*, a species that indicates an environment of open grassland.

Prehistoric?

- 5.4 Gully 106 was truncated by another gully [104], aligned roughly north-west/south-east, and 0.50m wide by up to 0.23m deep; the cut had gently sloping sides and a slightly concave base (see Sections 1 and 2 on figure 3, and plates 3 and 4). This contained a firm yellow-brown clay sand fill (105) with moderate chalk inclusions. A flint flake (debitage) of prehistoric date (refined dating not possible) was the only artefact recovered from this material. An environmental sample (S2) also produced similar 'ancient' biological remains including numerous fragments of terrestrial molluscs suggesting open grassland, traces of charcoal (one fragment identified as a diffuse-porous species), cinder, coal and occasional charred orache/goosefoot seeds.
- 5.5 In the area of the car park, a sub-circular pit [122], 1.30m long, 0.92m wide and 0.23m deep, had been cut into the natural (109) (see Section 6 on figure 6, and plates 9 and 10). This pit contained a primary fill of a loose very dark brown-black silt sand (125) up to 0.11m thick, from which prehistoric pottery of possible Bronze Age but more likely Iron Age date was recovered, as well as two burnt stones, a utilised flint flake possibly of Bronze Age date, and adebitage flake of prehistoric

date. A single *Vallonia ?excentrica* was also noted within an environmental sample (S3), together with a few charred orache/goosefoot seeds and coal as well as frequent charcoal fragments (not recommended for AMS dating), of which two were identified as alder/birch/hazel, two as diffuse-porous species. The primary fill (125) was overlain by a brown silt sand secondary fill (126) up to 0.14m thick. A sherd of possible Bronze Age/Iron Age pottery was recovered during the processing of an environmental sample (S4); occasional coal, cinder and frequent charcoal (not recommended for AMS dating) were also noted, two fragments of the latter were identified as alder/birch/hazel and two as diffuse-porous species.

Medieval?

- 5.6 Running either side of the earlier pit (122) were two north-east/south-west aligned furrows [114 and 115], c.1.00m wide and up to 0.08m deep, set 4.25m apart (see plates 7 and 8). No dating evidence was recovered from their loose brown sand silt fills (124 and 123, respectively) (see plate 7).
- 5.7 A probable contemporaneous, parallel aligned, 1.60m wide cut [110] for a former hedge line, up to 0.19m deep, lay to the south-west of the furrows (see plate 5). The cut had irregular sides and an undulating base caused by former root activity (see Sections 4 and 5 on figure 6) (see plate 6). No dating evidence was recovered from its loose and friable brown sand silt fill (111/112).
- 5.8 A further, parallel aligned, furrow [113] up to 0.54m wide and 0.08m deep lay to the south-east of the hedge line [110]. A debitage flake of prehistoric date was the only artefact recovered from its loose brown silt sand fill (120). This feature was seen in the southern trench excavated across the car park area, but was not seen in the northern trench as the depth of excavation was less here.

Post medieval/Modern?

- 5.9 The earlier features and natural deposits were partially overlain by a layer of firm dark orange-brown silt sand subsoil (108) up to 0.2m thick. The only artefact recovered from this deposit was an oyster valve.

Modern

- 5.10 Cut into the natural towards the northern end of the access road were a number of north-west/south-east aligned plough scars [103], one of which was investigated. This proved to be 3.0m long, up to 0.30m wide and 0.03m deep, and filled with topsoil (101). None of the plough scars crossed the full extent of the excavated access road.
- 5.11 The earlier features and deposits were overlain by a layer of friable loamy silt topsoil (101) up to 0.30m thick, which was devoid of artefacts and any other dating evidence. The topsoil formed the current ground surface and was encountered at 7.02m AOD adjacent to Long Lane, rising to 7.48m AOD 80m to the south, 7.61m AOD on approaching the area of the car park and between 7.52-7.64m AOD in the area of the car park.

Septic Tank (see figure 7)

- 5.12 A trench measuring 5.0m long north-west/south-east by 3.0m wide, situated to the north-west of the farmhouse and north of a barn, was stripped of topsoil and underlying deposits to house a septic tank (see plate 11).

- 5.13 The natural chalk gravel (109) was encountered 0.68m BGL at the eastern of the trench, rising slightly to 0.62m BGL at the western end (see Section 8 on figure 7). The natural (109) was overlain by a layer of firm dark orange-brown silt-sand subsoil (108) up to 0.28m thick, encountered 0.4m BGL at the eastern end of the trench, rising slightly to 0.3m BGL at the western end. No dating evidence was recovered from this deposit. The subsoil (108) was overlain by a layer of topsoil (101) up to 0.40m thick which formed the current ground surface. Again, no artefacts or other dating evidence was recovered from this deposit.

Drainage Trenches (see figure 8)

- 5.14 Two 0.45m wide drainage trenches up to 1.12m deep were cut from the eastern end of the trench for the septic tank. One ran roughly 12.0m north-east towards a drain for a pre-existing septic tank, the other ran south-east before turning south-west and continuing along the eastern side of a barn, a distance of roughly 44m (see plate 12).
- 5.15 In the north-eastern trench, the natural chalk gravel (109) was occasionally interspersed by a 0.13m thick lens of clay (see Section 10 on figure 7). The natural, encountered 0.30m BGL, was overlain by a 0.30m thick layer of topsoil (101), which formed the current ground surface.
- 5.16 In the south-eastern trench the natural chalk gravel (109) was encountered roughly 0.37m BGL. The natural was overlain by a 0.07m thick layer of subsoil (108), which increased to over 0.2m thick in a 7.4m wide localised area to the north of the barn (see Section 11 on figure 7). The subsoil was encountered 0.3m BGL and was overlain by a 0.3m thick layer of topsoil (101), which formed the current ground surface.

Soakaway Trenches (see figures 5, 7 and 8)

- 5.17 Four soakaway trenches up to 0.90m wide and 1.20m deep were cut from the west end of the septic tank trench and ran north-west towards the new access road (see plate 13). The outer two trenches terminated just before the road while the two central ones turned and ran south-west along either side of the new access road (see plate 14).
- 5.18 The stratigraphy in the four trenches running from the septic tank to the access road was similar, namely natural chalk gravel (109) overlaid by roughly 0.3m of topsoil (101), which formed the current ground surface.

Prehistoric?

- 5.19 Towards the southern ends of the soakaway trenches which continued along the access road, three possible ditches [127, 130 and 133] had been cut into the natural chalk gravel (109) and/or localised deposits of natural clay-sand (129 and 132) (see plate 116). The features were only seen in section due to the speed of excavation of the soakaway trenches, and it was not possible to fully determine whether they represented ditches or pits - their general alignment suggested that they were ditches, and there was some correlation with the adjacent cropmarks (see below). The ditches were also not seen in the main excavation for the access road, as the depth of excavation was less (typically 0.30m for the road compared to up to 1.20m for the drains).

- 5.20 Ditch 127 was encountered in the soakaway trench on the east side of the access road, towards its southern end (see plate 15). It was orientated north-west/south-east, and measured 0.80m wide and 0.44m deep, with sloping sides and a curved undulating base (see Section 9 on figure 7). It contained a friable brown-grey sand silt fill (128) from which six sherds of Iron Age pottery were recovered. The results from the environmental sample (S5) were again restricted to traces of indeterminate charcoal, coal and cinder, and a small terrestrial mollusc assemblage comparable to those noted within samples 1 and 3. The ditch [127] was not seen in the corresponding drainage trench on the west side of the access road.
- 5.21 The southernmost ditch [130] in the soakaway trench on the west side of the access road was orientated north-west/south-east, and measured 0.80m wide and 0.54m deep; the ditch had a bowl-shaped profile with convex sides and base (see Section 7 on figure 7, and plate 16). It contained a firm orange-brown silt clay fill (131), which was devoid of any dating evidence. An environmental sample (S6) was of very limited bio-archaeological potential with only occasional indeterminate terrestrial mollusc fragments, charcoal, coal, cinder and charred orache/goosefoot seeds.
- 5.22 Ditch 133 lay 1.0m to the north of pit 130 and was also orientated north-west/south-east, measuring 0.80m wide and 0.30m deep, with sloping sides and a sharp break of slope to the flat base (see Section 7 on figure 7). No dating evidence was recovered from the firm orange-brown silt clay fill (134). The results from an environmental sample (S7) were comparable to sample 6, but no mollusc remains were recorded.

Post medieval/Modern?

- 5.23 The earlier features and natural deposits were partially overlain by a layer of firm dark orange-brown silt sand subsoil (108) up to 0.2m thick. No dating evidence was recovered from this deposit.

Modern

- 5.24 The subsoil was overlain by a layer of topsoil (101) up to 0.3m thick, which was devoid of dating evidence and formed the current ground surface.

Summary of Finds Assemblage

- 5.25 A small finds assemblage that comprised flint, shell, burnt stone and pottery was recovered from the investigations (see Appendix 2 for the relevant specialist reports). Relevant information has also been added to the site narrative above.

Flint, shell and burnt stone

- 5.26 Three pieces of flint were hand-collected from two contexts (125 and 120) during the investigations, and a further 12 were recovered from six contexts (105, 107, 125, 126, 131 and 134) during the processing of the environmental samples. All were of local flint with evidence of weathering, and two flakes were possibly worked. One white/grey mottled flake from the primary fill (125) of pit 122 displayed at least one possibly utilised edge and is potentially of Bronze Age date. A small, pale brown, semi-opaque flake from the fill (120) of furrow 113 displayed some weathering along the edges including a potentially utilised edge, although refined dating was not possible.

- 5.27 The subsoil (108) produced a left (lower) oyster (*Ostrea edulis* L.) valve. Although the surfaces were eroded, there was no evidence of it having been opened with a knife or similar tool.
- 5.28 Two glacial erratics were recovered from the primary fill (125) of pit 122, weighing 828g. They both displayed a weak red hue from heat exposure, possibly from use within a hearth. No other distinguishing features were recorded.
- 5.29 The small size of the assemblage limits the archaeological potential of the artefacts, for example dating of the worked and debitage flint is broad due to the lack of diagnostic traits, although one flake may be of Bronze Age date. However, the use of local resources (flint), elements of food waste (shell), and other material associated with occupational activity (burnt stone), support the evidence of prehistoric activity encountered within the development area. The specialist report recommended that the artefacts could be discarded, apart from the worked flints which should be retained with the project archive.

Pottery

- 5.30 A total of 56 sherds of pottery, weighing 169 grams, and having an average sherd weight (ASW) of only 3.0 grams, was recovered from three contexts, the primary and secondary fills (125 and 126) of pit 122 and the fill (128) of probable ditch 127. The primary fill (125) produced 32 sherds, which are considered to derive from an estimated ten vessels, while the secondary fill (126) produced only a single fragment.
- 5.31 It proved difficult to accommodate the pit 122 material within the usual regional Iron Age fabric groups. Of three potentially diagnostic vessels, only one (vessel 10), offered any dating potential, but the simple rim barrel jar appears throughout the first millennium BC and perhaps derives from Bronze Age bucket urns; comparative evidence suggests 900-400 BC respectively. Two other sherds with applied strips (vessels 8 and 9) are not typical of either of the horizons of plastic decoration known from Iron Age East Yorkshire. In line with the specialist's report, further specialist opinion was sought on these sherds, and it was considered that they were more Iron Age rather than early prehistoric in date (Terry Manby, *pers. comm.*). As far as the vessel from pit/ditch 127 is concerned, it is thought that an Iron Age date is the most acceptable. The specialist report recommended that the pottery should be retained with the project archive.

Environmental Samples

- 5.32 Seven 'bulk' sediment samples were submitted for an assessment of their bio-archaeological potential, but very few biological remains of probable 'ancient' origin were recovered. The small quantities of charcoal represented no more than a 'background' level presumably derived from fuel waste and, although some fragments could be identified as of a diffuse-porous species and some a little more closely as alder (*Alnus*), birch (*Betula*) or hazel (*Corylus*), they were of no further interpretative value. The occasional charred seeds recovered were all of the common ruderal/arable weed taxa orache/goosefoot (*Atriplex/Chenopodium*) and also provided too little material for any interpretation. Similarly, the identifiable components of the recovered mollusc assemblages were too small for reliable interpretation, but *Vallonia ?excentrica* was the most numerous and is regarded as a good indicator of established open grassland. The other molluscs present were consistent with such a habitat, and there were no remains to suggest more

substantial vegetation, such as woodland or hedgerow, or aquatic taxa (implying that the features were dry). No vertebrate remains were recovered and no interpretatively valuable microfossils were present. All of the other plant and invertebrate remains were almost certainly modern intrusions or contaminants. No remains were considered suitable for submission for radiocarbon dating, and no further study of the biological remains is warranted.

6 DISCUSSION AND CONCLUSIONS

- 6.1 The following comments can be made regarding the results of the archaeological investigations (see figure 8).

Prehistoric?

- 6.2 Pit 122 was an isolated feature in the area of the car park that had been stripped down to the natural chalk deposits (109); it measured 1.30m long, 0.92m wide and 0.23m deep (see Section 6 on figure 6). It did not correlate with any of the dipolar readings on the geophysical survey. Based on the ceramic evidence, the pit is considered to be of Bronze Age?/Iron Age date.
- 6.3 Pits/ditches 133 and 130 were encountered in the western soakaway trench excavated along the line of the access road (see Section 7 on figure 7). Both appear to correlate with a curvilinear cropmark visible on aerial photographs running south-east into the development area, although it was not identified by the geophysical survey, presumably because it was masked by subsoil (108). The features had been cut into the natural chalk deposit (109). Any continuation of these two features within the access road (if present) was masked by the subsoil (108).
- 6.4 Pit/ditch 127 was encountered in the eastern soakaway trench excavated along the line of the access road; it measured 0.80m wide and 0.44m deep and was cut into the natural (109) (see Section 9 on figure 7). Iron Age pottery was recovered from the fill (128). If this feature was a ditch, it may represent the southern continuation of ditch 130 to the north and form the eastern arm of the small rectilinear feature (Anomaly G) noted by the geophysical survey (On Site Archaeology 2017a); no evidence of the northern or southern arms of Anomaly G was encountered during the site works, although much of it lay outside the area of investigation, and so remained undisturbed.
- 6.5 To the immediate west of pit/ditch 127, intersecting gullies 104 and 106 were encountered (see figure 5). Gully 104 was 0.50m wide by up to 0.23m deep, and gully 106 was 0.59m wide and up to 0.12m deep. Both may be broadly contemporary with the curvilinear cropmark noted above, and they possibly demarcate former land divisions.
- 6.6 No evidence of the cropmarks within the northern part of the development area was encountered within the soakaway trenches leading north-west from the septic tank.

Medieval

- 6.7 In the southern arm of the car park, hedge line 110 probably represented a field boundary; it measured 1.60m wide by up to 0.19m deep (see Sections 4 and 5 on figure 6). It is probably shown on the early 19th century Ordnance Survey maps of the area, such as the 1855 6" map (sheet 211) and the 1891 25" map (sheet

211/13), although it is not depicted on the 1910 and later editions. The remains of probably contemporary furrows lay to the north [114 and 115] and south [113]. The hedge line and furrows did not appear on the geophysical survey but ran parallel with linear Anomaly D to the north-west; it is therefore possible that Anomaly D may be contemporary.

- 6.8 Anomaly D was not exposed during the monitoring as it lay within an area of the access road that was only stripped of topsoil (101).

Post medieval/Modern?

- 6.9 The earlier features were overlain or partially overlain by a layer of subsoil (108), which probably represented the ploughed-out remains of ridges associated with the earlier ridge and furrow agriculture.

Modern

- 6.10 Modern agricultural activity was visible as plough scars (103) in the northern end of the access road.

Finds and Environmental

- 6.11 Although the results from the environmental samples were restricted, biological remains of probable 'ancient' origin were present, with particular reference to the terrestrial molluscs, suggesting that the features were dry and lay within a landscape of open grassland. The finds assemblage is also of limited archaeological potential although evidence of prehistoric activity is apparent.

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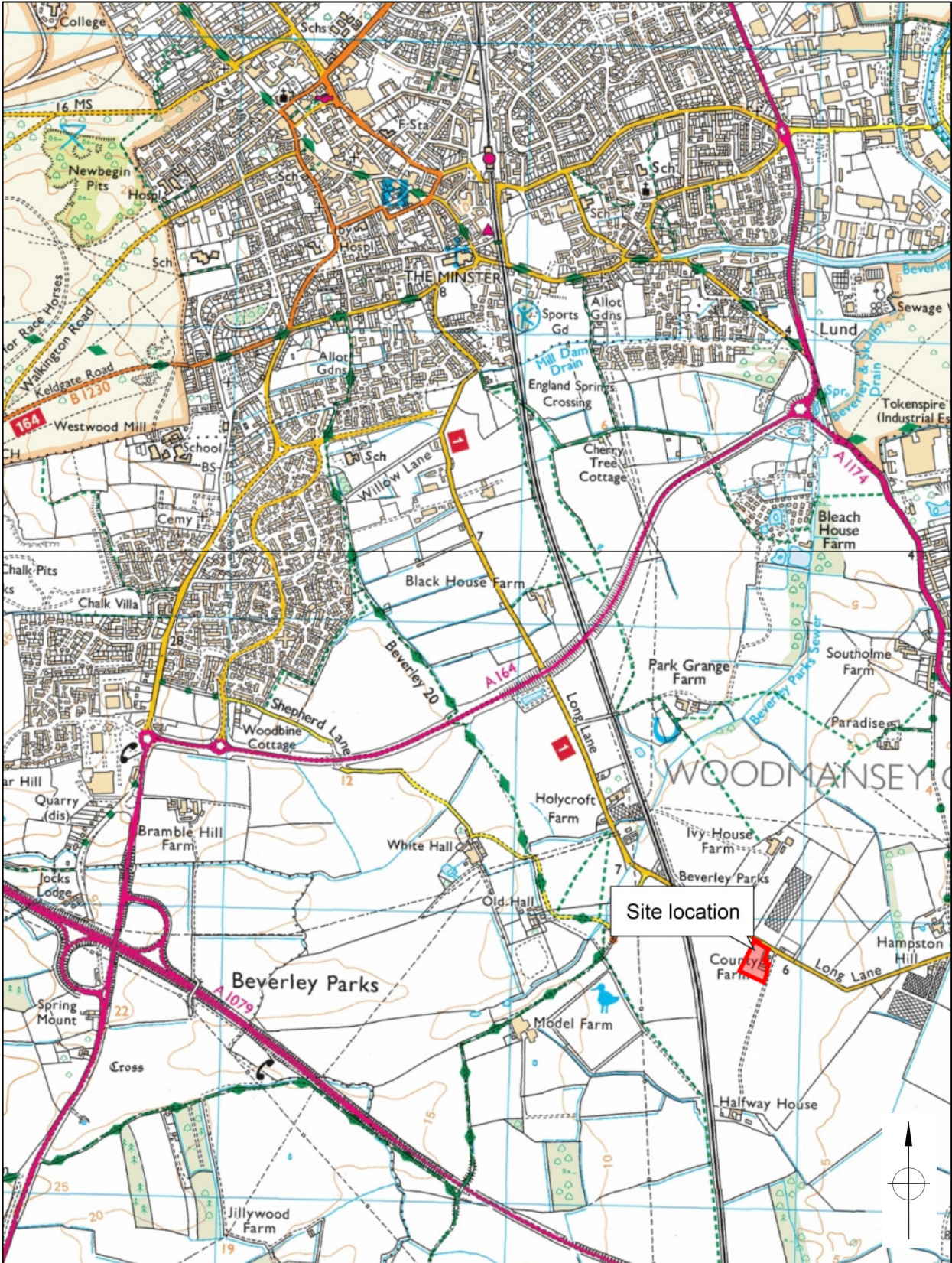
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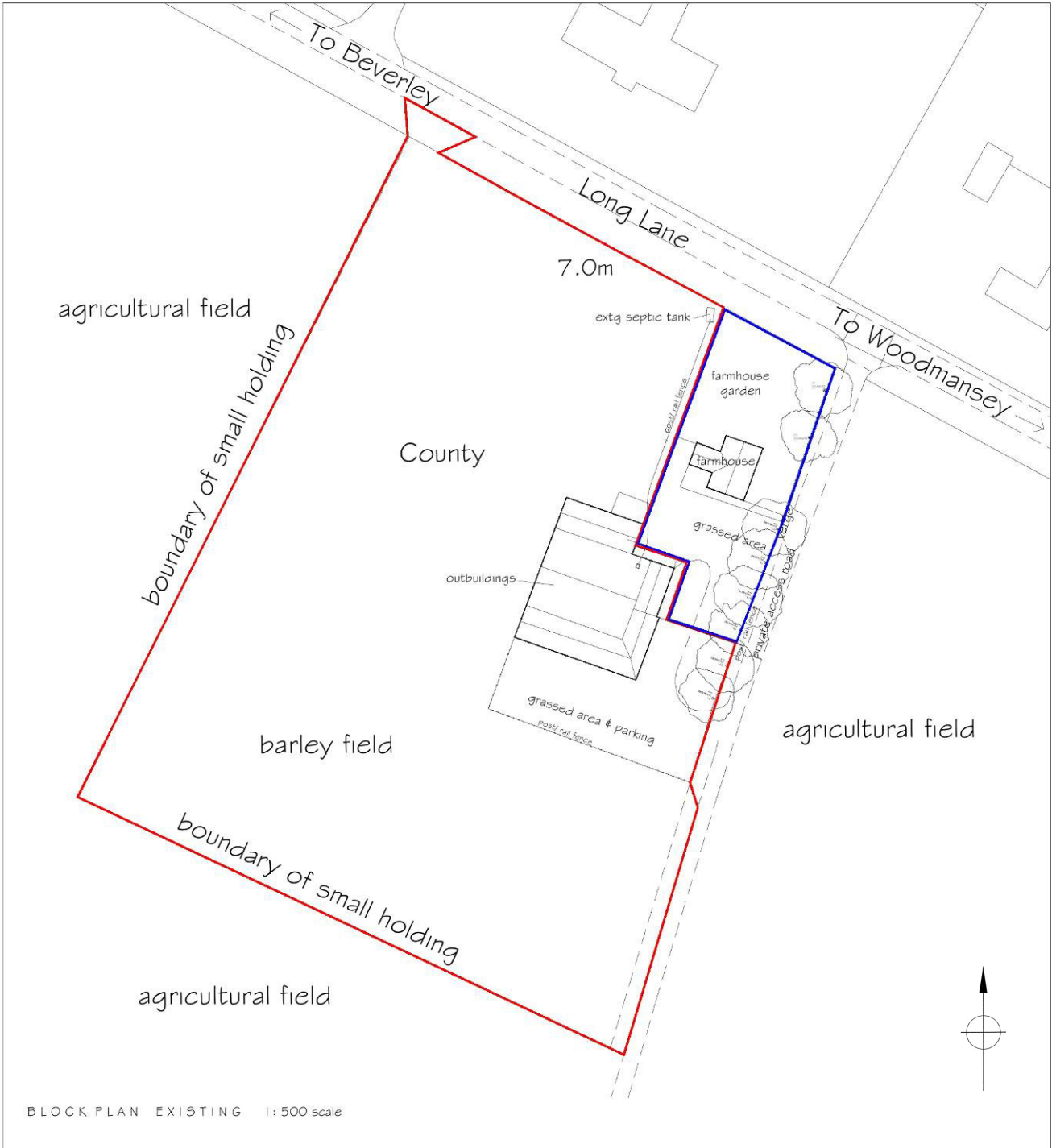
8 ACKNOWLEDGEMENTS

The archaeological investigations were commissioned by Philip Hagyard and Yasmin Clappison of The Beverley Barn, and EDAS would like to thank them for their help and co-operation in carrying out the work. The on-site archaeological recording was undertaken by Emma Samuel, Lisa Johnson and Richard Coates of East Riding Archaeology, with administrative support provided by Jim Fraser (ERA) and Ed Dennison (EDAS). The pottery was examined and reported on by Peter Didsbury, the small finds by Sophie Tibbles, and the palaeo-environmental analysis was undertaken by John Carrot of Palaeoecology Research Services of Hull. Additional comment on the pottery was secured from Terry Manby. The final report was produced by Jim Fraser and Ed Dennison, the latter retaining responsibility for any errors or inconsistencies.



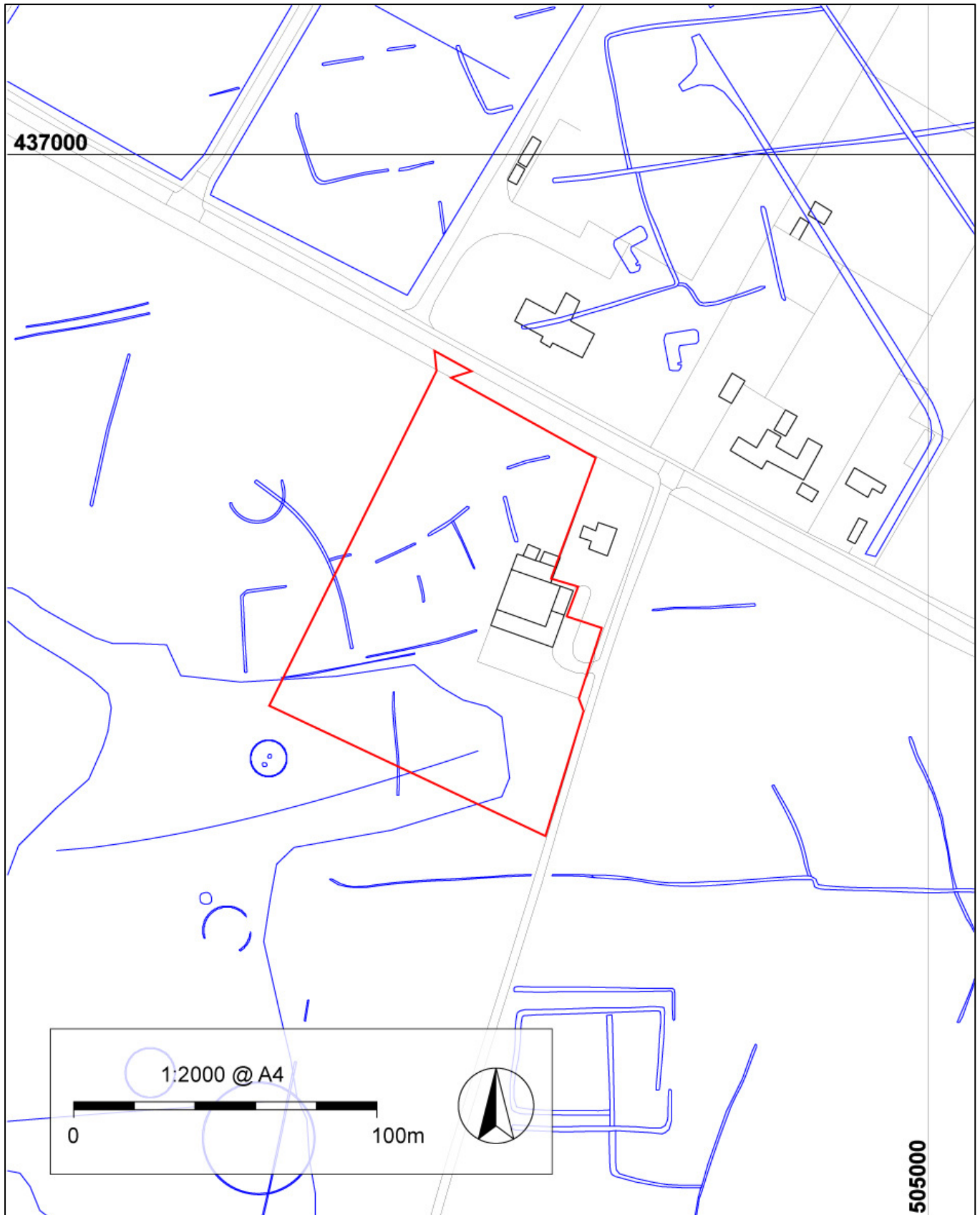
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PROJECT		COUNTY FARM, WOODMANSEY	
TITLE		GENERAL LOCATION	
SCALE	NTS	DATE	OCT 2018
EDAS		FIGURE	1



Site plan supplied by CCFD (Hull) Limited).

PROJECT		COUNTY FARM, WOODMANSEY	
TITLE		DETAILED LOCATION	
SCALE	DATE	FIGURE	
NTS	OCT 2018	2	
EDAS			



Cropmarks (blue) recorded in the vicinity of the development site (red) (information from Humber HER).

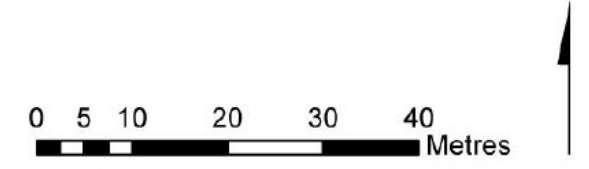
PROJECT		COUNTY FARM, WOODMANSEY	
TITLE			
CROPMARKS			
SCALE	AS SHOWN	DATE	OCT 2018
EDAS		FIGURE	3



Land at Long Lane, Beverley
Gradiometry Survey Interpretation Plot

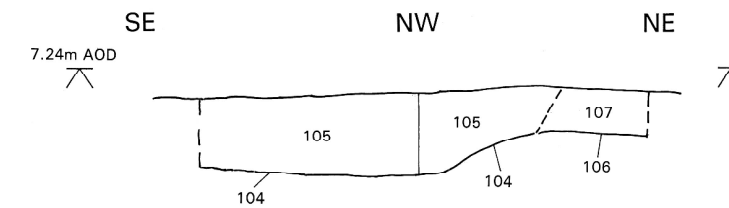
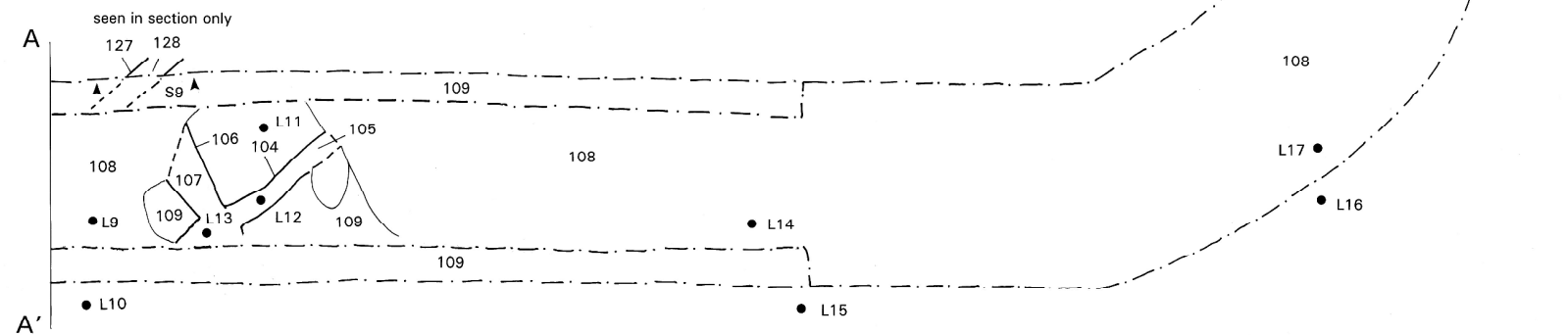
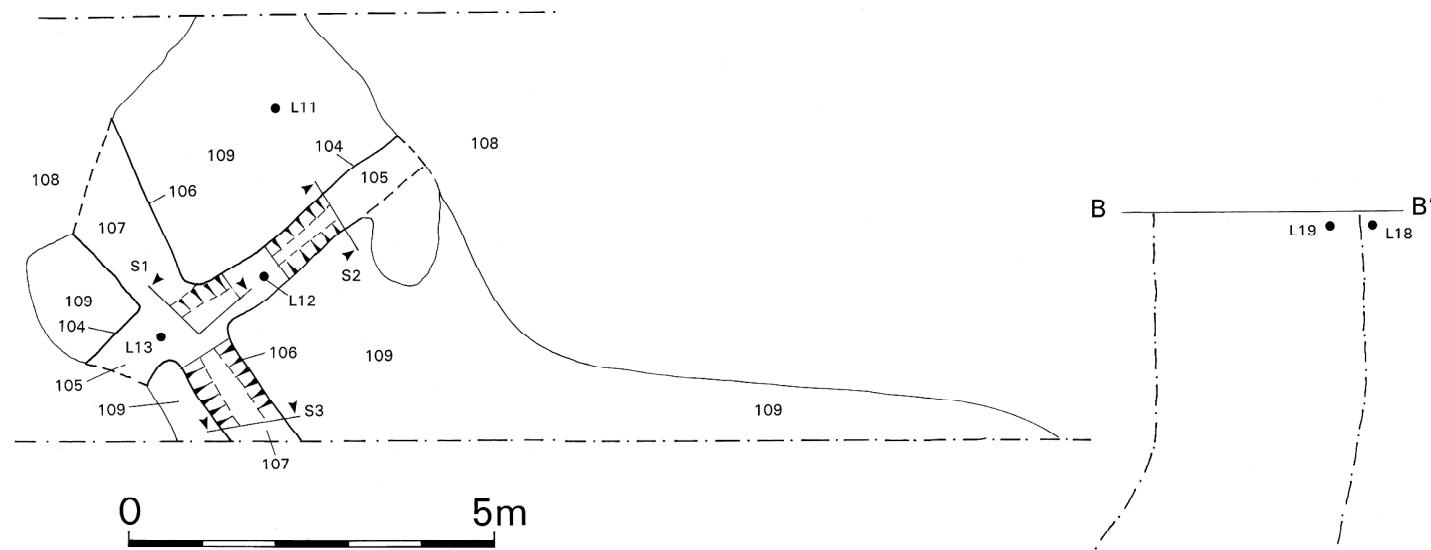
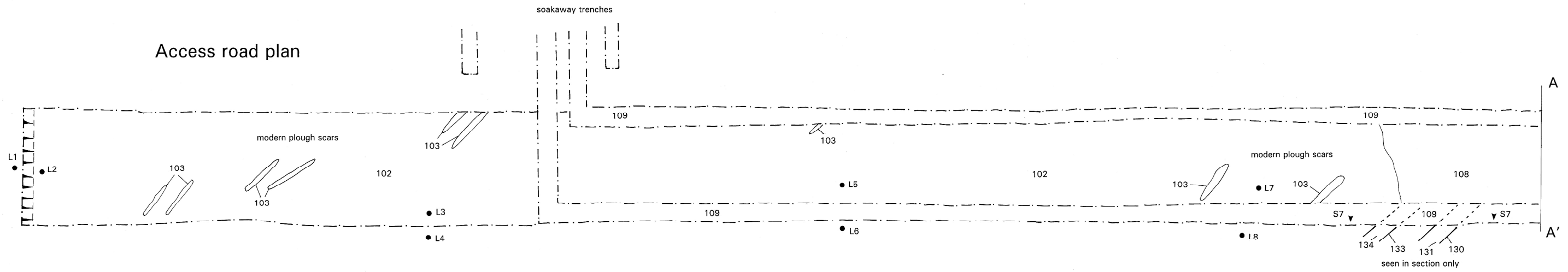
- Legend**
- Magnetic enhancement: geological/ archaeological
 - Area of magnetically enhanced soils
 - Surface/ topsoil responses from ferrous material
 - Existing surface object/ feature
 - Utilities trench
 - Overhead power lines
 - Land drain
 - Ploughing/ boundary
 - Linear trend- boundary
 - Survey Area

PROJECT		COUNTY FARM, WOODMANSEY	
TITLE			
RESULTS OF GEOPHYSICAL SURVEY			
SCALE	AS SHOWN	DATE	OCT 2018
EDAS		FIGURE	4



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Access road plan



Section 1 access road



Section 2 access road

Section 3 access road

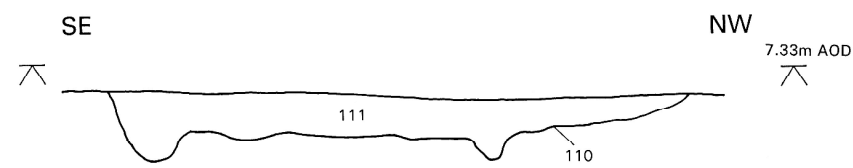


PROJECT	
COUNTY FARM, WOODMANSEY	
TITLE	
ACCESS ROAD EXCAVATIONS	
SCALE	DATE
AS SHOWN	OCT 2018
EDAS	FIGURE
	5

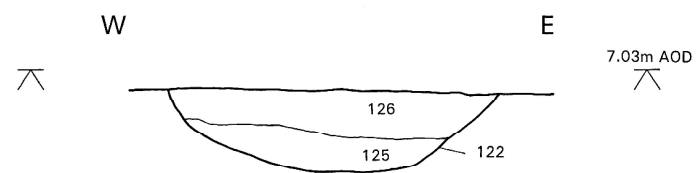
PROJECT COUNTY FARM, WOODMANSEY	
TITLE CAR PARK EXCAVATIONS	
SCALE AS SHOWN	DATE OCT 2018
EDAS	FIGURE 6



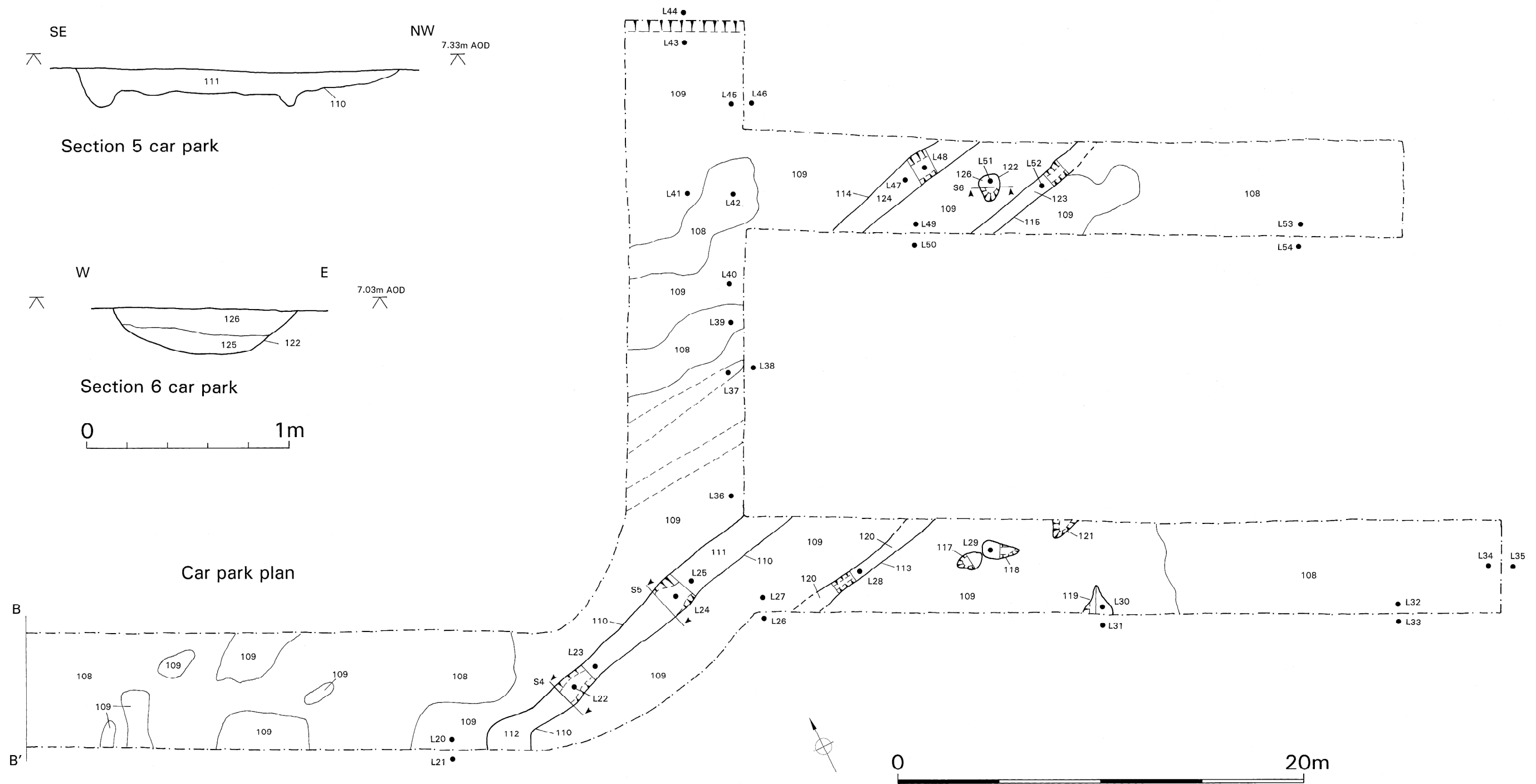
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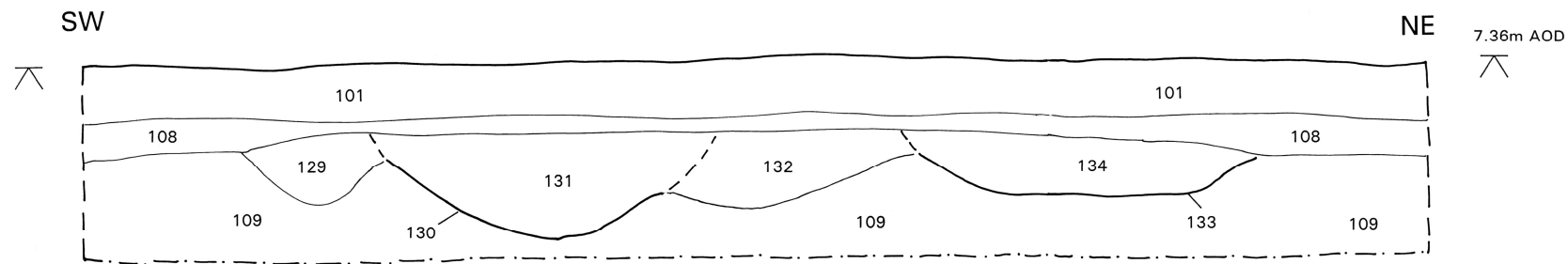
Section 5 car park



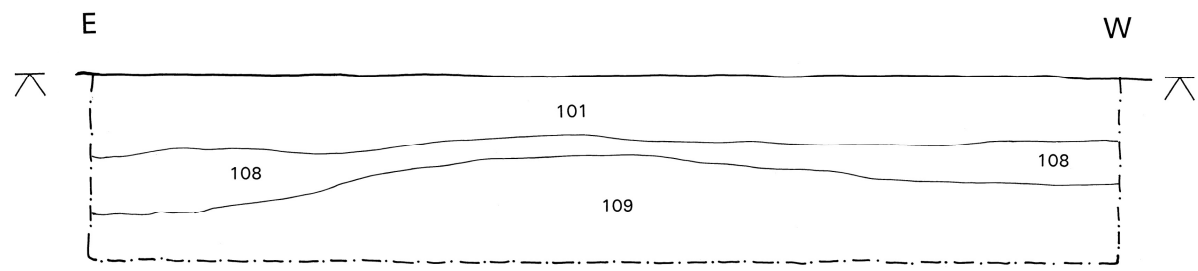
Section 6 car park



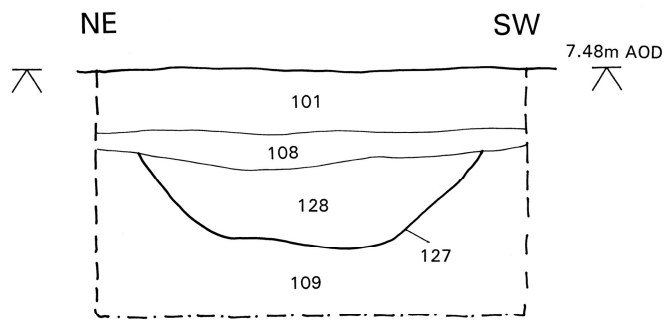
Car park plan



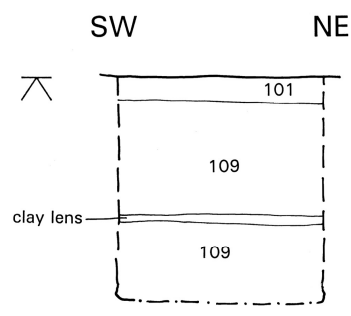
Section 7 access road



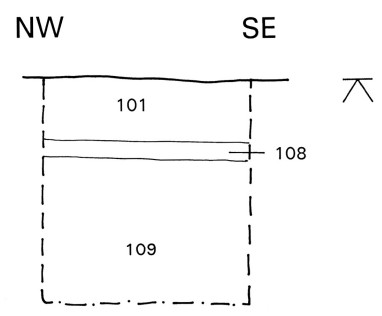
Section 8 septic tank



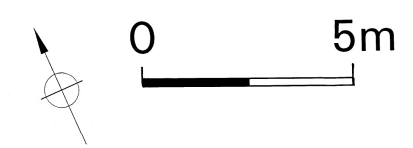
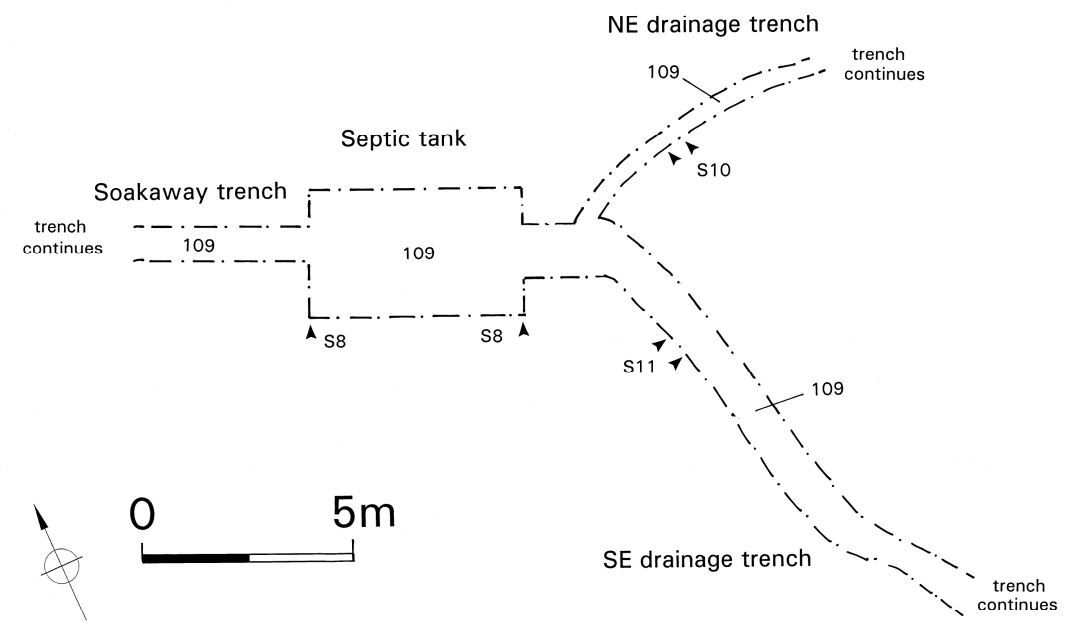
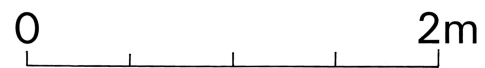
Section 9 access road



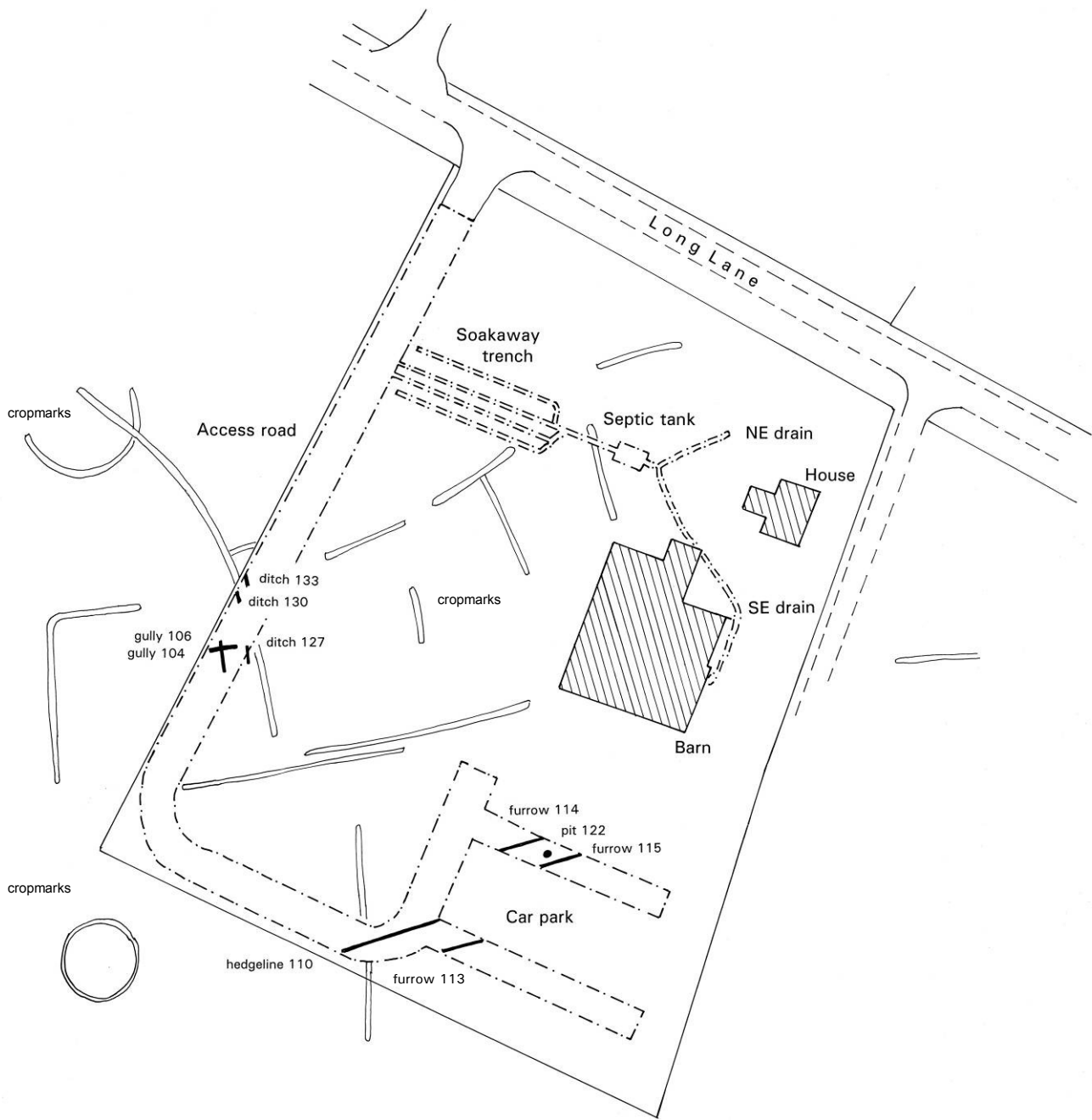
Section 10 NE drainage trench



Section 11 SE drainage trench



PROJECT		COUNTY FARM, WOODMANSEY	
TITLE		WATCHING BRIEF RESULTS	
SCALE	AS SHOWN	DATE	OCT 2018
EDAS		FIGURE	7



PROJECT	
COUNTY FARM, WOODMANSEY	
TITLE	
SUMMARY OF RESULTS	
SCALE	DATE
AS SHOWN	OCT 2018
EDAS	FIGURE
	8



Plate 1: General view of north-south section of stripped access road, looking N.



Plate 2: General view of southern car parking area, looking E.



Plate 3: Exposure of intersecting gullies [104 and 106], prior to excavation, looking E.



Plate 4: South-east facing section across intersecting ditches [104] and [106], looking NE.



Plate 5: Exposure of hedge line [110] in southern car park area, prior to excavation, looking NE.



Plate 6: East facing section across hedge line [110] in southern car park area, looking SW.



Plate 7: Exposure of furrow [115] in northern car park area, prior to excavation, looking NE.



Plate 8: Section across furrow [114] in northern car park area, looking SE.



Plate 9: Pit [122] in northern car park area, prior to excavation, looking S.



Plate 10: Pit [122] in northern car park area, prior to excavation, looking N.



Plate 11: Excavated septic tank, looking S.



Plate 12: Excavated drainage trench along east side of barn, looking S.



Plate 13: General view of excavated soakaway trenches, looking SW.



Plate 14: North end of soakaway drain along east side of access road after excavation, looking SW.



Plate 15: Ditch [127] in soakaway drain along east side of access road, looking E.



Plate 16: Ditches [130 and 133] in soakaway drain along west side of access road, looking NW.

APPENDIX 1
LIST OF CONTEXTS

APPENDIX 1: LIST OF CONTEXTS

<i>Context</i>	<i>Description and Interpretation</i>	<i>Area of Site</i>
100	Unstratified.	Whole site
101	Friable mid grey-brown loamy silt with 5% gravel, typically 5mm-10mm in size, 0.30m thick - topsoil.	Whole site
102	Loose medium brown-orange sand with 10%-20% chalk gravel, typically 10mm-20mm in size - natural deposit.	Whole site
103	Friable mid grey-brown loamy silt with 5% gravel, typically 5mm-10mm, 0.03m thick - plough scars.	Access road
104	Cut of gully or ditch, gently sloping sides and slightly concave base, 3.50m long, 0.50m wide, 0.23m deep.	Access road
105	Firm medium yellow-brown clayey sand with 10%-20% flint and gravel typically 20mm-30mm in size - fill of cut 104.	Access road
106	Cut of linear feature running across trench, NE-SW aligned, concave sides and base creating bowl-shaped profile, 0.59m wide and 0.12m deep - gully.	Access road
107	Firm medium-grey brown silty sand with 5% gravel typically 5mm-10mm in size - fill of cut 106.	Access road
108	Firm dark orange-brown silty sand, with 2% small gravel typically 0.01mm-0.1mm in size, 0.20m thick - subsoil or buried plough soil.	Whole site
109	Chalk (90%) with loose light yellow/brown silt binding (10%) - natural chalk.	Whole site
110	Cut, 1.60m wide and up to 0.19m deep, E-W aligned, with irregular sides and base from root activity - former hedge line.	Car park
111	Friable mid-orange/brown sandy silt with 30% small gravel typically 1mm-2mm in size, similar appearance to subsoil 108 - fill of hedge line 110.	Car park
112	Loose mid-brown sandy silt with 5% small gravel, typically 7mm in size - fill of hedge line 110.	Car park
113	NE/SW aligned linear feature, 0.54m wide and up to 0.08m deep - probable furrow.	Car park
114	NE/SW aligned linear feature, irregular base and sides, 0.93m wide and up to 0.08m deep - probable furrow.	Car park
115	NE/SW aligned linear feature, irregular base and sides, 1.00m wide and up to 0.07m deep, some root activity - probable furrow.	Car park
116	Not used.	

117	Cut with irregular sides and base, 1.22m long, 0.85m wide and 0.14m deep, filled with loose light mid-brown silty sterile sand with 10% chalky gravel typically 1mm-2mm in size - tree bole or natural depression,	Car park
118	Cut with irregular sides and base, 1.60m long, 0.63m wide and 0.16m deep, filled with loose light mid-brown silty sterile sand with 10% chalky gravel typically 1mm-2mm in size - tree bole or natural depression.	Car park
119	Cut with irregular shape with relatively flat base, more than 1.40m long, more than 1.60m wide and c.0.20m deep, filled with loose mid-brown sand silt with 10% natural flint and small chalk gravel, extends south beyond limit of excavation - tree bole or natural depression.	Car park
120	Loose mid-light brown sand silt with 40% chalky gravel typically 2mm in size - fill of linear 113.	Car park
121	Cut with irregular shape more than 0.75m long, c.1.20m wide and c.0.10m deep, filled with loose mid-light brown sterile sand silt with 10% chalk gravel up to 2mm in size - root disturbance or natural feature.	Car park
122	Cut of sub-circular pit, 1.30m long, 0.92m wide and 0.23m deep, root activity making it slightly irregular in places - pit.	Car park
123	Loose mid-brown sand silt with 15% small chalk gravel and natural flint, typically 1mm-2mm in size - fill of 115.	Car park
124	Moderate mid-brown silt sand with 40% chalk gravel typically 2mm in size - fill of 114.	Car park
125	Loose very dark brown/black silt sand, relating to a dump of burn rocks and pottery fragments, 0.11m thick - primary fill of pit 122.	Car park
126	Moderate light mid-brown silt sand with 40% chalk gravel and natural flint typically 10mm-20mm in size, 0.14m thick - secondary fill of pit 122.	Car park
127	Cut, 1.70m long, 0.80m wide and 0.44m deep, 45° sloping sides, curved break of slope to base, slightly undulating base sloping to S, orientated NW/SE, only seen in sections, and not visible in road strip as masked by 108 - probable ditch.	Access road - E soakaway trench
128	Friable medium brown/grey sandy silt with 5% natural chert/flint nodules typically 10mm-30mm in size, - fill of probable ditch 127.	Access road - E soakaway trench
129	Friable light brown/grey clayey sand with 2% chalk gravel typically 0.01mm-0.03m in size, up to 0.36m thick - natural deposit formed in undulation of chalk 109.	Access road - W soakaway trench
130	Cut, 1.76m long, 0.80m wide and 0.54m deep, bowl-shaped with convex sides and base, only seen in section only, and not visible in road strip as masked by 108 - probable ditch.	Access road - W soakaway trench

131	Firm mid-orange/brown silty clay with 5% natural flint/chert nodules typically 0.1mm-0.55m in size - fill of probable ditch 130.	Access road - W soakaway trench
132	Firm mid-orange/brown clayey sand with 2% chalk gravel typically 0.33mm-0.05mm in size, up to 0.42m thick - natural deposit formed in undulation of chalk 109.	Access road - W soakaway trench
133	Cut, 1.86m long, 0.80m wide and 0.30m deep, 45° sloping sides with sharp break of slope to base, and flat base, only seen in section and not visible in road strip as masked by 108 - probable ditch.	Access road - W soakaway trench
134	Firm mid-orange/brown silty clay with 5% natural flint/chert nodules typically 20mm-40mm in size - fill of probable ditch 133.	Access road - W soakaway trench

APPENDIX 2
SPECIALIST REPORTS

APPENDIX 2: SPECIALISED REPORTS

THE FINDS (OTHER THAN POTTERY)

by *Sophie Tibbles*

Introduction and Methodology

This assessment aims to identify the potential of the artefacts in keeping with the specific aims of the project (EDAS 2017) and the requirements of MoRPHE guidelines (English Heritage 2008). The assemblage was quantified by count and weight and notes were incorporated within the Context Catalogue (Access database) as part of the digital archive. Material categories were appropriately packaged for long term storage.

The archaeological investigation at Country Farm, Long Lane, Woodmansey produced a small finds assemblage that comprised flint, shell and burnt stone. The assemblage was recovered from eight contexts, six within the area of the access road & car park: gullies [104] (105) and [106] (107); pit [122] fills (125) and (126); furrow [113] (120) and subsoil (108), two within the soak-away trenches: pit/ditches [130] (131) and [133] (134).

Quantification and Condition of the Assemblage

Flint: 15 pieces – poor to fair condition

Shell: 1 valve – poor condition

Burnt stone: 2 fragments – good condition

Catalogue by Material Type

Flint

Three pieces of flint were hand-collected from 2 contexts during the monitoring; an additional 12 were recovered from 6 contexts during the processing of the environmental samples (see Table 1 for details) giving a total of 15 pieces, with a combined weight of 97.5g. All were of local flint with evidence of weathering (recorticated).

Two flakes were possibly worked. A white/grey mottled flake from primary fill (125) of pit [122], with maximum dimensions of L: 47mm W: 49mm Th: 7mm, displayed at least one utilised? edge; the flake is potentially of Bronze Age date. Furrow [113] (120) produced a small, pale brown, semi-opaque flake with maximum dimensions of L: 33mm W: 19mm Th: 3.5mm. Some recortication was noted along the edges including the utilised? edge; refined dating was not possible.

Debitage flakes were noted from gully [104] fill (105) Env. S.2. and the primary fill (125) of pit [122]. Both flakes were pale grey/white mottled with some recortication present; again refine dating was not possible. The remainder of the assemblage, x6 flakes and x5 chunks, were unmodified.

Table 1 Flint

<i>Context</i>	<i>Quantity</i>	<i>Notes</i>	<i>Weight (g)</i>
105: Fill of gully [104]	1	Debitage. Flake. White/pale grey. Some recortication present. Prehistoric. From Env. S.2.	2.3
	2	Unmodified flakes. White. Recorticated. From Env. S.2.	10.2
107: Fill of gully [106]	1	Unmodified chunk. White. Recorticated. From Env. S.1.	15.3
120: Fill of furrow [113]	1	Utilised? flake. Pale brown, semi-opaque. Possibly utilised along one edge. Some recortication along edges. Prehistoric. Max. dimensions L: 33mm W: 19mm Th: 3.5mm	3.1

Context	Quantity	Notes	Weight (g)
125: Primary fill of pit [122]	1	Utilised? flake. White/pale grey mottled. Possibly utilised along one edge. Pronounced bulb of percussion. Recorticated. Prehistoric (?Bronze Age.) Max. dimensions L: 47mm W: 49mm Th: 7mm.	16.3
	1	Debitage flake. Pale grey/white mottled. Some recortication present. Prehistoric.	3.6
	2	Unmodified flake and chunk. White (recorticated). From Env. S.3.	12.8
126: Secondary fill of pit [122]	2	Unmodified flake and chunk. White/grey mottled. Some recortication present. From Env. S.4.	16.6
131: Fill of pit/ditch [130]	1	Unmodified flake White/grey mottled. Some recortication present. From Env. S.6.	1.7
134: Fill of pit/ditch [133]	3	Unmodified flake and chunks (x2). White/grey mottled. Some recortication present. From Env. S.7.	15.6
	15		97.5

Shell

Subsoil (108) produced a left (lower) oyster (*Ostrea edulis* L.) valve. Although surfaces were eroded, no evidence of having been opened with a knife or similar tool ('V'- or 'W'-shaped notches on the shell margins) was recorded. The valve had a weight of 23.6g.

Burnt stone

The two glacial erratics were recovered from the primary fill (125) of pit [122], weight 828g. None were modified, however, a Weak Red (10R/5/4) hue was noted on both fragments from heat exposure, possibly from use within a hearth. No other distinguishing features were recorded.

Discussion and Recommendations

The small size of the assemblage limits the archaeological potential, e.g. dating of the worked and debitage flint is broad due to the paucity of diagnostic traits, though one flake may be of Bronze Age date. However, the use of local resources (flint, which is readily available within the area (Head 2000a, 24)) elements of food waste (shell) and other materials associated with occupational activity (burnt stone) support the evidence of prehistoric activity encountered within the development area.

The artefacts also compliment other prehistoric assemblages/finds within the locale and surrounding area (Tibbles 2002, 29; Head 2000a, 24; *ibid* b, 40; *ibid* c, 58-59; Tibbles 2000, 38; HG/HHER 2012 a; b; c) which enhances the known evidence for activity during the prehistoric period within this and the wider landscape.

No further work is considered necessary. Unless the client requests the return of any of the artefacts, with the exception of the worked flints, the finds are recommended for discard.

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Finds Spot, Neolithic Axe Head, HHER No. 20109

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Finds Spot, Bronze Age Axe, E. of park Grange Farm 1989, HHER No. 18386

https://www.heritagegateway.org.uk/Gateway/Results_Single.aspx?uid=MHU18386&resourceID=1043 [Accessed 16/08/2018]

AN ASSESSMENT OF THE POTTERY FROM COUNTY FARM, LONG LANE, WOODMANSEY (CFW 18)

by Peter Didsbury MPhil FSA

Introduction and Methodology

A total of 56 sherds of pottery, weighing 169 grams, and having an average sherd weight (ASW) of only 3.0 grams, was submitted for examination. The low ASW value is only slightly skewed by the inclusion of sieved samples. If these are excluded the ASW value rises to 4.5 grams. The sherds were examined and described and then quantified by the two measures of number and weight, within archaeological context. Full details are presented in the assemblage discussion, below.

The Fabrics

The approach to fabrics in this assemblage is conditioned by the low ASW values already noted, and by the absence of overt characteristics which facilitate the division of the material into discrete groupings. The great majority of the material, *i.e.* that from pit 122 (see below) does, however, share certain characteristics which make it appropriate here to provide an overall more generalised description. All material is from hand-built vessels, with wall thicknesses *c.* 5-10mm, predominantly at the higher end of the range... The sherds are usually rather lightweight, and can be relatively soft. They tend to be reduced, with a variety of oxidization tones on the exterior. Unlike much of the regional pottery of the first millennium BC, which is usually easy to characterize in terms of its predominant calcareous or non-soluble temper (Rigby 2004), the sherds under discussion tend to display only sparse and very small inclusions, many of which may be natural to the clay source. Small vesicles are also commonly apparent in sherd sections. Exterior surfaces may be quite well smoothed, and often give the appearance of having been smeared or wiped. More detailed individual descriptions of each group of sherds are provided in the assemblage discussion below.

Discussion: the Assemblages

The pottery came from three contexts in two features. Pit 122 was cut into the natural in the area of the car park. Its primary and secondary fills (125 and 126) each contained pottery. Pit/ditch 127 was encountered in the soakaway trench on the eastern side of the access road. Pottery came from its single fill (128).

Fills 125 and 126 of pit 122

Primary fill 125 produced 32 sherds, weighing 138 grams (ASW 4.3 grams), with sample <S.3> contributing a further 17 crumbs weighing 5 grams (ASW 0.3 grams). The group of 32 sherds suggested that the material derived from an estimated 10 vessels, as below.

Vessel 1. 4 sherds, 26 grams. Joining bodies from the shoulder (?) of a jar (?). 5mm wall. Reduced with patchy light brown areas on the exterior. Small vesicles and occasional small unidentified grits extant. Possible drag marks from grits on exterior.

Vessel 2. 7 sherds, 17 grams. Bodies. 6mm wall. Reduced throughout. Vesicles and small grits like Vessel 1. One body has a faint encircling groove on the exterior.

Vessel 3. 1 body sherd, 5 grams. 10mm wall. Soft to fairly hard. Light red to orange throughout wall. Sparse very fine grits.

Vessel 4. 6 body sherds, 10mm wall. Soft to fairly hard. Reduced with pinkish buff exterior. Small grits.

Vessel 5. 7 bodies, 18 grams. Fairly hard. 6mm wall. Reduced with oxidised exterior and core (in part). Possibly more than one vessel.

Vessel 6. 1 sherd, 12 grams. Rather tabular sherd. 10mm wall. Greyish core. Patchy light buff surfaces. Finely vesicular with sparse extant grits.

Vessel 7. 1 sherd, 7 grams. Body or false rim. 7 mm wall. Reduced with light buff exterior and core in places. Smoothed exterior.

Vessel 8. 1 sherd, 7 grams. Body. 10mm wall. Relatively soft. Buff exterior, and upper part of core above thin reduced margin and brown interior surface. Sparse vesicles and small grits. The sherd has an applied vertical cordon of triangular section. Requires specialist opinion from a prehistorian.

Vessel 9. 1 body sherd, 11 grams. Reduced with red surface. Sparse small grits. The sherd has a vertical (?) applied strip of triangular cross section. Requires specialist opinion from a prehistorian.

Vessel 10. 2 joining rims and a body probably from the same vessel. 7mm wall, thinning towards the simple rim. Reduced with a patchy brown exterior. Some small grits? Cf. Rigby 2004, 31-34 and fig. 4 "Barrel Jar".

Secondary fill 126 produced only a single fragment (4 grams), from sample <S.4>. A body, fairly hard fabric. Reduced with reddish patches. Single small quartz inclusion extant.

Fill 128 of pit/ditch 127

The fill yielded 3 body sherds, weighing 18 grams (ASW 6.0 grams), with sample < S.5 > providing a further 3 fragments, weighing 4 grams (ASW 1.3 grams). All the material appears to come from the same vessel; there are two joining sherds. The bodies have a 9mm wall, are hard-fired and are reduced with red/orange surfaces. The paste is tempered with ill-sorted quartz inclusions in the range 1-6mm, perhaps derived from crushed coarse sandstones. The temper is slightly extrusive through both surfaces. It will be noted that the fabric is of very different type from those discussed above, and is easy to accept as an Iron Age fabric within the dominant East Yorkshire traditions of the first millennium BC.

Conclusions and Recommendations

As indicated above, it is very difficult to accommodate the pit 122 material within the usual regional Iron Age fabric groups. Of three potentially diagnostic vessels, only one, Vessel 10, offers dating potential at this stage of assessment. Unfortunately, though, the simple rim barrel jar appears throughout the first millennium BC and perhaps derives from Bronze Age Bucket Urns. Rigby 2004, 34, assigns the form to her typological groupings 'd' and 'f', 900-600 BC and 600-400 BC, respectively. The two sherds with applied strips (Vessels 8 and 9) are not typical of either of the horizons of plastic decoration known from Iron Age East Yorkshire (*i.e.* that typified at Staple Howe, and that discernible in the Late Iron Age, cf. Challis and Harding 1975, 95). The difficulty of ascertaining with any certainty the orientation of the applied strips may also be noted here. It is therefore recommended that specialist opinion be sought of a prehistorian.

As far as the vessel from pit/ditch 127 is concerned, it is thought that an Iron Age date is the most acceptable.

The material should be curated in an appropriate material archive. Publication potential may be assessed when the specialist opinion recommended above has been acquired.

References

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**Assessment of sediment samples collected during archaeological works at
County Farm, Long Lane, Woodmansey, East Riding of Yorkshire
(site code: CFW18)**

by

John Carrott

Summary

Seven 'bulk' sediment samples, recovered from features/deposits encountered during archaeological works at County Farm, Long Lane, Woodmansey, East Riding of Yorkshire, were submitted for an assessment of their bioarchaeological potential. Features/deposits encountered included a prehistoric pit, a gully and pits/ditches, medieval furrows and a hedgeline, and a post-medieval-modern subsoil, together with one undated gully and four natural features.

Very few biological remains of probable 'ancient' origin were recovered from the samples. The small quantities of charcoal represented no more than a 'background' level presumably derived from fuel waste (similarly small quantities of cinder and/or coal were also present in most of the deposits) and, although some fragments could be identified as of a diffuse-porous species and some a little more closely as alder (Alnus), birch (Betula) or hazel (Corylus), they were of no further interpretative value. The occasional charred seeds recovered were all of the common ruderal/arable weed taxa orache/goosefoot (Atriplex/Chenopodium) and also provided too little material for any interpretation. Similarly, the identifiable components of the recovered mollusc assemblages were too small for reliable interpretation but it can be noted that Vallonia excentrica was always the most numerous record and that this is regarded as a good indicator of established open grassland. The other molluscs present were consistent with such a habitat and there were no remains to suggest more substantial vegetation, such as woodland or hedgerow, or aquatic taxa (implying that the features were dry). No vertebrate remains were recovered and no interpretatively valuable microfossils were present.

All of the other plant and invertebrate remains recorded from the samples were almost certainly modern intrusions or contaminants – rootlet, earthworm egg capsules, soil-dwelling nematode cysts, and uncharred 'seeds'.

Small numbers of possibly worked flints were extracted prior to processing (at least one from each sample), together with a little pot from three contexts, and returned to the excavator for consideration as small finds and forwarded to the appropriate specialists if warranted.

No remains considered suitable for submission for radiocarbon dating of the deposits was recovered and no further study of the biological remains is warranted.

KEYWORDS: COUNTY FARM; LONG LANE; WOODMANSEY; EAST RIDING OF YORKSHIRE; ASSESSMENT; ?LATE BRONZE AGE/IRON AGE; IRON AGE; PLANT REMAINS; CHARRED PLANT REMAINS (CHARCOAL –TRACE); INVERTEBRATE REMAINS; TERRESTRIAL MOLLISCS

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Assessment of sediment samples collected during archaeological works at County Farm, Long Lane, Woodmansey, East Riding of Yorkshire (site code: CFW18)

Introduction

Archaeological works were undertaken by East Riding Archaeology (ERA) at County Farm, Long Lane, Woodmansey, East Riding of Yorkshire (centred on NGR TA 0487 3685), between the 16th and the 21st of April 2018. The brief involved the archaeological monitoring of ground works associated with the change of use of land and buildings to a wedding venue and hospitality facility, and the construction of a lean-to store extension, and was undertaken on behalf of Ed Dennison Archaeological Services Ltd (EDAS).

Monitoring was undertaken for a proposed new access road and car park – the road running along the western and southern edges of the development area from Long Lane to the proposed car park area located to the south of a barn (the proposed wedding venue) – the trench for the installation of a new septic tank and six other associated trenches (two for drainage and four soakaways). No archaeological features or deposits were encountered in the trench for the new septic tank or the two drainage trenches other than a subsoil layer from which no dating evidence was recovered but which was perhaps of ?post-medieval- modern date. In the area of the access road and car park were a prehistoric (?Late Bronze Age/Iron Age pot was recovered from the primary and secondary fills) pit, three furrows and a hedgeline of ?medieval date (partially overlain by the ?post-medieval-modern subsoil) and a number of ?modern plough scars, together with two gullies (one possibly ?prehistoric) and four natural features. The soakaway trenches revealed three ?prehistoric (one contained Iron Age pot) possible pits/ditches, again overlain by the ?post-medieval-modern subsoil. Overlying all of the earlier features/deposits was approximately 0.3 metres of topsoil which formed the current ground.

Seven 'bulk' sediment sample ('GBA'/'BS' *sensu* Dobney *et al.* 1992), from fills of pits and ditches/gullies, were submitted to Palaeoecology Research Services Limited, Kingston upon Hull, for an assessment of its bioarchaeological potential.

Methods

The lithologies of the submitted sediment samples were recorded using a standard *pro forma*. All of the samples were selected for further investigation, in consultation with EDAS/ERA, and were processed for the recovery of plant, invertebrate and vertebrate remains (macrofossils), broadly following the techniques of Kenward *et al.* (1980), producing a residue and a washover for each. Prior to and during processing the samples were scanned for possible worked flints and, in particular, pot sherds – some of the latter recovered on site were ?prehistoric and of a fabric which would be adversely affected by prolonged immersion in water – which were returned to ERA for consideration alongside the hand-collected remains.

None of the deposits appeared to contain 'ancient' uncharred organic remains and the washovers were dried prior to recording. The washovers were examined 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 two fractions (using a 1 mm sieve) 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 and artefactual materials were sorted to 1 mm; residue less than 1 mm was retained unsorted. The residue fractions (including the less than 1 mm 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 and the quantities of remains recovered from the residues with the sizes of the processed sediment samples.

Plant remains were identified to the lowest taxon necessary to achieve the aims of the project by comparison with modern reference material (where possible) and the use of published works (e.g. Cappers *et al.* 2006). Nomenclature for plant taxa follows Stace (1997).

Species identifications was attempted for a small number of charcoal fragments recovered from the sediment samples (all of which were over 4 mm). The pieces were broken to give clean cross-sectional surfaces and the anatomical structures were examined using a low-power binocular microscope (x7 to x45) and higher magnification where necessary (x100 and x150). Identification was attempted by comparison with reference to published works (principally Hather 2000 and Schoch *et al.* 2004).

Terrestrial mollusc remains were examined and identified as closely as possible, with reference to published works (chief sources: Cameron 2003; Evans 1972; Kerney 1999). Nomenclature follows Kerney (1999). Minimum numbers of individuals present were determined by numbers of shell apices.

During recording, consideration was given to the identification of suitable remains (if present) for possible submission for radiocarbon dating by standard radiometric technique or accelerator mass spectrometry (AMS).

A small subsample (of approximately 5 ml) of sediment was extracted from each sample for examination for microfossils. These were investigated 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 other microfossils, such as pollen and

diatoms, which were also noted if present. The slides were scanned at x150 magnification and at x600 where necessary.

Results

The results of the investigations are presented below in context number order by monitoring area. Archaeological information, provided by the excavator, is given in square brackets. A summary of the processing method and an estimate of the volume of unprocessed sediment follows (in round brackets) after the sample number.

Access road and car park

Context 105 [Fill of linear gully [104] – not seen on geophysics or HHER cropmark plot; ?Prehistoric]
Sample 2/T (10.5 kg/6.75 litres sieved to 300 microns with washover and microfossil ‘squash’; approximately 5 ml of unprocessed sediment remain)

Just moist, light/mid brown to mid grey-brown (mottled at a mm-scale), brittle to unconsolidated, slightly silty sand. Stones (2 to 20 mm) were abundant and larger stones (20 to 60 mm) and modern rootlets were present; stones mostly chalk with occasional flint – three of the latter were possibly worked, extracted prior to processing and returned to ERA for consideration as small finds.

The very small washover (dry weight 11.3 g/~15 ml) was mostly sand (abundance score 5), with frequent modern rootlet (score 3) and cinder (to 9 mm; score 3), a little coal (to 8 mm; score 2), occasional charred orache/goosefoot (*Atriplex/Chenopodium*) seeds (score 2), a trace of rectilinear charcoal (to 5 mm; score 1 – only one fragment was over 4 mm and was partially identified as of a diffuse-porous species) and numerous fragments of terrestrial mollusc shell (score 4). The last was predominantly indeterminate fragments (score 4) but included *Vallonia ?excentrica* Sterki (score 2), *Trichia ?hispida* (L.) (score 2), Pupillidae sp. apices (score 2), *Oxychilus* sp. apices (score 2), one *Cepaea/Arianta* sp. and one *Cochlicopa ?lubrica* (Müller). Other biological remains present were almost certainly modern intrusions or contaminants and comprised some earthworm egg capsules and soil-dwelling nematode (*Heterodera* sp.) cysts (both score 2) and frequent uncharred ‘seeds’ (score 3; including nettle (*Urtica dioica* L.) achenes (score 1) and orache/goosefoot seeds (score 2)).

The quite large residue (dry weight 3630.9 g: >10 mm – 918.8 g; 1-10 mm – 1632.6 g; <1 mm – 1079.5 g) was mostly stones (to 50 mm; score 5 – chalk and flint), with some sand (score 3; all of the less than 1 mm fraction). No magnetic material was present.

The ‘squash’ subsample was almost entirely inorganic with the barest trace of organic detritus (<1%). No microfossils were present.

Context 107 [Fill of linear gully [106] – not seen on geophysics or HHER cropmark plot; undated]
Sample 1/T (10.75 kg/6.75 litres sieved to 300 microns with washover and microfossil ‘squash’; approximately 5 ml of unprocessed sediment remain)

Just moist, light slightly orange-brown to light/mid grey-brown to mid grey-brown to mid grey (mottled at a mm-scale). Stones (2 to 60 mm; flint and chalk) and modern rootlets were present. One possible worked flint was extracted prior to processing and returned to ERA for consideration as a small find.

The very small washover (dry weight 8.4 g/~10 ml) was mostly sand (abundance score 5) and modern rootlet (score 4) with frequent cinder (to 7 mm; score 3), occasional charred seeds (score 2; all orache/goosefoot) and some terrestrial molluscs (score 2; mostly *Vallonia ?excentrica*, with one *Trichia ?hispida* apex and a few (score 1) indeterminate fragments). Other biological remains present were almost certainly modern intrusions or

contaminants and comprised some earthworm egg capsules (score 2) and frequent uncharred 'seeds' (score 3; including nettle, *Urtica dioica* achenes (score 2) and orache/goosefoot seeds (score 1)).

The quite large residue (dry weight 3940.9 g: >10 mm – 1141.0 g; 1-10 mm – 1749.9 g; <1 mm – 1050.0 g) was mostly stones (to 50 mm; score 5 – chalk and flint, with three small ?fossils (to 20 mm; 1.0 g)), with some sand (score 3; all of the less than 1 mm fraction). No magnetic material was present.

The 'squash' subsample was almost entirely inorganic with the barest trace of organic detritus (<1%). No microfossils were present.

Context 125 [Primary fill of pit [122] – isolated feature in eastern extent of development area; ?Late Bronze Age/iron Age – pot, flint and burnt stone were recovered on site]

Sample 3/T (7.75 kg/5 litres sieved to 300 microns with washover and microfossil 'squash'; approximately 5 ml of unprocessed sediment remain)

Just moist, varicoloured (jumbled shades of brown, grey-brown and grey from light/mid to dark), unconsolidated, silty sand (?ashy in places). Stones (2 to 60 mm; flint and chalk) and modern rootlets were present – stones included two possibly worked flints which were extracted prior to processing and returned to ERA for consideration as small finds.

The very small washover (dry weight 10.6 g/~20 ml) was mostly composed of roughly equal thirds of sand, rectilinear charcoal (to 8 mm, but mostly less than 4 mm) and modern rootlet (all score 4), with occasional small stones (to 4 mm; score 2), a little coal (to 2 mm; score 1), a few charred orache/goosefoot seeds (score 1) and a single *Vallonia ?excentrica* land snail. Six charcoal fragments were examined more closely and four were partially identified, two as alder/birch/hazel (*Alnus/Betula/Corylus*) and two as diffuse-porous (the two other fragments crumbled and could not be identified).

The quite large residue (dry weight 2631.9 g: >10 mm – 503.9 g; 1-10 mm – 978.8 g; <1 mm – 1149.2 g) was mostly stones (to 45 mm; score 5 – chalk and flint), with abundant sand (score 4; all of the less than 1 mm fraction) and 16 sherds of pot (to 17 mm; 6.0 g). No magnetic material was present.

The 'squash' subsample was almost entirely inorganic with the barest trace of organic detritus (<1%). No microfossils were present.

Context 126 [Secondary/upper fill of pit [122] – isolated feature in eastern extent of development area; ?Late Bronze Age/iron Age – no finds were recovered on site]

Sample 4/T (8 kg/5 litres sieved to 300 microns with washover and microfossil 'squash'; approximately 5 ml of unprocessed sediment remain)

Moist, mid brown to mid grey (mottled at mm- and cm-scales), brittle to crumbly or unconsolidated (working very slightly soft), slightly clay, slightly silty sand to sandy silt (varies: more sandy areas brown and unconsolidated; more silty areas grey and crumbly). Stones (2 to 6 mm) were common and larger stones (6 to 60 mm), charcoal and modern rootlets were present; stones mostly chalk and flint. Two possibly worked flints and a single small pot sherd were extracted prior to processing and returned to ERA for consideration as small finds.

The very small washover (dry weight 7.2 g/~25 ml) was mostly rootlet (score 5), with abundant sand (score 4), frequent rectilinear charcoal (to 6 mm but all but four fragments less than 4 mm; score 3), occasional coal (to 4 mm; score 2), cinder (to 7 mm; score 2) and small stones (to 6 mm; score 2), and a few earthworm egg capsules (score 1 – the last almost certainly reflecting modern intrusions). The four largest charcoal fragments could all be partially identified, two as alder/birch/hazel and two as diffuse-porous.

The medium-sized residue (dry weight 2385.2 g: >10 mm – 506.0 g; 1-10 mm – 808.0 g; <1 mm – 1071.2 g) was mostly stones (to 45 mm; score 5 – chalk and flint), with abundant sand (score 4; all of the less than 1 mm fraction). No magnetic material was present.

The 'squash' subsample was almost entirely inorganic with the barest trace of organic detritus (<1%). No microfossils were present.

Soakaway trenches

Context 128 [Fill of ?ditch terminus/?pit [127] – feature tallies with HHER cropmark plot; Iron Age – pot of the first millennium BC was recovered on site]

Sample 5/T (5 kg/3 litres sieved to 300 microns with washover and microfossil 'squash'; approximately 5 ml of unprocessed sediment remain)

Moist, mid grey-brown, unconsolidated, slightly clay silty sand, Stones (2 to 6 mm) were abundant, larger stones (6 to 60 mm) were common and modern rootlet was present; stones mostly chalk with some flint. There was also a *Cepaea/Arianta* sp. land snail shell and a single small pot sherd – the latter extracted at the beginning of processing, air dried and returned to ERA for consideration as a small find.

The very small washover (dry weight 5.1 g/~25 ml) was mostly rootlet (score 5), with abundant sand (score 4),, occasional small stones (to 5 mm; score 2), and traces of indeterminate rectilinear charcoal (to 3 mm; score 1), coal (to 4 mm; score 1) and cinder (to 7 mm; score 1). There was also a small land snail assemblage – fragments were abundant (score 4) but almost all indeterminate with identifiable (at least in part) remains restricted to some *Vallonia ?excentrica* (score 2), a few *Trichia ?hispida* (L.) (score 1), Pupillidae sp. apices (score 1) and *Carychium* sp. (score 1), and single individuals of *Cepaea/Arianta* sp. and *Cochlicopa ?lubricella* (Porro).

The quite large residue (dry weight 2544.5 g: >10 mm – 688.2 g; 1-10 mm – 1358.4 g; <1 mm – 497.9 g) was mostly stones (to 40 mm; score 5 – chalk and flint), with some sand (score 3; all of the less than 1 mm fraction) and two crumbly sherds of pot (to 15 mm; 1.5 g). No magnetic material was present.

The 'squash' subsample was almost entirely inorganic with the barest trace of organic detritus (<1%). No microfossils were present.

Context 131 [Fill of ?pit/?ditch [130]; ?prehistoric – no finds were recovered on site]

Sample 6/T (4 kg/2.5 litres sieved to 300 microns with washover and microfossil 'squash'; approximately 5 ml of unprocessed sediment remain)

Moist, mid brown to mid grey-brown (mottled at a mm-scale), unconsolidated with brittle to crumbly lumps (working soft and slightly plastic), slightly silty clay sand. Stones (2 to 60 mm; including flint and rounded pebbles) were common and modern rootlets were present. One possible worked flint was extracted prior to processing and returned to ERA for consideration as a small find.

The tiny washover (dry weight 1.7 g/~3 ml) was mostly rootlet (score 5), with abundant sand (score 4),, occasional small stones (to 3 mm; score 2), rectilinear charcoal (to 7 mm but only one fragment over 4 mm; score 2), charred orache/goosefoot seeds (score 2), indeterminate land snail shell fragments (to 2 mm; score 2), coal (to 3 mm; score 2) and cinder (to 5 mm; score 1). There were also a few earthworm egg capsules (almost certainly modern intrusions) and a single small, roughly spherical piece of 'glassy' slag (to 2 mm).

The medium-sized residue (dry weight 1460.0 g: >10 mm – 344.9 g; 1-10 mm – 485.2 g; <1 mm – 629.9 g) was mostly stones (to 45 mm; score 5 – chalk and flint), with abundant sand (score 4; all of the less than 1 mm fraction). No magnetic material was present.

The 'squash' subsample was almost entirely inorganic with the barest trace of organic detritus (<1%). No microfossils were present.

Context 134 [Fill of ?pit/?ditch [133] – feature tallies with HHER cropmark plot; no finds were recovered on site]

Sample 7/T (4 kg/2.5 litres sieved to 300 microns with washover and microfossil 'squash'; approximately 5 ml of unprocessed sediment remain)

Just moist, light/mid grey-brown to light/mid slightly orange-brown (mottled at a cm-scale), unconsolidated with firm lumps (working soft and more or less plastic), slightly sandy slightly silty clay, Stones (2 to 60 mm; chalk and flint) and modern rootlets were present. Three flints were possibly worked and were extracted prior to processing and returned to ERA for consideration as small finds.

The tiny washover (dry weight 1.0 g/~2 ml) was mostly sand (abundance score 5) and modern rootlet (score 4) with a little cinder (to 5 mm; score 2), traces of indeterminate rectilinear charcoal (to 3 mm; score 1) and coal (to 3 mm; score 1), and a few charred orache/goosefoot seeds (score 1).

The quite large (relative to the size of the sample processed) residue (dry weight 1568.6 g: >10 mm – 341.7 g; 1-10 mm – 575.1 g; <1 mm – 651.8 g) was mostly stones (to 45 mm; score 5 – chalk and flint), with abundant sand (score 4; almost all of the less than 1 mm fraction, although this also included frequent (score 3) black flecks of fine ?charcoal). No magnetic material was present.

The 'squash' subsample was almost entirely inorganic with the barest trace of organic detritus (<1%). No microfossils were present.

Discussion and statement of potential

Few biological remains of probable 'ancient' origin (i.e. likely to be contemporary with deposit formation) were recovered from the samples – from the fills of linear gullies/ditches [104] and [106] and the two fills of ?Late Bronze Age/Iron Age pit [122] in the area of the access road and car park, and fills of three ?pits/?ditches ([127], [130] and [133]; the first containing Iron Age pot and perhaps a ditch terminus) in the area of the soakaway trenches. All but one (from Context 107, fill of [106]) yielded trace levels of rectilinear charcoal, there were occasional charred seeds from all but two (from Contexts 126 and 128, the secondary/upper fill of [122] and the fill of [127], respectively), and small assemblages of terrestrial molluscs were recovered from Contexts 105 (fill of [104]), 107 and 128, together with a single *Vallonia ?excentrica* Sterki from Context 125 (primary fill of [122]).

The small quantities of charcoal represent no more than a 'background' level presumably derived from fuel waste (similarly small quantities of cinder and/or coal were also present in most of the deposits) and, although some fragments could be identified as of a diffuse-porous species and some a little more closely as alder (*Alnus*), birch (*Betula*) or hazel (*Corylus*), they were of no further interpretative value. The occasional charred seeds recovered were all of the common ruderal/arable weed taxa orache/goosefoot (*Atriplex/Chenopodium*) and also provided too little material for any interpretation.

The identifiable components of the mollusc assemblages were also too small for reliable interpretation but it can be noted that *Vallonia ?excentrica* was always the most numerous record and that this is regarded as a good indicator of established open grassland (Evans 1972, 161-164). The other molluscs present were consistent with such a habitat and there were no remains to suggest more substantial vegetation such as woodland or hedgerow or aquatic taxa (implying that the features were dry); the presence of *Carychium* sp. in Context 128 does suggest damper more shaded conditions but these could be provided by no more than longer grass growth within ?ditch terminus/?pit [127].

All of the other plant and invertebrate remains recorded from the samples were almost certainly modern intrusions or contaminants – rootlet (all seven deposits), earthworm egg capsules (Contexts 105, 107, 126 and 131), soil-dwelling nematode (*Heterodera* sp.) cysts (Context 105), and uncharred ‘seeds’ (Contexts 105 and 107).

No vertebrate remains were recovered and no interpretatively valuable microfossils were present in the deposits assessed.

Small numbers of possibly worked flints were extracted prior to processing (at least one from each sample), together with a little pot from Contexts 125, 126 and 128, and returned to the excavator for consideration as small finds and forwarded to the appropriate specialists if warranted.

No remains suitable for submission for radiocarbon dating of the deposits were recovered from the sediment samples. Although sufficient charcoal was recovered from all but one of the deposits for AMS dating to be attempted this material cannot be recommended as all of the fragments were of an unknown number of years of wood growth; the ‘old wood’ problems whereby any date returned could be much earlier than the charring event would, therefore, apply. Furthermore, both the fragment size and the quantities of the charcoal recovered were small and it may have been disturbed from its original point of deposition by, for example, bioturbation (from root/rootlet growth). Hence any dates returned could not be reliably extended to the fills as a whole; by the same reasoning, more inherently suitable material for dating, such as the charred orache/goosefoot seeds which might be considered (although these were few and could well be insufficient), cannot be recommended for submission for AMS.

Overall, there were no indications of significant human activity from the assemblages of biological remains recovered with only the small quantities of prehistoric pot and possibly worked flint (and the features themselves) to suggest this and the corresponding implication that any occupation must have been at some remove from the features encountered at County Farm. Excavations at Low Farm, Cottingham (approximately 1 km to the south-east) also encountered evidence of Later Bronze Age and Iron Age/Romano-British activity and biological remains were also scarce but a crucial difference here was the presence of small assemblages of vertebrate remains indicating food waste (Hall *et al.* 2002; 2003 subsequently incorporated within Tibbles 2002; 2003, respectively).

Recommendations

No further study of the biological remains from the sediment samples is warranted.

Retention and disposal

The extant material is of no further interpretative value and, other than the artefactual remains, which have been returned to the excavator, it may all be discarded.

Archive

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

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APPENDIX 3
EDAS WRITTEN SCHEME OF INVESTIGATION

CHANGE OF USE OF LAND AND BUILDINGS
TO WEDDING VENUE AND HOSPITALITY FACILITY,
AND THE CONSTRUCTION OF A LEAN-TO
STORE EXTENSION, COUNTY FARM, LONG LANE,
WOODMANSEY, EAST YORKSHIRE HU17 0RN
(planning application DC/17/01885/PLF/EASTSE)

WRITTEN SCHEME OF INVESTIGATION
FOR A PROGRAMME
OF ARCHAEOLOGICAL INVESTIGATIONS

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

WRITTEN SCHEME OF INVESTIGATION FOR A PROGRAMME OF ARCHAEOLOGICAL INVESTIGATIONS, CHANGE OF USE OF LAND AND BUILDINGS TO WEDDING VENUE AND HOSPITALITY FACILITY, AND THE CONSTRUCTION OF A LEAN-TO STORE EXTENSION, COUNTY FARM, LONG LANE, WOODMANSEY, EAST YORKSHIRE, HU17 0RN

1 INTRODUCTION

- 1.1 This Written Scheme of Investigation (WSI) details the work required to undertake a programme of archaeological investigations, to be carried out during groundworks associated with the establishment of a wedding venue and hospitality facility, at County Farm, Long Lane, Woodmansey, East Yorkshire (NGR TA 0487 3685) (see figure 1). This written scheme has been produced by Ed Dennison Archaeological Services Ltd (EDAS), at the request of the developers, The Beverley Barn Limited.
- 1.2 This document forms the 'Written Scheme of Investigation' required under Condition 10 of the full planning permission (application DC/17/01885/PLF/EASTSE), granted by East Riding of Yorkshire Council on 19th December 2017.

2 SITE LOCATION AND DESCRIPTION

- 2.1 The proposed development site lies off the south side of Long Lane, in open countryside some 2.65 kilometres south-south-east from Beverley Minster. The site comprises a grassed field, formerly part of a larger arable field, and a small farm complex. The site is relatively flat at 7.00 metres above Ordnance Datum (AOD), and the farm buildings are centred at NGR TA 04870 36850 (see figure 1).

3 PLANNING BACKGROUND

- 3.1 Full planning permission for the proposed development was approved by East Riding of Yorkshire Council on 19th December 2017 (application DC/17/01885/PLF/EASTSE). Condition 10 relates to archaeology, and states:

No development shall take place until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a Written Scheme of Investigation which has been submitted to, and approved in writing, by the Local Planning Authority.

A written scheme of investigation shall include:

- i) the proper identification and evaluation of the extent, character and significance of archaeological remains within the application area;*
- ii) an assessment of the impact of the proposed development on the archaeological remains;*
- iii) proposals for the preservation in situ, or for the investigation, recording and recovery of archaeological remains and the publishing of findings, it being understood that there shall be a presumption in favour of their preservation in situ where feasible;*
- iv) sufficient notification and allowance of time to archaeological contractors nominated by the developer to ensure that archaeological fieldwork as proposed in pursuance of (i) and (iii) above is completed prior to commencement of the approved development in the area of archaeological interest; and*

v) notification in writing to the Curatorial Officer of the Humber Archaeology Partnership of the commencement of archaeological works and the opportunity to monitor such works.

This pre-commencement condition is imposed in accordance with policy ENV3 of the East Riding Local Plan and in order to provide a reasonable opportunity to record the history of the site which site lies within an area of archaeological interest [sic].

4 ARCHAEOLOGICAL INTEREST

- 4.1 Information from the Humber Historic Environment Record shows that the proposed development site lies within an important archaeological landscape, with cropmarks of an Iron Age and/or Romano-British field system running through the proposal site itself. These features have been identified on aerial photographs and further enhanced by the Hull Valley Mapping Project, which identified further ditches and enclosures (see figure 2). The field system appears to extend to the north and north-east of County Farm, therefore suggesting that the features are contemporary with each other. In addition to the above, there are also at least five Bronze Age round barrows in the vicinity of the application site. It is likely, therefore, that any groundworks in this area would affect heritage assets dating to the prehistoric and Romano-British periods.
- 4.2 In order to assess the archaeological implications of the proposed development, and to determine whether any of the above mentioned field system elements extend into the application site, a geophysical magnetometer survey was undertaken of the pasture area to the immediate west and south of the existing farm buildings. This survey was carried out on 27th November 2017 by On Site Archaeology, and an unedited version of their report appears as Appendix 1 (On Site Archaeology 2017a).
- 4.3 The survey area of c.1.00ha was divided into 30m by 30m grids and tied in to known Ordnance Survey points using appropriate GPS equipment. Data collection was carried out using two Bartington Grad 601-2 fluxgate gradiometers, and samples were recorded on an interval of 0.25m by 1m in accordance with current archaeological guidelines, yielding 3600 measurements per 30m square.
- 4.4 The survey results show a strong correlation between magnetic anomalies and cropmark evidence, pointing to some potential archaeological activity (see figure 3). Of note are several positive linear responses. The clearest run parallel to one another, suggesting a possible trackway (Feature D) aligned east-north-east/west-south-west and forming part of the surrounding late prehistoric and Romano-British landscape. Adjacent anomalies, such as an area of magnetic noise (Feature F) and a small rectilinear feature (Feature G) may be associated with the trackway. Further low linear responses (Feature B) may represent part of a sub-divided field system, although they may also be associated with nearby farm buildings. Feature H presents as an isolated anomaly and may prove to be archaeological feature such as a pit or similar. Other anomalies are modern features or disturbance from adjacent farm buildings.
- 4.5 It is of note that several of the potential archaeological features identified as cropmarks were not identified by the geophysical survey. This may suggest that the site has suffered truncation from recent agricultural activity, since the aerial photographs that recorded the cropmarks were taken. However, it should also be noted that a previous geophysical survey on a development site at Woodmansey

recorded no archaeological features, although some ditches were subsequently noted by field investigation (On Site Archaeology 2017b).

5 NATURE OF THE DEVELOPMENT

- 5.1 The proposed new development will have limited archaeological implications as the main works involve the conversion of an existing modern agricultural building into a wedding venue and hospitality facility. Almost all of these works will be internal to the building, but a new lean-to storage shed will be built against the north side of the existing building, in an area partly occupied by the site of a to-be-demolished garage structure. There will, however, be a number of new drains and other services dug around the converted farm buildings, leading into an existing septic tank placed adjacent to Long Lane (see figure 4).
- 5.2 The main ground-disturbing works will result from the construction of a new permeable access track running from Long Lane along the west and south sides of the grassed area and into a new car park area to the south of the to-be-converted farm buildings (see figure 4). The new access road will be 6.0m wide, and it is envisaged that a depth of c.300mm will need to be excavated along the alignment. The dimensions of the new car park are not given, but it is presently envisaged that no ground excavation will be required, the surface remaining as grass.

6 ARCHAEOLOGICAL MITIGATION STRATEGY

- 6.1 The archaeological potential of the proposed development site has been assessed by means of a geophysical survey. The evidence suggests that the archaeological potential of the site is medium, with the possibility that some late prehistoric/Romano-British features might occur anywhere within the site.
- 6.2 Initial discussions with the Humber Archaeology Partnership have agreed that an appropriate archaeology mitigation strategy would be to undertake further investigations along the line of the proposed access road, with any subsequent works over any other parts of the site being determined by these results and the nature of the development. The alignment and extent of the proposed access road is such that a good sample of the linear geophysical survey anomalies will be examined, although the main part of the potential trackway alignment (Feature D on figure 3) will remain preserved in-situ as it will not be affected by the proposed development.
- 6.3 Four separate phases of archaeological work are therefore proposed, the results of each phase defining the parameters for the subsequent phase. Initially, the route allocated for the access road will be subject to an archaeologically-controlled topsoil strip, followed by the detailed cleaning and recording of exposed surfaces and the selected excavation of any identified deposits or features - this is traditionally known as a "strip, plan and record" project (Phase 1a). If archaeological features or deposits are identified, and if these are deemed to be significant, further work will be undertaken to achieve "preservation by record", i.e. detailed excavation of selected features followed by an appropriate level of post-excavation analysis and publication of results (Phase 1b), in accordance with the requirements of the planning condition. Depending on the results of the Phase 1 work, other parts or specific areas of the site may be subject to an archaeological watching brief (Phase 2a), followed by further work as necessary to achieve 'preservation by record' (Phase 2b).
- 6.4 The objectives of the Phase 1a "strip, plan and record" investigations can be defined as follows:

- to determine the presence/absence of all archaeological deposits and features within the areas allocated for the access road alignment;
 - to identify and record in plan all the archaeological deposits and features within the areas allocated for the access road alignment; and
 - to provide an assessment of the potential and significance of any identified archaeological deposits and features within a local and regional context.
- 6.5 Once the Phase 1a work is complete, an informed decision can be made regarding the extent of any further archaeological work that might be required prior to or during development (Phase 1b work) to achieve “preservation by record”.
- 6.6 The objectives of any subsequent Phase 1b detailed work will be to:
- identify and appropriately record through excavation all archaeological deposits and features within the areas allocated for the access road alignment;
 - determine the extent, condition, function, relationships, character, quality of survival, importance and date of any identified archaeological deposits and features within the areas allocated for the access road alignment; and
 - recover an adequate sample of the deposits and related artefactual and ecofactual materials to allow the determination of (i) the chronology of the site, its components and detailed phases, (ii) the inter-relationships between the various components of the site, (iii) the function of the various components of the site, and (iv) the potential co-existence or succession of sites in the immediate vicinity, so as to achieve “preservation by record”.
- 6.7 The expected nature of the remains may mean that the Phase 1a and Phase 1b work run concurrently, with no separation or time division between the two operations.
- 6.8 The aims of the Phase 2 work would be similar, although it is not possible to be specific until the results of the Phase 1 investigations are known.

7 ON SITE EXCAVATION PROGRAMME

Preamble

- 7.1 All archaeological work will be undertaken in accordance with Chartered Institute for Archaeologists guidelines (ClfA 2014a; 2014b; 2014c), and following current Historic England professional guidelines (English Heritage 1991; 2006a; Historic England 2015). If EDAS or their appointed sub-contractors do not have the expertise and facilities to undertake all of the work to the required standards, consideration will be given to sub-contracting various elements of the works to other groups or individuals. All archaeological work will be undertaken using standard archaeological recording procedures and numbering systems.
- 7.2 Reasonable prior notice (minimum two weeks) of the commencement of development will be given to EDAS, who will then inform the Curatorial Officer of the Humber Archaeology Partnership, so that they may attend or monitor the site work if required.
- 7.3 EDAS will make the client aware of any specific requirements likely to be made by the receiving museum as part of the archiving and deposition process; for this project, the receiving museum will be the East Riding of Yorkshire Museum Service (ERYMS). As necessary, EDAS will hold detailed discussions with the ERYMS

over finds recovery, conservation and sampling strategies, as well as archive deposition procedures.

- 7.4 All artefacts recovered during this project will be treated as the property of the landowner. Subject to their agreement, and after discussion with specialists and ERYMS staff regarding finds retention and sampling, all suitable finds will be packaged and delivered with the site archive to ERYMS. The timing of the deposition of the site archive will be determined by the need for any further excavations in advance of development.
- 7.5 The responsibility for setting out the areas of topsoil strip within the development site will be the responsibility of the developer. The final positions of topsoil strips, and any other archaeological works, will be surveyed and tied into the Ordnance Survey national grid and other survey stations by EDAS or their appointed sub-contractor, using appropriate electronic distance measuring equipment (EDM total station or similar) as necessary.
- 7.6 Health and safety issues will take priority over archaeological matters. All archaeologists undertaking fieldwork will comply with all Health and Safety Legislation, this includes the preparation of a Risk Assessment. Necessary precautions should be taken regarding any underground services and overhead lines. Existing knowledge of the site means that the use of shoring for deep excavations, pumps and artificial lighting will not be required.

Phase 1 On-site Methodology and Recording within the Access Road Alignment

- 7.7 All topsoil stripping will be directly supervised and monitored by EDAS or their nominated sub-contractors. The depth of topsoil stripping will be determined by EDAS for archaeological purposes, unless construction depths exceed this. A previous “strip, map and record” project at Woodmansey showed that archaeological deposits of a similar nature are likely to be expected at this site (ditches etc) were cut in the natural subsoil at depths of between 300mm-500mm below existing ground level.
- 7.8 A detailed methodology for the stripping operation will be established and employed across the site, to prevent stripped areas being crossed at a later date by other mechanical equipment and site staff. Only once specific areas have been signed off as being “archaeologically sterile” (i.e. after the completion of all archaeological recording in that part of the site) will access be granted to the main contractor.

Phase 1a “Strip, Plan and Record”

- 7.9 The topsoil and modern overburden along the access road alignment will be stripped by mechanical excavator(s) using toothless ditching buckets in level spits down to the first significant archaeological deposit or the natural subsoil. as noted above, the depth of archaeological deposits and the depth of excavation required for road construction are likely to be similar.
- 7.10 Once stripped, the exposed surfaces will be inspected in detail and any areas of archaeological potential and/or interest will be hand-cleaned. Any identified deposits or features of archaeological interest will then be planned using EDM or total station equipment, at 1:50, 1:100 or 1:200 scales (as appropriate to show their full extent relative to the development site) and photographed. Some limited hand

excavation may also be required at this stage to confirm that features are indeed of archaeological origin, and to characterise and assess their importance; in general, detailed excavation and sampling is to be left until the Phase 1b works.

- 7.11 At this stage, elements of intact archaeological structural features of early date, such as walls or hearths, will only be removed for necessary sampling and recording purposes. This may be necessary if the presence of the feature hinders the proper excavation or understanding of earlier deposits, or where its presence would pose a risk to the continuation of safe excavation. Otherwise, such features would normally remain *in situ*, to be dealt with as part of the Phase 1b works. Similarly, any human remains will be adequately recorded and left *in situ*, and not be unnecessarily disturbed at this stage.
- 7.12 Any decisions regarding further archaeological excavation to achieve “preservation by record” will be determined by the extent, density and presumed importance of the identified features.

Phase 1b Further Excavation

- 7.13 Should further Phase 1b excavation work be required, all identified archaeological features and deposits will be excavated in a manner as so to fulfil the Phase 1b objectives (see above), to achieve “preservation by record”.
- 7.14 All archaeological features or deposits will be recorded in plan and/or section to establish the stratigraphic sequence and, where possible, will be completely excavated down to naturally occurring deposits.
- 7.15 However, the complete excavation of some features may not be necessary and if so, the following sampling policy will be adopted: for linear features, a minimum sample of 25% of each linear feature less than 5m in length and a minimum sample of 15% of each linear feature greater than 5m in length (each section not to be less than 1m wide); for discrete features, a 100% sample of all stake holes and a 50% sample of all pits, post holes and other discrete features less than 1.5m in diameter; large pits, postholes or deposits over 1.5m in diameter will be sampled in sufficient quantity to define the extents of the feature and to achieve the objectives of the evaluation, but will not be less than 25% and will include a complete section across the feature to recover its full profile. All intersections will be investigated to determine the relationship(s) between component features. Features with a greater depth than can be safely excavated in one stage will be stepped to enable the excavation and recording of their full depth - generally the maximum safe depth is 1.2m, but this will be dependent on local conditions.
- 7.16 In some cases, it may also be appropriate to use a mechanical excavator to remove deep intrusions (e.g. modern brick or other debris), or for putting sections through major features after partial excavation (e.g. large ditches). Limited sondages, if required, will be mechanically excavated through parts of the open area site to ensure that the identification of natural deposits is confirmed.
- 7.17 A full written, drawn and photographic record will be made of all material revealed during the course of the excavation. The limits of the open area excavation will be surveyed using EDM or total station equipment, to illustrate archaeological features at 1:100, 1:50 or 1:20 scale, as appropriate. Sections of linear and discrete features will be drawn at 1:20 or 1:10 scale. All sections, plans and elevations will include spot-heights related to Ordnance Datum in metres correct to two decimal places. Survey tie-in information will be undertaken during the course of the excavation and will be fixed in relation to nearby permanent structures and roads

and to the Ordnance Survey National Grid. A minimum 35mm format for photography will be used (in monochrome and colour), supplemented by digital photography (minimum 12 mega-pixel resolution). General photographs of the site will also be taken before, during and after excavation.

Phase 2 On-site Methodology and Recording within Other Parts of the Site

- 7.18 As noted above, the requirement for any Phase 2 work within other parts of the site will be dependent on the results of the Phase 1 works, for example the likely or expected nature of any archaeological remains not yet fully examined as part of the Phase 1 investigations.

Phase 2a Watching Brief

- 7.19 Drainage or service trenches and/or ground reduction works for landscaping etc excavated for the proposed development will be subject to archaeological monitoring as they are being dug, so that any archaeological deposits that might be uncovered can be immediately identified and recorded. Where mechanical equipment is to be used for the excavations, the main contractor will use a toothless bucket, to facilitate the archaeological recording.
- 7.20 If it becomes clear during the monitoring work that little of archaeological interest is likely to survive within this part of the site, the recording work may be halted, in consultation with the Curatorial Officer of the Humber Archaeology Partnership. However, if structures, features, finds or deposits of archaeological interest are exposed or disturbed, EDAS and their nominated sub-contractors will be allowed time to clean, assess, and hand excavate, sample and record the archaeological remains, as necessary and appropriate according to the nature of the remains, to allow the archaeological material to be sufficiently characterised. Construction will not be continued in the immediate vicinity of any archaeological remains until those remains have been recorded, and EDAS has given explicit permission for operations to recommence at that location.
- 7.21 The actual areas of ground disturbance, and any features of archaeological interest, will be accurately located on a site plan and recorded by photographs (35mm black and white/colour prints and digital shots), scale drawings (plans and sections at 1:50, 1:20 and 1:10 scales as appropriate), and written descriptions as judged adequate by the archaeologist on site, using appropriate proforma record sheets and standard archaeological recording systems.
- 7.22 If, in the professional judgement of the archaeologist on site, unexpectedly significant or complex discoveries are made that warrant more recording than is covered by this watching brief, immediate contact will be made with the Curatorial Officer of the Humber Archaeology Partnership. This will allow appropriate amendments to be made to the scope of the recording work, in agreement with all parties concerned; these amendments might, for example, include the requirement to sample archaeological and/or environmental deposits, and/or detailed excavation of specific structures. The possibility of temporarily halting work for unexpected discoveries will be discussed with the developer in advance of the development, and sufficient time and resources will be made available to ensure that proper recording is made prior to any removal.

Phase 2b Further Excavation

- 7.23 The methodologies as set out for the Phase 1b work will be followed (see above).

Finds Recovery

- 7.24 All finds (artefacts and ecofacts) visible during the archaeological investigations will be collected and processed. A finds recovery and conservation strategy will be agreed before the commencement of any site works; this strategy will follow regional and national guidelines (e.g. Society of Museum Archaeologists 1993; UKIC 2001). All artefacts will be washed and marked in a manner agreed with the recipient museum. Any recording, marking and storage materials will be of archival quality, and recording systems will be compatible with the recipient museum.
- 7.25 The following categories of artefacts may be predicted from the archaeological investigations: pottery and tile, animal bone and shell, ferrous and non-ferrous metalwork, glass, ceramic building material, clay pipes and worked stone. Experience on other sites in the vicinity suggests that deeper archaeological deposits may potentially be waterlogged, which might favour the survival of organic material. However, the results of earlier ground investigations implies that this will not be the case within the depth of material to be stripped from the site.
- 7.26 All artefacts will be collected, conserved as necessary (see below), stored and processed in accordance with standard methodologies and national guidelines in the appropriate materials and conditions to ensure that minimal deterioration takes place (Watkinson & Neal 1998). If necessary, a conservator will visit the site to undertake “first aid” conservation treatment. EDAS and their nominated sub-contractor will ensure that all records associated with the artefacts are complete.
- 7.27 All bulk finds, defined as brick and tile, appropriate medieval and post-medieval pottery, building materials, animal bone and shell, will be washed and marked in a manner likely to be required by the receiving museum. The bulk finds will be appropriately bagged and boxed, and statistically recorded in accordance with standard methodologies and national guidelines. Where possible, ceramic building materials will be recorded on site, with only the diagnostic examples being taken off site for further examination. Animal bones will be hand collected from all excavated features, and will be bagged and labelled according to their excavated context; there will be no collection of material from unstratified contexts. Where deposits contain dense concentrations of bones, these will be bulk sampled (see above). All other finds will be treated as small finds.
- 7.28 Any identified human remains will be adequately recorded and lifted, either as part of the Phase 1b or Phase 2b further excavation works or as part of the watching brief work, and then carefully removed for scientific study and long-term storage with an appropriate museum, subject to the conditions imposed by a Ministry of Justice burial licence. All human remains will be handled and excavated according to current standards (e.g. Brinkley & McKinley 2004). Any finds of gold and silver will be duly reported to the Coroner by EDAS, in accordance with the 1996 Treasure Act, after discussions with the Supervising Officer.
- 7.29 Finds which are unstratified or from the topsoil or modern overburden will generally be retained for assessment.

Sampling Strategies

- 7.30 As part of the Phase 1b or Phase 2b further excavation work, and also as part of the Phase 2a watching brief work, deposits will be sampled for the retrieval and analysis of biological remains, and to assess their bio-archaeological potential. To this end, a number of samples will be taken from excavated features. It is not

intended to institute an extensive blanket sampling policy involving the routine sampling of all features, but those specific contexts which appear to have high potential will be targeted. These may include burnt deposits and those with visible preserved organic material from specific types of feature, such as pit fills, ditch fills and occupation deposits/floor silts if clearly uncontaminated. Several background samples will also be taken from features with no visible potential.

- 7.31 A strategy for the recovery and sampling of environmental remains from the site will be produced, and this will include a reasoned justification for the selection of deposits for sampling which will be developed with an environmental consultancy and in conjunction with the Historic England Regional Advisor for Archaeological Sciences, following regional and national guidelines (e.g. Association for Environmental Archaeology 1995; English Heritage 2011). Copies of the environmental strategy, which will address the study of faunal, plant and invertebrate remains, will be formulated once the Phase 1a and Phase 2a evaluation is complete, and will be submitted to the Curatorial Officer of the Humber Archaeology Partnership for approval. At present, it is envisaged that the following sample types will be taken:
- a single 10 litre general biological analysis (GBA) sample will be taken from targeted deposits;
 - a single 10 litre sample will be taken from sediments which appear to have accumulated naturally;
 - a small number of deposits will have 40–60 litre bulk-sieved (BS) samples taken, particularly if they are visibly rich in biological/organic material (such as small animal bone, insect remains or well-preserved vegetation); and
 - 100% samples will be taken from smaller features.
- 7.32 The need for any specialist sampling will be assessed as part of the Phase 1b and Phase 2b further excavation and watching brief work. This may include monolith samples and “spot” samples for particular purposes (e.g. recovery of snails, seeds, small bones, wood for identification).
- 7.33 Some of the excavated materials may also be suitable for radiocarbon, archaeomagnetic dating and/or dendrochronological determinations, as appropriate; where *in situ* timbers are found to survive in good condition, samples will be taken for dendrochronological assay. The post-excavation assessment (see below) will include recommendations for a programme of dating techniques, if appropriate.
- 7.34 EDAS will also arrange for an appropriate number of site visits at suitable stages during the excavations by any appointed sub-consultants to allow them to carry out environmental sample processing and/or other assessment works, as necessary.

8 POST-EXCAVATION STRATEGY

Preamble

- 8.1 The main stages of the post-excavation work will be the preparation of a final report and post-excavation assessment, to cover all elements of the on-site archaeological investigations, both Phase 1 and Phase 2 works as appropriate.
- 8.2 EDAS and their appointed sub-contractor will therefore undertake:
- (a) the indexing, ordering, quantification and checking for consistency of all original context records, object records, bulk finds records, sample records,

photographs and photographic records, drawings and drawing records, level books, site note-books, spot dating records, radiocarbon assay sample sheets, and conservation records;

- (b) the production of inked copies of original site drawings, a matrix or matrices for the stratigraphic sequences, phase plans, and a narrative account of the stratigraphic and structural history of the site;
- (c) the processing of environmental and other samples;
- (d) the processing, conservation and storage of special finds and bulk finds;
- (e) ensuring that all artefacts and ecofacts recovered from the site are cleaned (as appropriate), packed and stored in the appropriate materials and conditions to ensure that no deterioration takes place, and that all their associated records are complete;
- (f) an assessment of the site archive which will consider the value of the results of fieldwork and examine the potential for any further analytical work on the data contained within the archive. The latter process will be undertaken in consultation with established specialists. If further work is recommended, a research design for this will be prepared.

Finds Processing, Conservation and Storage

- 8.3 All finds processing, conservation works and storage of finds from the site will be carried out by appropriately qualified staff or specialists and in accordance with standards agreed with the recipient museum. The implementation of these standards will ensure compatibility with other sites in the museum's collecting area.
- 8.4 The site may produce some organic and/or metallic objects and materials. As well as any "first aid" treatment on site, all organic and inorganic materials will be appropriately treated after excavation, following Historic England guidance, including prior specialist recording for materials where there is a possibility of information loss during the process of conservation.
- 8.5 Following established guidance (e.g. English Heritage 2006b; IFA 1992), all iron objects, a selection of non-ferrous artefacts (including all coins), and a sample of any industrial debris relating to metallurgy will be X-radiographed before assessment, and the process of selection for conservation will involve the appropriate specialists. All non-conserved material will be stored in stable conditions, while all other classes of material will be stored as and where appropriate. Any waterlogged deposits and organic remains will also be dealt with following established guidelines (e.g. English Heritage 2008, 2010 & 2012), as well as any recovered human bone (English Heritage 2004a & 2013).
- 8.6 All recovered small finds will be stored in the appropriate materials and storage conditions in accordance with national and regional guidelines (e.g. UKIC 1983 & 1984; Watkinson & Neal 1998). Vulnerable objects will be specially packaged, and textiles, painted glass and coins stored in appropriate specialist systems.

9 THE PRODUCTS

Post-Excavation Assessment Report

9.1 An illustrated post-excavation assessment report will be produced by EDAS. This will incorporate the post-excavation assessment and will be submitted within ten weeks of the completion of the on-site work, unless otherwise agreed with the Curatorial Officer of the Humber Archaeology Partnership. This report will include as a minimum:

- (a) a non-technical summary;
- (b) an introduction outlining the circumstances of the project (including references to planning application number, site codes etc), the archaeological background, a detailed site description (including NGR), and the dates when fieldwork took place;
- (c) appropriate acknowledgements;
- (d) a description of the methodology and techniques used and the objectives of the archaeological investigations;
- (e) a detailed narrative description of the results of the archaeological investigations, with reference to context numbers;
- (f) an interpretation of the overall structural and stratigraphic sequence established by the investigations, including phasing of the site sequence and ceramic assessments, with reference to the local and regional archaeological context;
- (g) catalogues and summary records, accounts and descriptions of each artefactual and ecofactual assemblage recovered from the excavations, supported by illustration and specialist reports where appropriate. Any individual specialist reports will contain non-technical summaries and tabulation of data in relation to the site phasing contexts, and will be presented as unedited appendices to the main report;
- (h) inked plans showing an overall site plan, the location of the investigations within the site at 1:500 or 1:250 scale, individual plans and sections of relevant archaeological features, all at appropriate scales, and any other plans and sections as may be required to illustrate the report, including any necessary plans or sections of individual features;
- (i) appropriate photographs to illustrate the report and/or the findings;
- (j) an interpretation of the archaeological and research potential of the site;
- (k) a summary of the material held in the site archive and details of archive location and destination;
- (l) a post-excavation assessment of each category of data or material held in the site archive. Assessment of artefacts will include inspection of X-radiographs of all iron objects, a selection of non-ferrous artefacts (including coins), and a sample of any industrial debris relating to metallurgy, with appropriate conservation assessments; material

considered vulnerable will be selected for stabilisation after specialist recording. The post-excavation assessment will examine the potential for any further analytical work and make recommendations for selection of material to be deposited for long-term storage with the site archive; these recommendations will be clearly separated from results and interpretation. If further post-excavation work is recommended, an outline research design will be prepared; the timing of the implementation of any such work will depend on whether further site work, either in advance of or during development, is required;

- (m) a copy of this specification and/or the approved project design, presented as an appendix to the main report; and
 - (n) references and bibliography of all sources used.
- 9.2 The post-excavation assessment report will be produced as a pdf document, for distribution to the client, the Humber HER, the Local Planning Authority, and other interested parties; hard copies will also be provided as necessary.
- 9.3 EDAS subscribe to Historic England's OASIS (Online Access to Index of Archaeological Investigations) project, and all EDAS projects are fully OASIS compliant. Prior to the start of any fieldwork, an OASIS online record will be initiated and key fields completed on Details, Location and Creators forms. All parts of the OASIS online form will be subsequently completed, and this will include an uploaded pdf version of the post-excavation assessment report. Copies of the relevant OASIS forms will be included in the various project reports.

Final Archaeological Report

- 9.4 Once all phases of the archaeological fieldwork have been concluded, a final archaeological report will be produced. This will include all of items (a) to (n) listed above, together with any further archaeological work carried out to mitigate the impacts of the proposed development, as well as the results of any further analytical work that might have been recommended under item (l) in the post-excavation assessment report.

Publication

- 9.5 It is appreciated that the archaeological fieldwork and/or any subsequent post-excavation assessment work may produce results of sufficient significance to merit publication in their own right. Consideration will therefore be made for the preparation and publication of an appropriate note in a local journal outlining the results of all phases of the archaeological project.

Archive Preparation and Deposition

- 9.6 A site archive will be prepared in accordance with accepted national and regional guidelines (e.g. Walker 1990; English Heritage 1991; Historic England 2015; Society of Museum Archaeologists 1995; Brown 2007); this will include labelling, conservation and storage matters. EDAS will have liaised with the recipient museum (ERYMS) concerning their detailed requirements in advance of the start of fieldwork, and a provisional allowance for a minimum of two boxes will be made when calculating estimates for the museum's long term storage costs.

- 9.7 It is expected that the final archive will include the following:
- (a) a project summary;
 - (b) the approved method statement;
 - (c) an archive guide (an introduction to the archive stating its principle and layout);
 - (d) an index to the contents of the archive;
 - (e) the complete site archive including all records, data, reports, photographs, correspondence etc. produced during excavation, post-excavation, finds processing, conservation, and analysis, the complete material archive, and the interim and post-excavation assessment report.
- 9.8 EDAS will be responsible for the deposition of the final site archive, and will also liaise with the landowner in respect of the legal ownership of any finds, and their transference to the ERYMS.

10 OTHER CONSIDERATIONS

Monitoring

- 10.1 It is possible that the field investigations will be monitored by the Curatorial Officer of the Humber Archaeology Partnership, who will be given at least two week's notice of the start of excavations. Access to the site will be provided by EDAS and any nominated sub-contractor at all reasonable times to the client and his representatives. Any visitors to the site will be required to observe the appropriate Health and Safety regulations imposed by EDAS and/or the main contractor.

Health and Safety, Insurances etc

- 10.2 EDAS and any nominated sub-contractors will comply with the Health and Safety at Work Act of 1974 while undertaking the archaeological investigations, including the preparation of a Risk Assessment, and Health and Safety issues will take priority over archaeological matters. Necessary precautions will be taken regarding any underground services and overhead lines. Existing knowledge of the site means that the use of shoring for deep excavations, pumps and artificial lighting are not likely to be required. The site is privately owned and EDAS will indemnify the landowners in respect of their legal liability for physical injury to persons or damage to property arising on site in connection with the survey, to the extent of EDAS's Public Liability Insurance Cover (£5,000,000).

Copyright

- 10.3 Unless specifically requested by the Client, the copyright of all written, electronic, graphic or photographic records and reports produced as a result of this project will rest with the originating body (EDAS and any nominated sub-contractors undertaking the fieldwork and analysis).

Timing of the Project

- 10.4 At present, no date for the start of the on-site archaeological works has been determined. As and when it is determined, the Curatorial Officer of the Humber

Archaeology Partnership will be given at least two week's notice of the start of excavations.

11 REFERENCES

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CIFA (Chartered Institute for Archaeologists) 2014c *Standard and Guidance: Archaeological Watching Brief*

CIFA (Chartered Institute for Archaeologists) 2014b *Standard and Guidance: Archaeological Excavation*

CIFA (Chartered Institute for Archaeologists) 2014a *Standard and Guidance: Archaeological Field Evaluation*

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English Heritage 2006b *Guidelines on the X-radiography of Archaeological Metalwork*

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Walker, K 1990 *Guidelines for the Preparation of Excavation Archives for Long-term Storage*

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Ed Dennison, EDAS,
31st December 2017



Figure 1: General location.

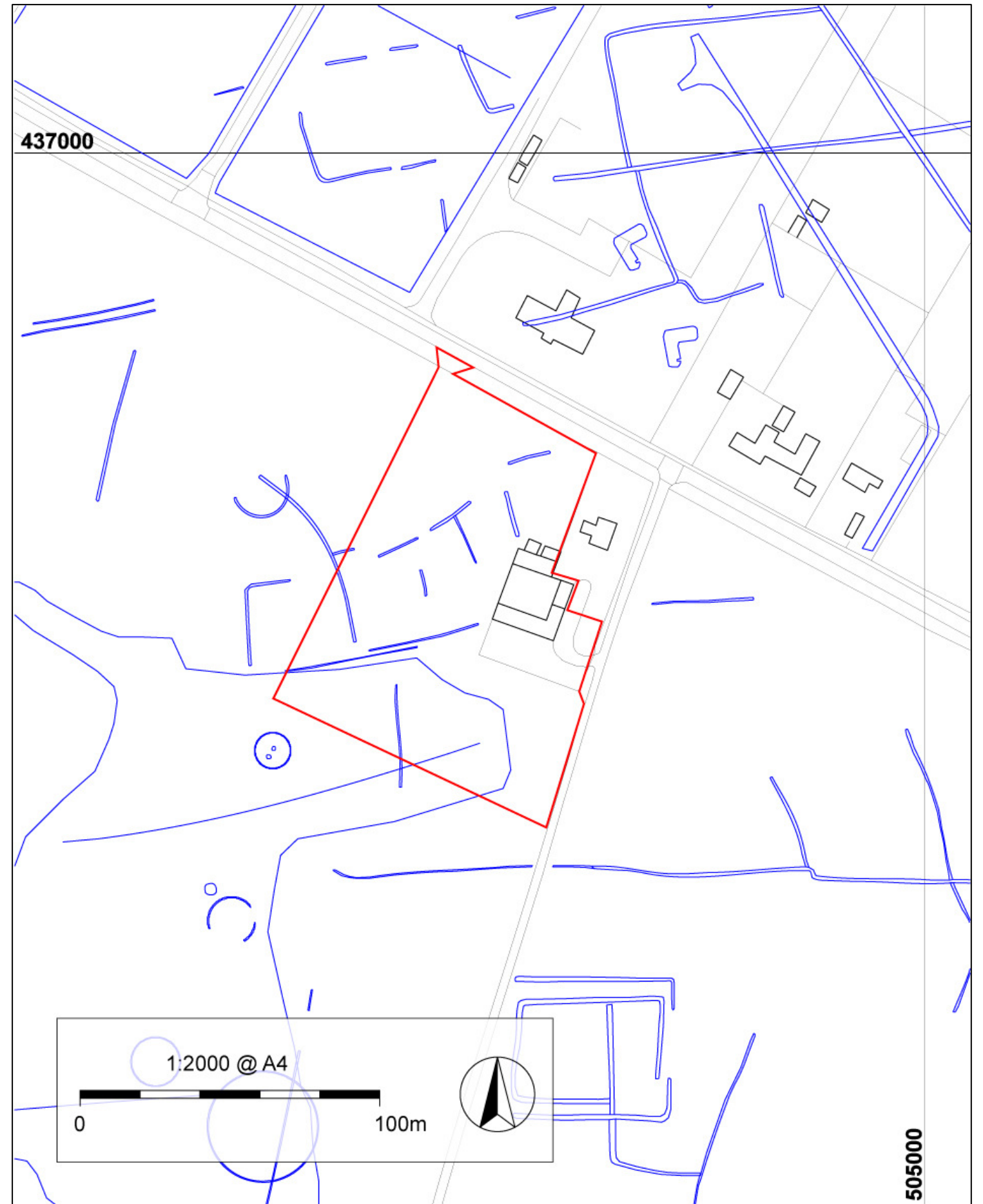


Figure 2: Cropmarks (blue) recorded in the vicinity of the development site (red) (information from Humber HER).

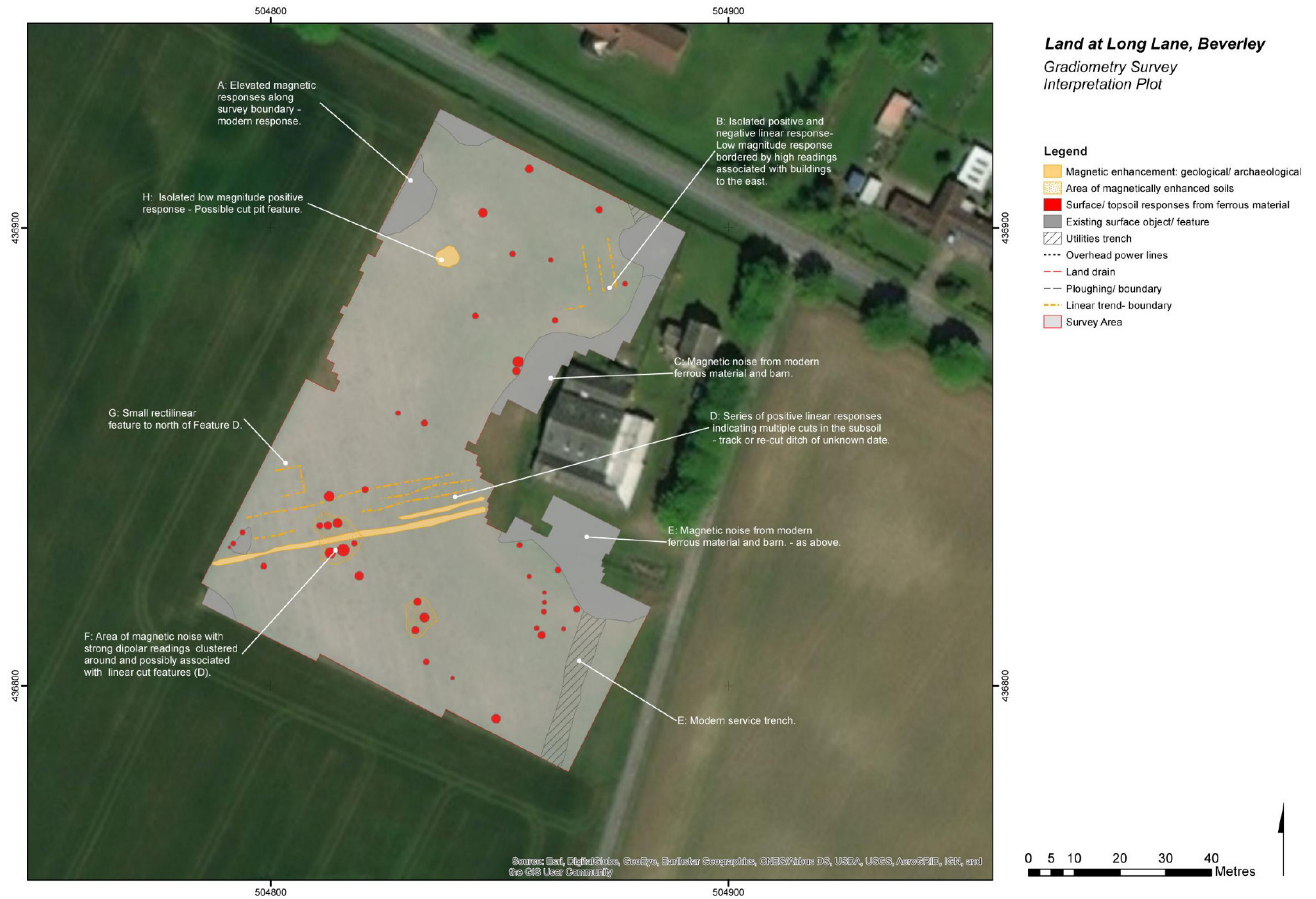


Figure 3: Interpretation of Geophysical Survey Results

COUNTY FARM, LONG LANE, BEVERLEY,
EAST YORKSHIRE.

REPORT ON A GEOPHYSICAL SURVEY
OSA REPORT No: OSA17EV38

DECEMBER 2017

OSA

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Report Summary.

PROJECT NO: OSA17EV38 (Geophysics)

SITE NAME: County Farm, Long Lane, Beverley

COUNTY: East Yorkshire

NATIONAL GRID REFERENCE: TA 04870 36850

ON BEHALF OF: Ms Y. Clappison
The Beverley Barn
County Farm
Long Lane
Beverley
HU17 0RN

GRAPHICS: Ben Gourley

FIELDWORK: Amy Pearson
Ryan Wilson

REPORT: Ben Gourley
Ryan Wilson

TIMING: Fieldwork:
December 2017
Report preparation:
December 2017

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1.0 Abstract.

Development is proposed for pasture land at County Farm, Long Lane, Beverley. A geophysical survey of the site was carried out as an initial stage of evaluation.

The site lies within a landscape with a moderate likelihood of remains from the prehistoric and Romano-British period. This is based on the identification of a number of cropmarks in the area that are indicative of remains of these periods.

Of note in the data is the presence of several positive linear responses. The clearest examples of these run parallel to one another and their form suggest a possible trackway. Although the date of these is not clear from their arrangement, they do appear to correspond to existing cropmark data. Therefore they are likely to form part of the late-prehistoric and Romano-British period landscape.

It is of note that several of the potential archaeological features previously identified as cropmarks were not identified through the current survey. This may suggest that the site has suffered plough truncation since the aerial photographs that recorded the cropmarks were taken.

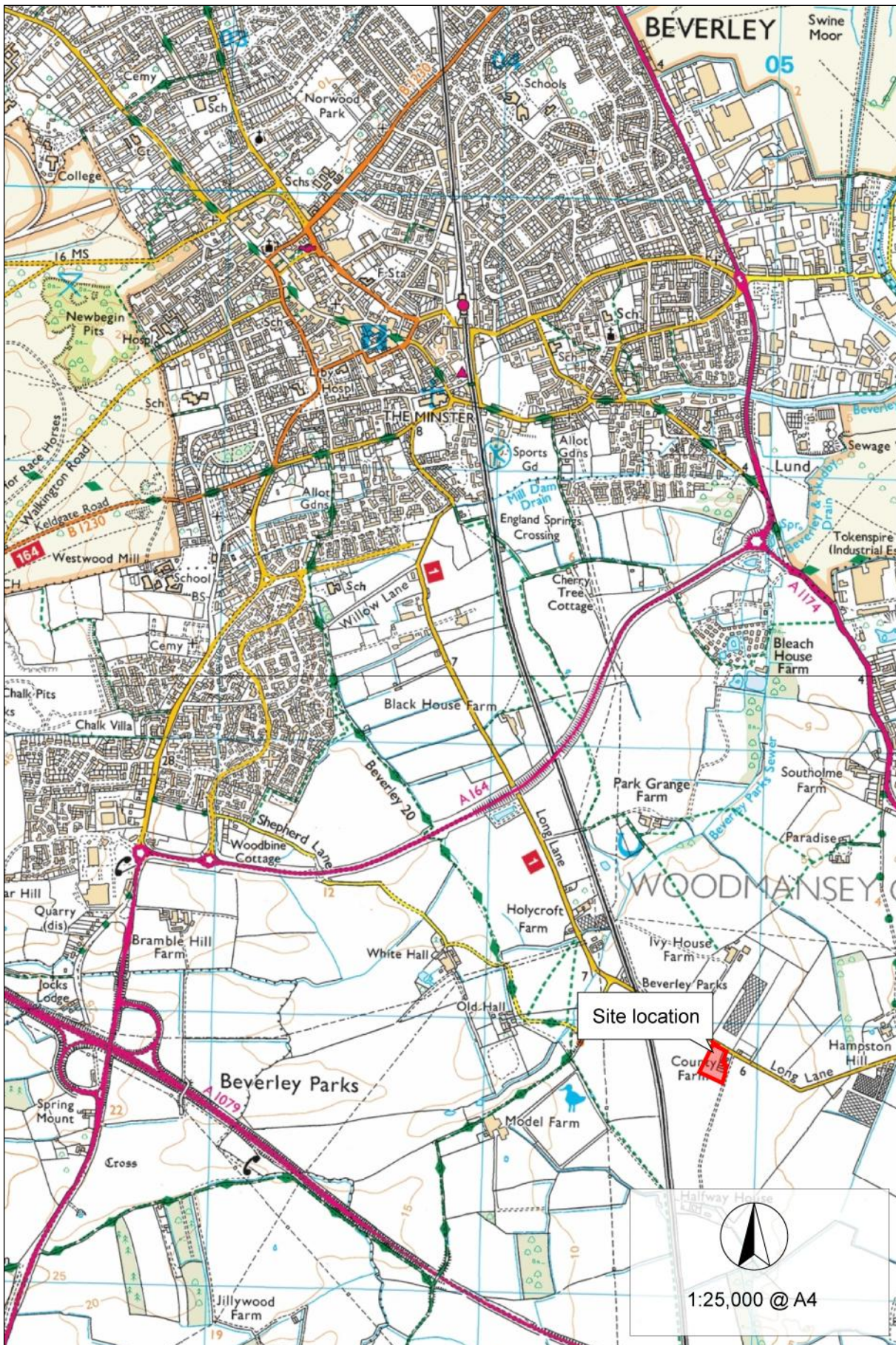


Figure 1. Site location (TA 04870 36850)

Reproduced from the Ordnance Survey 1:25 000 maps with the permission of The Controller of Her Majesty's Stationery Office. © Crown copyright. OSA Licence No: AL 52132A0001.

2.0 Site Location, Geology, Topography and Land Use.

The site considered by this report is located broadly south of the town of Beverley, approximately 2.65 kilometres south-southeast from Beverley Minster. The site comprises pasture and a small farm complex. At the time of the site visit the site presented as well manicured grass, with small, discrete spoil heaps of building waste, largely non-ferrous. The pole for overhead cables is located in the southwestern most corner of the site.

The site lies relatively flat at 7.00 metres above Ordnance Datum (AOD), and the farm buildings are centred at TA 04870 36850 (**Figure 1**). The extent of the surveyed area of the site is illustrated on **Figure 3**.

The site is bordered on the north by Long Lane and by agricultural land in all other directions. A clear division between this site and cropped land is further demarcated by a short post and wire fence.

The geology is Flamborough Chalk Formation bedrock overlain by undated sands and gravels (British Geological Survey N.D.).

3.0 Archaeological Background

The following text uses extracts of the background information presented in the planning consultation response by Humber Archaeology Partnership (Goodyear 2017).

The site of the proposed development lies within an important archaeological landscape, with cropmarks off an Iron Age and/or Romano-British field system running through the proposal site itself. These features have been identified on aerial photographs and further enhanced by the Hull Valley Mapping Project which identified further ditches and enclosures. The field system appears to extend to the north and north-east of County Farm, therefore suggesting that the features are contemporary with each other. In addition to the above, there are also at least five Bronze Age round barrows near the application site.

It is likely, therefore, that any ground-works in this area would previously unknown heritage assets dating to the prehistoric and Romano-British periods.

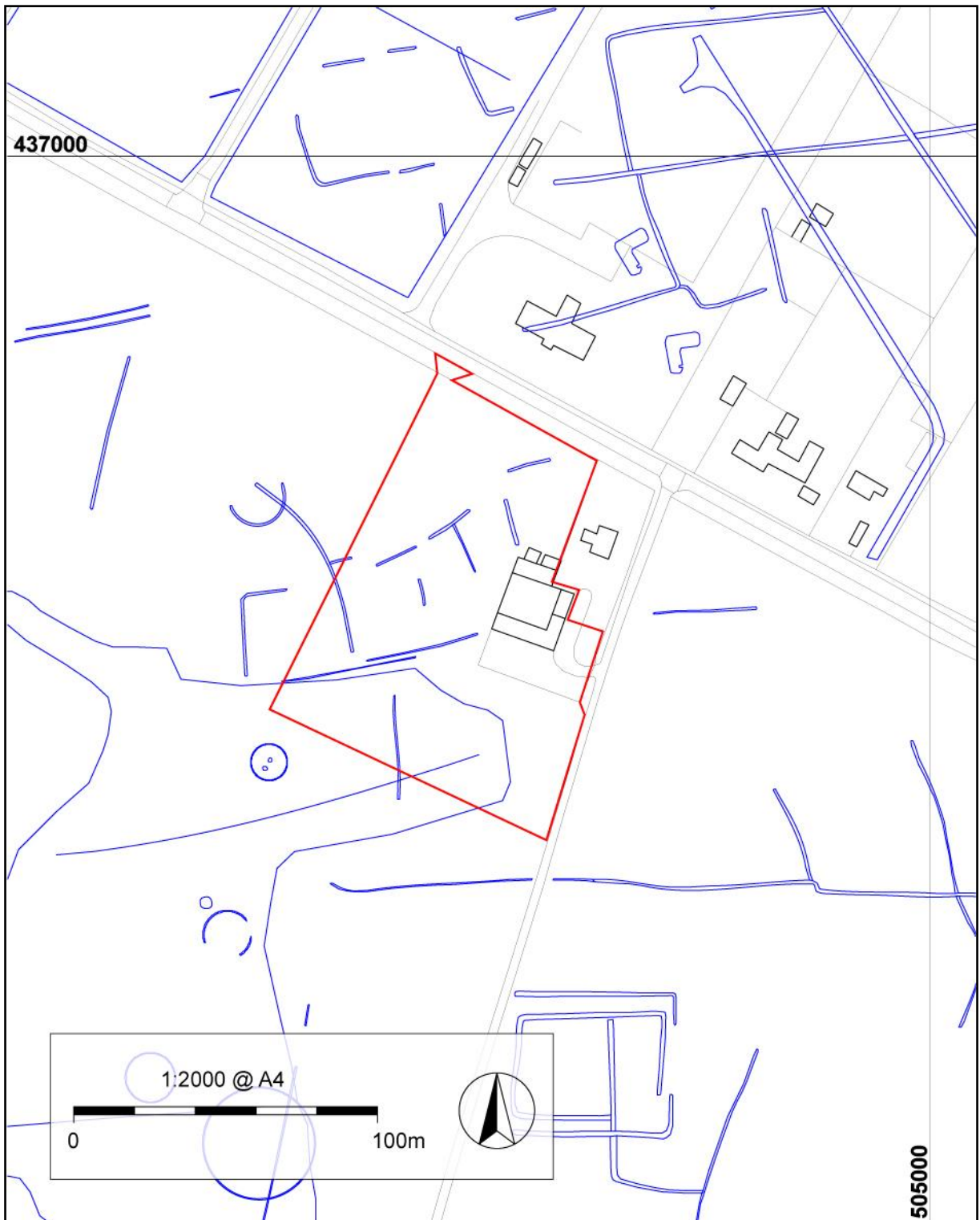


Figure 2. Cropmark data (blue) superimposed onto the site (red) and immediate area. Source: Humber HER.

4.0 Methodology.

4.1 *General*

The survey and reporting were conducted in accordance with the current professional guidelines “Geophysical Survey in Archaeological Field Evaluation” (Historic England 2008) and “Standard and Guidance for Archaeological Geophysical Survey” (Chartered Institute for Archaeologists 2013).

Geophysical surveying enables the relatively rapid and non-invasive identification of potential archaeological features within landscapes and can involve a variety of complementary techniques such as magnetometry, electrical resistivity, ground-penetrating radar and electromagnetic survey. Some techniques are more suitable than others in particular situations, depending on a variety of site-specific factors including the nature and depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.

In this instance, there is some evidence of probable archaeological features in the immediate vicinity and on the site, represented by cropmarks recorded from aerial photographs. These are likely to be represented by features that are cut into the existing soils/geology. These might include features such as ditches, pits, trackways and other below-ground ‘cut’ features ranging in date from the prehistoric to the present day.

Magnetic survey is generally well suited to the detection of such features, and it is most commonly employed as a rapid means of assessing the extent of archaeological deposits across a large area, particularly where silted up or backfilled ‘cut’ features are thought to be present. Geological conditions play a significant part in the successful identification of deposits with this technique, and the mudstone, siltstone and sandstone bedrocks at Common Road are likely to produce variable results with magnetic survey (Historic England 2008).

This technique is sensitive to changes in the localised magnetic field caused by ferrous material in the soil and on the surface in the immediate area. Modern services, electricity pylons, metal fences/ buildings, and any other ferrous objects in the topsoil all produce elevated magnetic responses that can confuse interpretation of results. In this survey the extent of metallic pollution is variable.

4.2 *Fieldwork methodology*

In archaeological geophysics in Britain the most frequently used magnetic technique is Fluxgate Gradiometry, a method that detects minor variations in the vertical component of the local magnetic field of near-surface soils and subsoils. These variations are caused by changes in magnetic susceptibility or permanent thermo-remnant magnetism, both of which can indicate archaeological activity. Data is collected at regular intervals over a gridded area producing a continuous coverage over the site.

The survey comprises an area of approximately 1.00ha. The site was divided into 30x30m grids and tied in to known Ordnance Survey points using a *Leica GPS900*. The *GPS900* is a real time kinematic GPS unit providing survey quality location information accurate to around 10mm.

Data collection was carried out using two *Bartington Grad 601-2* fluxgate gradiometers with automatic data logging facilities. Samples were recorded on an interval of 0.25 x 1 m in accordance with current archaeological guidelines (Historic England 2008), yielding 3600 measurements per 30m square. The instrument sensitivity was set to 0.03nT within a +/- 100nT range ensuring the accurate recording of small variation in the local magnetic gradient.

4.3 *Processing and data treatment*

Following initial field survey, data was prepared and processed using a series of software tools to eliminate data defects resulting from local conditions or field collection problems. Typically, once defects have been identified, images are prepared using a greyscale representation of the relative strength of magnetic response in the survey areas. The greyscale plots provide a graphic ‘2D image’ of subsurface magnetic conditions and form the basis of the interpretation diagram in **Figures 7-9**. (Additional ‘X/Y trace’ plots are also included as an alternative graphic representation of results for comparison with greyscale plots).

For processing, Geoscan *Geoplot 3.0* software was used for initial data processing and Golden Software’s *Surfer* used for the production of both raw and processed data plots. Maps of the site were prepared using *Esri ArcGIS* geographical informatics software.

The following processing and image enhancement functions have been applied to the data (see Appendix 1 for details):

Despike – Used to locate and reduce the effects of random ferrous responses in the survey area that most commonly result from iron objects near to the surface. NB. Some anomalies of this type cannot be successfully eliminated using ‘despike’ (especially if they are caused by larger iron objects in top-soils) without compromising the reading for the nearby data, and in these cases they are left in the dataset and marked in the interpretation plot accordingly.

The parameters used for the despike process were: radius of X4 x Y1 readings for local averaging with a threshold of 3.0. A ‘mean spike replacement method’ was applied using the despike filter in *Geoplot 3.0* software.

Zero Mean Traverse – For removing striping effects in the data caused by the orientation of the instrument sensors; also removes traverse striping caused by abnormally strong responses caused by ferrous pollution. For settings see Appendix 2 below.

Interpolation – This is mostly an image optimisation process designed to create a more coherent and ‘readable’ graphic. Interpolating increases the number of data points in a survey on one or both axes. In this instance survey data was collected using a 0.25 x 1m sampling interval, and for final graphic preparation clipped and processed data was interpolated on the

Y-axis resulting in a smoothed greyscale plot where one pixel is the equivalent to a 0.25 x 0.5m survey sample. Geoplot's *sin x/x* interpolation method was used for this process.

5.0 Results.

5.1 General

The data is presented here using greyscale and X/Y plots with minimal processing to give an impression of the full range data statistics (**Figure 5**). Darker greys and blacks represent elevated magnetic readings, and lighter values lower readings, while middle grey indicates the 'survey average' response of the underlying geological conditions.

Magnetic values are measured here in Nanotesla (*nT*) and the Bartington is configured at a sensitivity of 0.03 *nT*, recording data within a range of -100nT/ +100nT. Within this range most archaeological and geological features occupy relatively low *nT* value with respect to the survey zero (typically between -20 and +20 *nT* and lower). *Nanotesla (nT)* values are given in relation to the survey 'zero' or *mean*. Therefore, '*positive*' refers to elevated or enhanced magnetic values, '*negative*' refers to lower values, and '*dipolar*' refers to responses that consist of an elevated peak and a negative trough. Depending on their origin and structure, each of these can constitute linear features, localised features, or features covering an area.

Responses of very high magnitude in the top and bottom end of this scale usually result from isolated metallic objects in the topsoil or from major features with high iron content near or in, the survey area.

A combination of factors including: subsurface/surface conditions, the depth of anomaly, and material composition all affect the form of magnetic responses.

Figure 4 displays the unprocessed raw data using a greyscale gradient to represent magnetic values.

5.2 Processed Data

Processing was undertaken to eliminate data anomalies. As above these include *Despike*, *ZMT*, and *Interpolate*. **Figures 5 and 6** show the processed data in greyscale and 3D surface plot. The data here has been optimised to show magnetic variations in the lower *nT* range (typical occupied by geological and archaeological features).

Figure 7 shows a greyscale representation of significant anomalies with a colour-coded interpretation overlaid on the greyscale plot. **Figure 8** is a colour coded anomaly map showing interpretation of results with significant anomalies identified with an alphabetical code.

Figures 8 and 9 show an interpretation of the specific anomalies. The various categories identified in the associated legend and significant features are listed below:

5.3 *Summary of recorded anomalies.*

Geophysical Anomalies	Description
Feature A	Elevated magnetic responses along survey boundary; modern response.
Feature B	Isolated positive and negative linear response. Low magnitude response bordered by high readings associated with buildings to the east.
Feature C	Magnetic noise from modern ferrous material and barn.
Feature D	Series of positive linear responses indicating multiple cuts in the subsoil; track or re-cut ditch of unknown date.
Feature E	Modern service trench.
Feature F	Area of magnetic noise with strong dipolar readings clustered around and possibly associated with linear cut Feature D.
Feature G	Small rectilinear feature to north of Feature D.
Feature H	Isolated low magnitude positive response. Possible cut pit feature.

6.0 Discussion and Conclusions.

The magnetic survey at Long Lane shows evidence of correlation between magnetic anomalies and cropmark evidence – pointing to archaeological activity.

The periphery of the survey area abutted against standing farm buildings or contained discreet spoil heaps of building rubble, which has caused magnetic noise.

Of note in the data is the presence of several positive linear responses. The clearest examples of these run parallel to one another and their form suggest a possible trackway, collectively labelled Feature D. Although the date of these is not clear from their arrangement, they do appear to correspond to existing cropmark data. Therefore they are likely to form part of the late-prehistoric and Romano-British period landscape.

Further correlated to the cropmarks is Feature B, a series of low response linears. If tallied with the cropmarks these may form part of a subdivided field system, although this cannot be confirmed further from the evidence presented.

Finally, Feature H presents as an isolated anomaly and may prove to be archaeological; perhaps a pit or suchlike.

It is of note that several of the potential archaeological features identified as cropmarks (see **Figure 2**) were not identified through the current survey. This may suggest that the site has suffered plough truncation since the aerial photographs that recorded the cropmarks were taken. However, it should also be noted that a previous geophysical survey on a development site at Woodmansey recorded no archaeological features, although some ditches were noted by subsequent field investigation (*On-Site Archaeology* 2017).

7.0 Appendix 1: Methodology.

Survey area	County Farm, Long Lane, Beverley	
Crop types	Short-cut pasture	
Geology	Chalk bedrock with sands and gravels as superficial deposits.	
Instrumentation	Bartington Grad 601-2 Leica GPS900	
Software	Geoplot 3.00, ArcGIS 9.3, AutoCAD 2009, ArcGIS 9.3, Surfer	
Survey	Resolution: Sample Interval: Traverse interval: Grid Size: Cell size: Traverse method Survey Date	0.03nT/m used in 100nT range 0.25m 1m 30x30m 1x0.25m Zig-Zag December 2017
Processing	Using Geoplot 3.0 software: Clip, Despike, Zero Mean Grid, Zero Mean Traverse, Interpolation	
Coordinate system	GB Ordnance Survey	

8.0 Appendix 2: Processing Methodology.

All processing and image preparation was done using Geoplot 3.00 software

Data Statistics: min/ max/mean and std. dev:

Mean: -0.004nT

Std. Dev.: 2.423 nT

Min: -100.00 nT

Max: 100.00 nT

Processing procedures:

Despike: Search radius X=4 Y=1, Threshold: 3, Replacement method: Mean

Zero mean traverse: using Threshold Standard Deviation= 0.25

Zero mean traverse: using Geoplot Presets Grid=All, LMS=On. Pos.Threshold = +5,
Neg.Threshold = -5.

Interpolate Using Geoplot Sin X/X on y-axis.

9.0 Appendix 3: Equipment used.

9.1 *Gradiometer*

Bartington Grad601-2 fluxgate gradiometer. Data is stored in a non-volatile memory.

Technical specifications can be found at:

<http://www.bartington.com/Literaturepdf/Operation%20Manuals/OM1800%20Grad601.pdf>

9.2 *GPS Survey*

Leica GPS900 RTK GPS. The *GPS900* is a dual-frequency, geodetic, real-time-kinematic (RTK) receiver with a potential accuracy of kinematic (phase) horizontal: 10mm + 1ppm and moving mode after initialisation, vertical: 20mm + 1ppm.

Technical specifications can be found at:

http://www.leica-geosystems.us/downloads123/zz/gps/GPS900/brochures-datasheet/GPS900_technicalData_en.pdf

9.3 *Software*

Geoscan Research *Geoplot 3.0*.

Technical information can be found at: <http://www.geoscan-research.co.uk/page9.html>

10.0 Appendix 4: Bibliography.

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11.0 Appendix 5: Figures.



Figure 3. Location of survey.

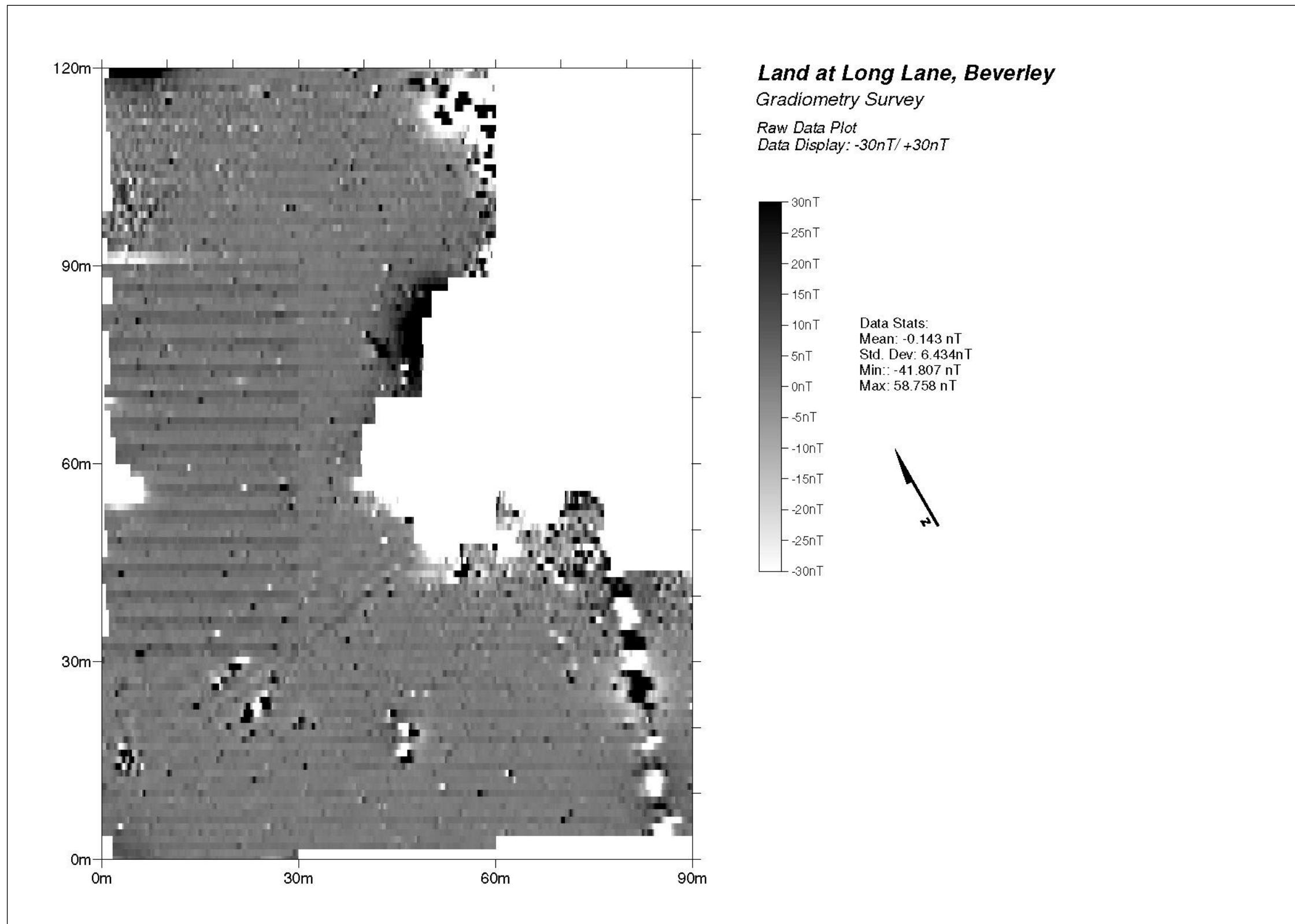


Figure 4. Greyscale plot of raw results (displayed greyscale range -30/+30nT).

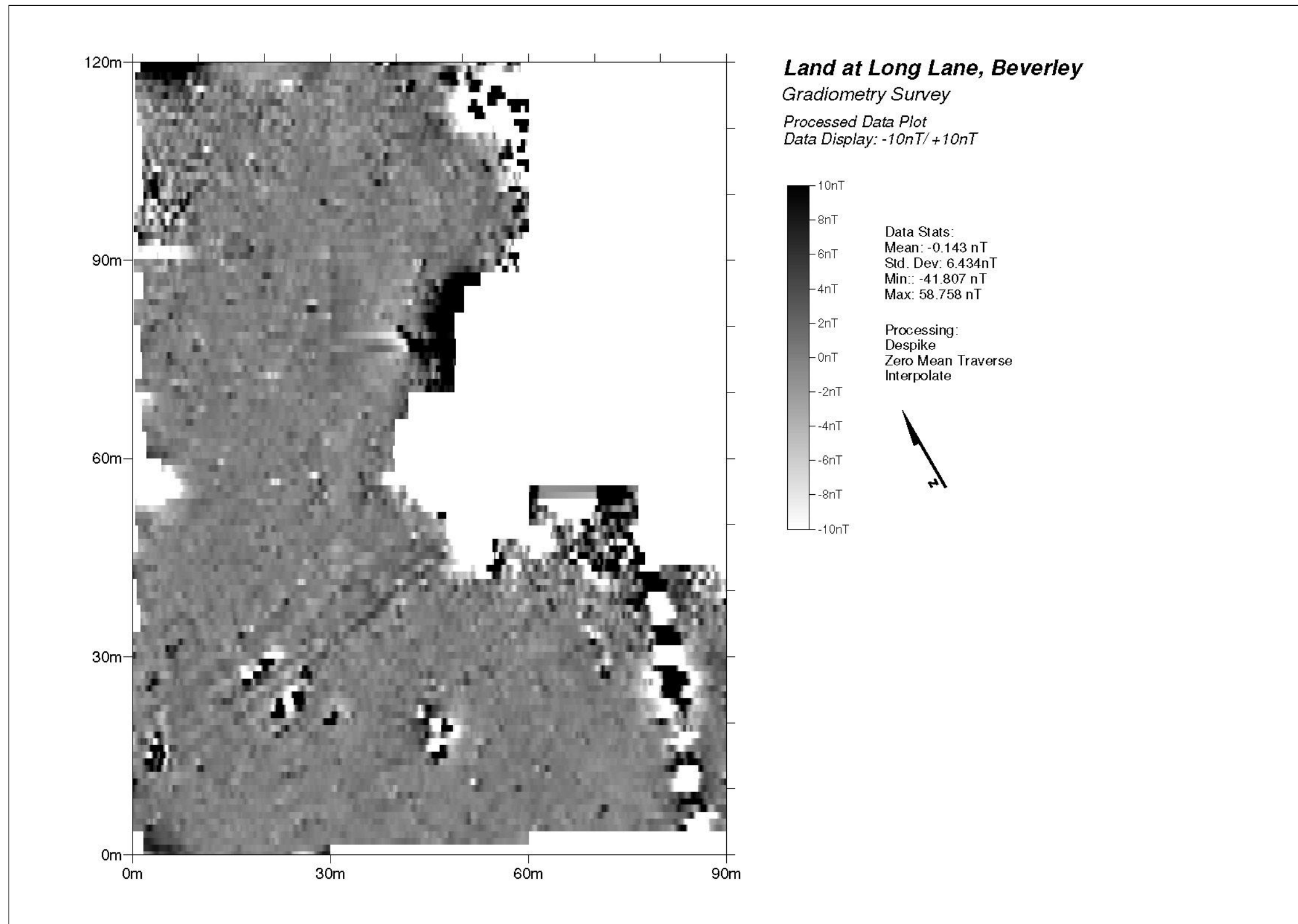


Figure 5. Greyscale plot of processed results

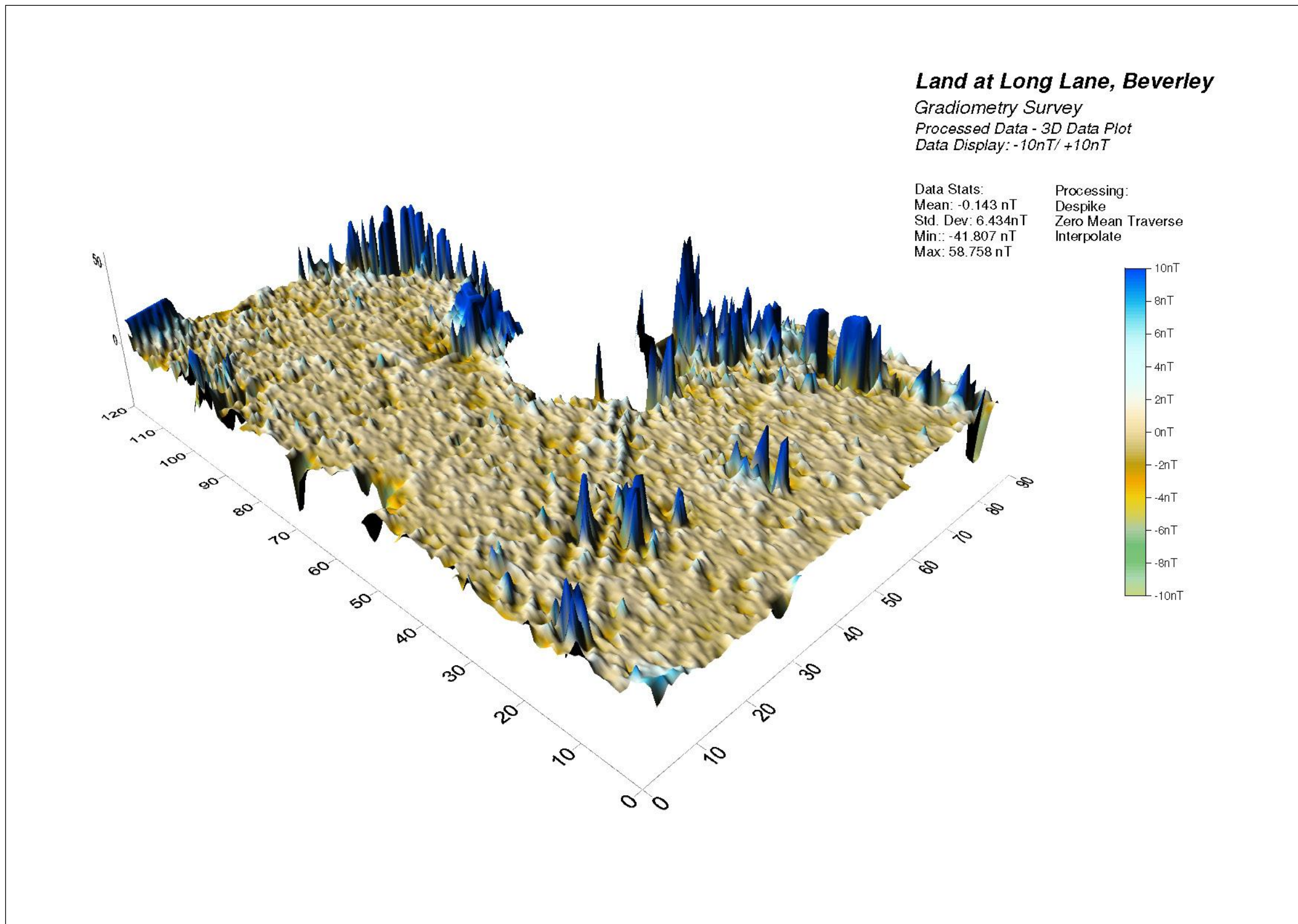


Figure 6. 3D surface plot of processed results

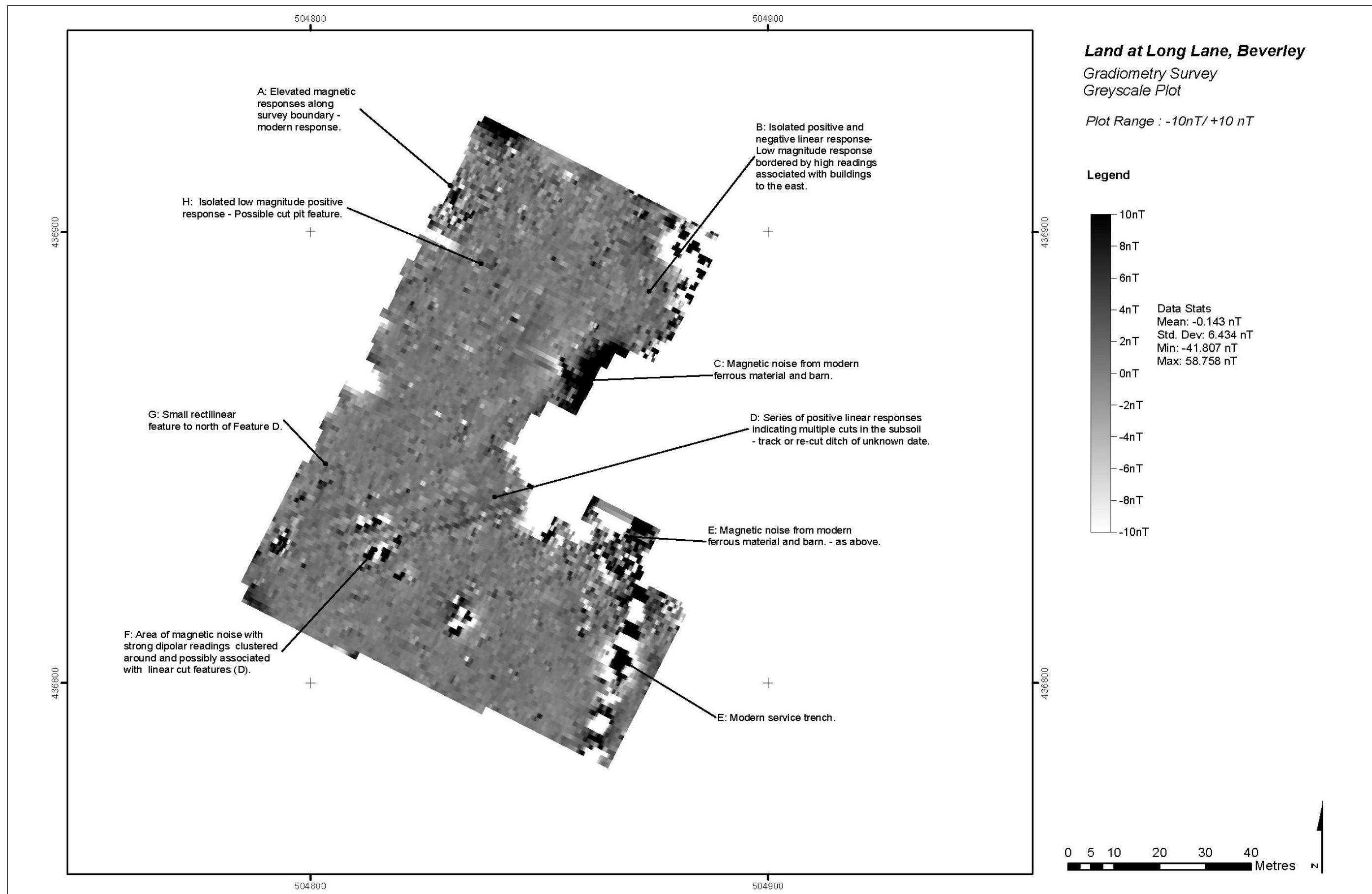


Figure 7. Greyscale plot of processed results with significant anomalies labelled



Figure 8. Greyscale plot with interpretation



Figure 9. Interpretation with significant anomalies labelled displayed on a location map of the site.