

BEVERLEY COMMUNITY HOSPITAL,  
SWINEMOOR LANE, BEVERLEY, EAST YORKSHIRE

ARCHAEOLOGICAL ASSESSMENT

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Report no: 2009/351.R01  
Version: Final  
Date: June 2009  
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**ARCHAEOLOGICAL ASSESSMENT,  
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## EXECUTIVE SUMMARY

In May 2009, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Interserve Project Services Ltd, through GVA Grimley Ltd, to undertake an archaeological assessment of an area of land on the east side of Swinemoor Lane in Beverley, East Yorkshire (NGR TA 0450 4080 centred). This land is proposed for a new Community Hospital for the NHS East Riding of Yorkshire, and this archaeological assessment will be used to support an outline planning application.

Three phases of archaeological work were undertaken for the assessment. A desk-based assessment initially collated all readily-available information from published and unpublished sources, and archaeological databases. It also included a summary and assessment of any previous archaeological field investigations or research that had been undertaken within and around the study area, which was defined as being 500m around the proposed development site. A detailed inspection of the proposed development site was then carried out, and the visible earthworks were subject to a sketch survey. The third phase of work involved a non-intrusive geophysical survey of the proposed development site.

A total of eleven archaeological sites were identified within the study area, with two within the actual proposed development site. One of these sites comprised some ridge and furrow earthworks which were graded as being of Local Importance (Site 1). One area of the ridge and furrow had been disturbed by later activity, possibly small-scale clay extraction. A small agricultural building within the development site was also shown on historic maps, although nothing now remains of this above ground (Site 2).

Documentary research has established that the three fields comprising the proposed development site originally formed part of "Riding Field", a former open medieval field which covered an extensive area on the east side of Beverley. It is not known when this open field was enclosed into the various crofts and closes depicted on the 18th and 19th century maps, but it was probably before the 14th century and presumably by agreement. Historic maps show that the site was originally two fields, which were sub-divided into three between 1747 and 1809, and the realignment of an internal north-south boundary may also have occurred at the same time. The fields originally formed part of Dalton's charity, which was established by Benjamin Dalton in 1713 to support the poor of the town, and they are currently owned by the Beverley Consolidated Charities.

The archaeological implications of the proposed development have been assessed, and it is considered that there will not be any significant impacts on the identified archaeological resource. Nevertheless, there is some limited potential for, as yet undiscovered, below-ground deposits or features, and mitigation measures are recommended to ensure that any such deposits are identified during the initial stages of development, to ensure "preservation by record".

# 1 INTRODUCTION

- 1.1 In May 2009, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Interserve Project Services Ltd, through GVA Grimley Ltd, to undertake an archaeological assessment of an area of land on the east side of Swinemoor Lane in Beverley, East Yorkshire (NGR TA 0450 4080 centred). This land was proposed to be developed for a new Community Hospital for NHS East Riding of Yorkshire, and the archaeological assessment will be used to support an outline planning application.
- 1.2 Three phases of archaeological work were undertaken for the assessment. A desk-based assessment initially collated all readily-available information from published and unpublished sources, and archaeological databases. It also included a summary and assessment of any previous archaeological field investigations or research that had been undertaken within and around the study area, which was defined as being 500m around the proposed development site. A detailed inspection of the proposed development site was then carried out, to note the location, nature, extent and condition of any recorded and unrecorded archaeological sites or deposits; as part of this work, a sketch survey of the earthworks within the site was undertaken. The third phase of work comprised a non-intrusive geophysical survey of the proposed development site.
- 1.3 A total of eleven archaeological sites were identified within the 500m diameter study area, with two within the actual proposed development site. These sites are detailed and discussed in the report below.

## 2 INFORMATION SOURCES

- 2.1 In line with standard archaeological practice and the requirements of the Institute of Field Archaeologists (IFA 1999), and following guidance issued by the local archaeological curators (the Humber Archaeology Partnership), the following sources of information were examined as part of the assessment.

### Archaeological Databases

- 2.2 The Humber Sites and Monuments Record (HSMR), which is held and maintained by the Humber Archaeological Partnership in Hull, was consulted for information on the known archaeological heritage of the area. Data from the National Monuments Record (NMR), compiled and maintained by English Heritage in Swindon, was also consulted, as was information held by the Yorkshire Archaeological Society and the East Riding of Yorkshire Museum Service. Relevant aerial photographs held by the HSMR were also examined.

### Listed Buildings

- 2.3 Information on those buildings listed as being of Special Architectural or Historic Interest was obtained from the HSMR and English Heritage's "Images of England" website ([www.imagesofengland.org.uk](http://www.imagesofengland.org.uk)), as well as the relevant lists of Listed Buildings (DOE 1987).

### Records of Previous Archaeological Research or Investigations

- 2.4 The wider archaeological background and context to the study area has recently been re-assessed by the Humber Wetlands Survey (Van de Noort & Ellis 2000), and this provides an important source of relevant material which is summarised in Chapter 3 below. Rod Mackey has also reviewed a large number of 1946 aerial photographs which cover the area, and the various sites and earthworks he identified have been included in the HSMR.
- 2.5 English Heritage has recently completed archaeological surveys of the main areas of common land which surround Beverley, namely Figham Common (Pollington & Pearson 2004) and Westwood Common (Pearson & Pollington 2005). However, although a survey of Swinemoor Common, which lies immediately adjacent to the proposed development site, was carried out in May 2004, there were not sufficient results to merit any publication (Trevor Pearson, English Heritage, *pers. comm.*); such information that is available has been obtained from English Heritage for the completion of this assessment.

### Printed and Manuscript Maps

- 2.6 As the study area lies within the East Riding of Yorkshire, and close to Beverley, most historic printed and manuscript maps are held by the East Riding Archive Office (ERAO) in Beverley. The reference section of Beverley Library was also consulted for local history material. Various editions of the Ordnance Survey maps, at both 6" and 25" scales, were examined, as were any other appropriate or relevant maps and documents. A list of all the sources consulted by this assessment is provided in the bibliography (Chapter 7) below.

## **Published and Unpublished Documentary Sources**

- 2.7 A number of published and unpublished documentary sources in both local and national collections were consulted for background information and specific data on specialised aspects of the history and archaeology of the study area, including place and field name evidence. The area is also covered by the Victoria County History (Allison 1989a). A list of all these sources is provided in the bibliography below. Material held by the East Riding Archive Office (ERAO), the University of Hull Archive Office (HUAO), and the East Yorkshire Family History Society (EYFHAS) was consulted.

## **Geological and Soil Surveys**

- 2.8 The geological and soil survey data for the study area has been taken from national surveys and the Humber Wetlands volume (Van de Noort & Ellis 2000), and a summary of the relevant information is given below. Other geotechnical data for the proposed development site has been obtained from a 2009 Geo-Environmental Investigation Report (Opus Joynes Pike 2009).

## **Earthwork Sketch Survey**

- 2.9 A detailed walkover survey of the c.4.2ha proposed development site was carried out to determine the extent of survival of any buildings or other structures, to note the location, nature, extent and condition of any additional recorded and unrecorded archaeological sites, and to identify any concentrations of material which might serve as an indication of sub-surface archaeological features.
- 2.10 The earthworks within the proposed development site were also subject to a sketch survey at 1:1000 scale, on 11th June 2009. The survey was undertaken using hand-measurement techniques, principally tapes using field boundaries as base points from which to measure. The sketch survey recorded the position at ground level of all upstanding earthworks and other relevant features, such as structural remnants, footings and any other features considered to be of archaeological or historic interest, using a detailed topographical survey base provided by Aedas Architects Ltd. This sketch survey was undertaken on 11th June 2009, in sunny and showery conditions. The results of the survey are discussed in Chapter 4 below.

## **Geophysical Survey**

- 2.11 A geophysical (magnetometer) survey of the proposed development site was undertaken by Archaeological Services WYAS on 8th June 2009 (Harrison & Harrison 2009). Appendix 1 contains an unedited version of the geophysical survey report, while the conclusions and other details are discussed in Chapter 4 below.

### 3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

#### Introduction

- 3.1 In order to put the proposed development site into context, it is necessary to consider the wider archaeological background of the region and so reference will be made to sites lying outside the study area. This information has been compiled from a variety of sources which are listed in the bibliography below.
- 3.2 Evidence for the archaeological heritage comes from a variety of sources, including upstanding monuments and buried deposits, records of excavated sites and artefacts recovered from fieldwalking, palaeo-environmental studies, and the study of historic maps, antiquarian documentation and place names. Increasingly, archaeological assessments and evaluations, often carried out in advance of development and including methodologies such as fieldwalking, geophysical survey, earthwork survey, and trial excavation, provide information on otherwise “blank” areas.
- 3.3 A great deal of archaeological evidence has also emerged through the identification and recording of cropmarks seen from the air and on aerial photographs. Cropmarks are caused by differential crop growth over buried archaeological features and, while they are likely to indicate the presence of an archaeological site, it should be noted that their formation is affected by many extraneous factors including land use, drainage, geology, and climatic conditions.

#### The Prehistoric Periods (up to c.700bc)

- 3.4 Several palaeo-environmental and lithostratigraphic surveys have recently been conducted along the river Hull valley, for example on Leven Carrs and at Arram Grange in Eske, and on Tickton Carrs and Stone Carr at Weel (Lillie & Gearey 2000, 52-69). This and related work has confirmed the presence of several deeply incised, high energy palaeo-channels, and the whole area has considerable potential for the recovery of palaeo-environmental deposits spanning the late-glacial through to the more recent Holocene periods. Evidence from Arram Grange, for example, suggests that the floodplain peat formation occurred at the very end of the Mesolithic period and continued into the subsequent Neolithic and early Bronze Age periods (Lillie & Gearey 2000, 81).
- 3.5 The earliest phases of prehistoric occupation are, as yet, poorly understood in this part of East Yorkshire, but the recovery of worked flints and other artefacts suggests that the area had some transient Mesolithic (c.8,500-3,500 BC) occupation. The earliest known artefact from the Hull valley is an upper Palaeolithic barbed antler point recovered from Gransmoor Quarry, which has been interpreted as a harpoon tip probably used for fishing (Sheldrick, Lowe & Reynier 1997). An important Palaeolithic or Mesolithic flint-working site was also excavated at Brigham in 1962-63 in advance of gravel extraction (Manby 1966). Another important late Mesolithic site was identified in 1998-99 to the south-east of Weel on Stone Carr, represented by an extensive scatter of flint artefacts and knapping debris (Chapman *et al* 2000, 160-169). Several other Mesolithic flint tools have also been recovered from fieldwalking in the general area (e.g. Chapman *et al* 2000, 152).
- 3.6 The number and density of Neolithic (c.3,500-2,000 BC) sites on the Yorkshire Wolds to the north of Beverley implies that this higher land was well-populated during this period, with a mixed agricultural regime leading to extensive forest



clearance (e.g. Manby 1988). However, the numerous stray finds from the low-lying ground of the upper Hull valley, mostly of flint and stone axes, for example from Tickton, Arram, Eske and Aike, implies that activity was also significant in this area. Despite these finds, actual settlement sites of this period are rare, which can possibly be explained by the fact that more limited forest clearance took place in this area. Nevertheless, some sites are known, for example at Bryan Mills near Leconfield where a concentration of animal bone, pottery, burnt stone and organic remains has been found (Fenwick *et al* 2000, 89; HSMR 2802). Recent fieldwork undertaken by the Humber Wetlands Survey has also identified ten new Mesolithic and early Neolithic sites in the Hull valley, all closely associated with the river and located on till outcrops or levees, rather than from the alluvial areas. The recovery of redeposited finds of polished axeheads from excavations at Hengate and Lurk Lane in Beverley also suggest there was some Neolithic activity in and around the town (Evans 1990, 270).

- 3.7 Conversely, the Bronze Age (c.2,000-700 BC) is well represented in the Hull valley, and is evidenced by several barrows (burial mounds) and the recovery of various implements. Early Bronze Age features are typically characterised by ring ditches and field boundaries, often seen as cropmarks on aerial photographs, while barrows are known from Eske Carrs and Arram Carrs (HSMRs 19042 & 19435). Other cropmarks on the east side of Leconfield airfield, between Carr House and Park Cottage, might also represent Bronze Age activity (Chapman *et al* 2000, 153). Many documented finds of Bronze Age material lie close to the River Hull, for example the recovery of a spearhead and seven oak split timbers from Wilfolme Landing on Watton Carrs (HSMR 1225); these finds also lie close to a cropmark complex (HSMR 11033). Other finds from the area include a dagger from Watton Beck (HSMR 15797), several socketed axes from Eske and Aike, and a broken basal looped spearhead from an area to the east of Lodge Farm, Arram (HSMRs 9005 & 3706). A Bronze Age hoard, comprising nine metal bowls and a bronze axe was also found in the 1240s on Eske Moor, representing one of the earliest recorded archaeological finds in the country (English & Miller 1991, 7), and other axes and swords have been recovered from around Wawne, Watton and Leven Carrs (Fenwick *et al* 2000, 89). Several Bronze Age barrows also survive as earthworks on the Beverley Westwood (Pearson & Pollington 2005, 15-19).

### **The Iron Age and Romano-British Periods (700bc-c.450 AD)**

- 3.8 Several types of Iron Age and Romano-British occupation have been identified from cropmark evidence, suggesting that the Hull valley was at least partially occupied during these periods. However, settlement does not appear to have been as concentrated as on the densely occupied and farmed landscape of the Yorkshire Wolds at this time (Stoertz 1997), although this may be a reflection of poor cropmark generation and a lack of previous research. Other work has shown that the lower parts of the Hull valley were comparatively well settled at this time (Didsbury 1990), and so some activity in the vicinity of the study area might be expected. This is becoming increasingly more evident as new research and investigation is carried out.
- 3.9 Important Iron Age (c.700 BC-AD 43) settlement sites have been identified in the Hull valley to the north of the study area, for example from Thornham Hill or Gransmoor Quarry and from Little Kelk (Chapman *et al* 2000, 111-133). Other Iron Age pottery has been recovered from Frodingham Bridge, and there is a square barrow cemetery of up to 127 low mounds, characteristic of the Iron Age in this area, still surviving as earthworks at Scarborough (Stead 1975). Other square barrow earthworks survive on the Beverley Westwood (Pearson & Pollington 2005,

15-19). Further to the south-east, there is evidence for an Iron Age occupation site to the north-west of Weel, where a quernstone and pot have been found (HSMR 2586). Cropmarks also indicate potential areas of former settlement activity in the area, for example a complex including a double-ditched trackway and square enclosure near Wawne (HSMR 6706).

- 3.10 Roman earthworks, cropmarks and pottery have been identified at Cleaves Farm near Skerne, which, together with an undated crouched burial, suggests there was at least a small settlement on the west side of the river here, and other ditches and pottery have also been noted at the nearby Cooper Hill Farm (Dent 1990, 106; Dent *et al* 2000, 237-240). A Roman pottery kiln has also been identified between the River Hull and the Driffield Navigation at Snakeholme to the north of Skerne, through a combination of fieldwalking and geophysical survey (HSMR 8729). To the north of Arram Grange, Roman grey ware pottery has been reported (HSMR 15129) and other Roman finds have been recovered from the east of Eske (HSMR 12575). Indeed, fieldwalking in the 1980s yielded significant concentrations of 4th century Roman pottery between High Eske and Eske Manor, suggestive of an occupation site (Chapman *et al* 2000, 152). Finally, evidence of Roman occupation has been recovered from west of the River Hull close to Beverley, and has included coins (HSMR 13472) and tegulae (roof tiles) (HSMR 15435), while a Roman occupation site was identified to the north of Weel, representing a continuation of the Iron Age site noted above (HSMR 2586).
- 3.11 Numerous cropmark complexes have been identified in the Hull valley, forming discrete, scattered, rectangular or rectilinear enclosures containing hut circles and associated with droveways or tracks and field systems. These probably represent small scattered farmsteads, although slightly larger sites formed by groups of two or three co-joined or closely spaced enclosures have also been noted. These types of sites are usually attributed to the combined Iron Age/Romano-British period, as different phases are difficult to identify from the cropmarks, and it is likely that there was actually little change in the exploitation of the landscape during these periods (Chapman 2000, 177).
- 3.12 In the vicinity of the study area, cropmarks of a large double-ditched oval feature and round enclosures have been identified at Lockington (HSMR 19434), and a ring ditch and other features have been seen to the east of Leconfield (HSMR 6591). To the south of New Holland Drain there are other cropmarks of circular and linear features, while similar cropmarks have been noted to the north of the Routh and Meaux Drain, on the eastern edge of Tickton Carrs, and near Woodmansey (Chapman *et al* 2000, 169). There is also a growing accumulation of finds, particularly coins and pottery, to suggest that there was some form of Roman settlement in Beverley, perhaps towards the northern end of the later town, where pottery and other finds were recovered from excavations at Wylies Road in 1985 (Evans 2000, 270-271). There was also some brick and tile production around Grovehill, exploiting the local clays, in the later Roman period.
- 3.13 The fact that the majority of the Romano-British activity appears to be concentrated along the river corridor, or above the 10m contour, implies that the waterway was the predominant transport route of this period, and this may help to explain the lack of a Roman road system in the area (Fenwick *et al* 2000, 90). The riverside locations suggest that the long-lived settlements had an important trading function, and they exploited the carrs and ings for stock rearing, despite occasional flooding.
- 3.14 The commons around Beverley have not been comprehensively ploughed or improved in the medieval and later periods, and this means that a large number of

earthworks survive in these areas. Although many of these earthwork sites are likely to date from the medieval or post-medieval periods, some of the features could be associated with prehistoric or Romano-British activity; the presence of Bronze Age and Iron Age burial mounds on the Westwood has already been noted above. There are also two potential settlement complexes surviving as earthwork enclosures on the Westwood, together with the remains of several field systems (Pearson & Pollington 2005, 19-26). To the east of the study area, on the west side of the Beverley and Barmston Drain (centred on NGR TA 0520 4040), a series of earthworks visible on an aerial photograph taken August 1977 (NMR AP TA0540/1 held in HSMR) appear to represent a section of an east-west aligned trackway defined by ditches, as well as other vague enclosures and linear boundaries (HSMR 9873; Miller *et al* 1982, 35). These earthworks might suggest a small, probably Romano-British settlement site, but this would need to be confirmed by intrusive investigations.

### **The Anglo-Saxon Period (c.450-1066)**

- 3.15 The pattern of place-name elements has often been used to provide clues to the distribution of settlement and ethnic groups between the 4th and 9th centuries. The extent of Anglian colonisation can be seen through villages with suffixes such as *-ham* (meaning a village, homestead or manor), *-ton* (farmstead), and *-wic* (a village or dairy farm), while elements such as *-by* (a farmstead), *-thwaite* (a clearing), *-saeter* and *-booth* provide examples of Scandinavian settlement, many pre-fixed with personal names. The part played by the Danes in the colonisation of the marshy land is also emphasised by the frequency of minor names incorporating *-holm* (island) and *-carr* (boggy ground), while *-gate* (road or street) is common in this part of Yorkshire (Gelling 1984, 50-52 & 73). Examples of these types of place-names in the vicinity of the study area include Tickton (meaning “Tica’s farm” or “kid farm”), Weel (“a deep place in a river”), Figham (“a cattle track”) and Stork(holme) (a stream or island frequented by storks”) (Smith 1937, 198 & 200-202); Sandholme (“a sandy water meadow”) which appears to be Danish in origin was not actually recorded until the 14th century (Kent 1989, 291). There are also numerous “carr” names either side of the river Hull, suggesting that the valley was a boggy and marshy area at this time.
- 3.16 Beverley itself probably originated in the Anglo-Saxon period, when John, Bishop of York, chose the site for his monastery of Inderawuda (meaning “in the wood of the men of Deira”) at the beginning of the 8th century. A substantial section of the ditch which surrounded this complex was uncovered during the 1979-82 excavations at Lurk Lane, and other finds suggest there was an industrial component associated with lead and glass working (Evans 2000, 14-15). The later refounding of the monastery as a collegiate church for secular canons in the early 10th century, and the canonisation of St John of Beverley in 1037 provided added impetus to the growth of a town to provide for the needs of pilgrims and churchmen (Pevsner & Neave 1995, 280). In addition, although the fabric in St Mary’s church at the north end of the town dates from the 12th century, the building clearly predates the medieval street system which is on a markedly different alignment (Evans 1990, 271-273).

### **The Medieval and early Post-medieval Periods (1066-1750)**

- 3.17 Within a century of the Norman Conquest, Beverley emerged as a town with borough status (granted by the 1120s). By 1377 it was the 11th largest town in England and one of the three major towns in Yorkshire, the other two being York and Hull. One of the main reasons for this growth was the patronage of the

Archbishops of York who, as sole lords of the manor, were able to secure important market grants and other trading privileges, and were able to control and plan the town's development. Beverley also became the major port for the Hull valley and the Yorkshire Wolds, and it enjoyed a thriving coastal and continental trade. Beverley's industrial base was also significant, with wool processing, textile manufacture, leather working, and brick and tile making being especially significant (Evans 1990, 274-280; Miller *et al* 1982, 3-5). As a result, the town became a major religious and commercial centre in the medieval period, although there was some decline in prosperity in the 16th and early 17th centuries (Neave 1990, 283-284).

- 3.18 Away from Beverley, the medieval settlement pattern of the Hull valley was largely determined by the local topography. Since adequate drainage was not achieved in many parts of the Hull valley until the 18th or 19th century, most of the villages are sited on the higher, drier land away from the river; many of these villages are mentioned in the 1086 Domesday Book and so have at least 10th century origins. There is also some evidence for riverside settlement, often associated with the early crossing points, for example at Eske, Brigham and Wawne. Many of the villages have the same plan form, a linear main street with houses on one or both sides, often served by back lanes, and many probably result from a re-planning of earlier, less regular, settlements at some time before or after the Norman Conquest. Some of the medieval villages have subsequently become deserted, for example Rotsea and Eske (Cocroft *et al* 1989; English & Miller 1991), while others show evidence for movement or piecemeal abandonment. The arable fields associated with the medieval villages were typically on the higher ground, with meadows and pasture in the valley. The carr land, bordering the river, was often flooded for long periods of time. The natural resources of the Hull valley also provided supplementary or alternative incomes, for example from fishing, grazing and wildfowl, while thatch, turf and peat were regularly harvested.
- 3.19 Evidence for medieval activity around the study area is, as might be expected, extensive. In addition to the villages themselves, medieval pottery has been recovered from the area of the Roman occupation to the north of Weel (HSMR 2585), while the area around Figham has evidence of an open field system (HSMR 8202) and a medieval deer park (HSMR 697). There is a deserted medieval village at Storkhill, although little above-ground archaeological remains survive (HSMR 6558; NMR TA04SE7). There are several moated sites in the vicinity, representing former medieval manorial complexes. One, to the south-west of Molescroft Grange (HSMR 647) and bisected by the railway line, may have been the capital messuage known as Estoft, held in Henry VI's reign by John Bedford (HSMR 647; Miller *et al* 1982, 34). There is another at Tickton (HSMR 6557), and the cropmarks of a regular square ditched feature c.70m square, partially cut by the Beverley and Barmston Drain within the Grovehill Industrial Estate, are probably another moat (Chapman *et al* 2000, 160). In addition to these outlying moats, there were also several within the town, surrounding important complexes such as the Archbishops of York's house on Hall Garth on the south side of the Minster, the Knights Hospitallers' preceptory near the present railway station, the Franciscan Friary on the west side of the town, and St Nicholas's Hospital to the east of the Minster.
- 3.20 The medieval town of Beverley was surrounded by a number of commons, Westwood and Hurn to the west, Figham with Lund to the south-east, and Swine Moor and the Tongue to the east; together, they totalled over 1,200 acres (486ha) (Miller *et al* 1982, 34-35). As noted above, Figham and Westwood commons have been subject to detailed archaeological surveys and they both contain extensive

earthwork remains of sites dating from the prehistoric to Second World War periods (Pollington & Pearson 2004; Pearson & Pollington 2005). The origins of the townsmen's rights in these commons is obscure, although there are references to pasturage in the early 12th century town charters. Originally, the different pastures may have been intended for different types of animal, for example Swine Moor for pigs and Figham for cattle, but any such differentiation was soon discarded.

3.21 Swine Moor covers an area of 263 acres (c.105ha) immediately adjacent to the proposed development site, on its east and south sides. This common is mentioned in the documentary record from 1277, when it was called the Pasture of Peter of Chester, provost of Beverley, although it may well have existed by 1255 (Smith 1937, 199; Allison 1976, 236). Ownership had apparently passed to the town by 1344 and in 1399 the inhabitants of Stork and Sandholme also enjoyed rights of pasture over the area. Unlike the other Beverley commons, the boundaries of Swine Moor do not appear to have changed significantly over time (Allison 1989b, 213-214), and the 1st edition 1855 Ordnance Survey map shows that the common was bounded by the river Hull in the east, the municipal boundary on the south side of Sandholme in the north, and partly by Swinemoor Lane in the west (see figure 3). In the early 15th century two keepers were designated to supervise the pasture, later to be replaced by a paid supervisor and other various officials. They were responsible for the stocking rates and grazing regimes, for example in the 16th and 17th centuries animals were excluded from the common between February and May to preserve the pasture (Allison 1989b, 215). The low lying nature of the common meant that drainage was always an issue, and despite the presence of floodbanks along the river, and the periodic cleaning of the dykes and raising the banks (MacMahon 1958, 13-14; Dennett 1932, 30), the area was frequently flooded; perhaps this was the reason that the common is named "Swine Mere" on the early maps of the town (e.g. Burrow's 1747 map and the 1847 tithe map (ERAO BC/IV/4/1 & TA/6). Attempts at drainage appear to have been undertaken on a small, piecemeal scale until the late 18th century (see below). Fishing and fowling on Swine Moor were also enjoyed by the burgesses or were let on an annual basis (Dennett 1932, 123, 127 & 134).

3.22 Swine Moor contains a large number of well-preserved earthworks, some of which are likely to date to the medieval period, if not before (see above). In the approximate centre of the common, on the west side of the Beverley and Barmston Drain (centred on NGR TA 0500 4080), is an enclosure which is potentially of late prehistoric date but it is more likely to be a late medieval or later feature; this is described in more detail (Site 7) below. Although some possible ridge and furrow has been identified on the extreme west side of the common from the 1947 aerial photographs (see figure 5), there does not appear to have been any significant ploughing on Swine Moor in the medieval period, as there was on some parts of Figham and Westwood (Pollington & Pearson 2004, 14-15; Pearson & Pollington 2005, 36-37). Indeed, this ridge and furrow might suggest that this western area was a later addition to the common, perhaps to create an access once Swinemoor Lane was created or formalised in the early 16th century (see Site 5 below). Some of the other surviving earthworks are likely to be associated with clay extraction (see also Site 3 below), as several people were given permission to dig for clay in the common in the 1660s (Dennett 1932, 129), and turf was also cut from the common for a bowling green in Beverley (Forster 1989, 111). English Heritage have also identified a possible pillow mound (an artificial rabbit warren) on the west side of the Beverley and Barmston Drain just to the south of the brick bridge (Trevor Pearson, English Heritage, *pers. comm.*). In terms of actual artefacts, a

coin from the reign of Edward I has also been recovered from Swine Moor (HSMR 15861).

3.23 By the later Middle Ages the ground between the built-up area of Beverley and the common pastures was occupied by many crofts and closes. These were especially extensive on the east side of the town, where they were collectively known as “Ridding” or “Ryding Field”, and they belonged to numerous individuals and institutions. There are no definite documentary references to medieval open fields around Beverley, but by the 15th century there are mentions of “selions”, or strips of open field land, including some in Ridding Field; the name actually means cleared or assarted (i.e. taken in) land (Allison 1898b, 211-213). “Riding Fields” is printed on the mid 19th century Ordnance Survey maps, and the area seems to be bounded by Cherrytree Lane in the west, Grovehill Lane in the south, Goths Lane in the north, and Swine Moor in the east (see figure 3). There are some areas of ridge and furrow cultivation, representing former arable land, still surviving as earthworks in pasture in the former Riding Field, with much more visible on early (e.g. 1940s) aerial photographs (Allison 1976, 233-235); large areas were destroyed by the construction of the Swinemoor residential and industrial estates in the 1950s-70s, but some earthworks still survive, for example within the proposed development site itself (see Site 1 below). It is not known precisely when the open fields were enclosed into the various crofts and closes, but it was probably before the 14th century (Allison 1989b, 213).

3.24 The main road leading east out of Beverley, from Norwood to the Hull Bridge and beyond into Holderness (the present A1035), was a major medieval thoroughfare, and it is documented from 1367 onwards (see Site 6 below). The date or origin of Swinemoor Lane is not known, although it is first recorded in 1519 (see Site 5 below).

### **The Later Post-medieval Period (1750 onwards)**

3.25 Beverley reached a height of prosperity in the 18th and 19th centuries and, from a period of decline in the 17th century, it soon regained its role as the foremost trading and commercial town in the area. The Corporation spent considerable sums of money improving the Beverley Beck, which allowed boats to virtually enter the centre of the town, and by 1769 all the main roads to Beverley had been turnpiked and improved. Agricultural improvements in the East Riding from the 1760s led to a significant increase in the corn trade, and all agricultural-based industries in the town, such as tanning, brewing and corn milling, flourished and grew in importance. In the early 18th century Beverley became the administrative centre of the East Riding and, with regular gatherings of the local gentry, it also developed into a social centre. Horse racing was held on the Westwood, and a theatre and assembly rooms were built. By the early 19th century, the modest half-timber and thatch buildings which dominated the town in the 1660s had been almost totally replaced by brick and tile structures, either fine Georgian mansions with large gardens for the upper classes, or semi-detached middle class villas, predominantly to the north and west of the town (Pevsner & Neave 1995, 282; MacMahon 2004, 48-62).

3.26 Beverley’s population rose steadily throughout the 19th century, reflecting the increasing industrialisation of the town. William Hodgson’s tannery and William Crosskill’s iron foundry were the major employers, and the latter in particular benefited from the improved transport links brought about by the arrival of the Hull to Bridlington Railway in 1846. Grovehill was also the centre of an important shipbuilding industry, with the Cochrane, Cooper and Schofield works launching

some 245 ships between 1884 and 1900. To cater for the increased population, new artisan and working class terraced housing was built on the east and south sides of the town (Neave 1990, 289-291; Pevsner & Neave 1995, 282).

- 3.27 Using the subsidies available from central government under the Addison Act of 1919, to provide “Homes Fit for Heroes” after the First World War, the Corporation bought land to the north of Grovehill Road, and by 1923 some 88 concrete houses had been built on Neville Avenue, Warton Avenue and Routh Avenue. The second part of the Grovehill housing scheme was completed by 1926 under the Wheatley Housing Act of 1924, with a further 78 houses being built to form Schofield Avenue and Hotham Square (Anon 2006, 8-9). The Cherry Tree Estate, comprising 126 houses, was built between 1931-38, and 75 prefabricated houses were built on Cherry Tree Lane and Goth’s Lane Estates in 1944-45 (Anon 2006, 9). After the Second World War, there was a further rapid development of housing to the east of Coltman Avenue, where nearly 800 houses were built over an area of c.134 acres across the former medieval “Riding Field” as far as Swinemoor Lane (ERAO BOBE/2/15/1/124, 128, 133 & 134); the Ordnance Survey maps of 1966 show that the estate was complete. The new Riding Fields and Swinemoor Lane Estates were more ambitious than the earlier developments, with more facilities including a doctor’s surgery, shops, chemist, school and playing fields, and they are characterised by more open spaces and curving road alignments.
- 3.28 In 1836, when the acreages of the pastures were reliably set down, Swine Moor covered some 263 acres, and the Pasture Masters also leased Swine Moor banks covering another 14 acres (Allison 1989b, 214). As noted above, it was not only the townsmen of Beverley who enjoyed the use of the common - the inhabitants of Stork and Sandholme still had 40 gates (an allocation of animals allowed to graze on the common) there in the early 19th century, and other gates were held by the Keld and Brigham families. Between 1787 and 1836, some 200-300 animals were kept on Swine Moor, with horses generally outnumbering cows, while in 1842-43, 124 people put 397 animals on the common. However, there was a major change in the way the common was managed in 1836, when the Beverley Pastures Act was passed. This enabled the resident pasture freemen to elect twelve Pasture Masters and two auditors; these new Pasture Masters controlled the common, and were empowered to collect rents, make regulations, maintain fences and roads, impound and sell illegally pastured cattle, buy gates from owners to extinguish them and generally manage the resource (Allison 1989b, 216). The new Act also enabled freemen and widows to receive a payment from the Pasture Masters instead of putting their own stock on the common, and the number of non-stockers increased; by 1896-97 only 143 people used their gates and there were 500-600 non-stockers (Allison 1989b, 216).
- 3.29 The improvement of the pasture was actively pursued in the 18th and 19th centuries, usually paid for by the Corporation. As noted above, the pasture was regularly flooded, but in 1798 an Act of Parliament was passed to establish the Beverley and Barmston Drainage Board (ERAO DCBB/5/2). As a result, in 1802, a new main drain was cut across the eastern side of the pasture (Allison 1989b, 216). The drain was crossed by a number of wooden footbridges, as well as a new brick-built bridge in the centre of the common. However, this new drain was only a limited success for, as the soil was drained, it caused shrinkage in the underlying peat, thus lowering the ground near the drain and making it susceptible to flooding once again (Sheppard 1958, 16). Other improvements included the construction of cottages for the cowherds at the main entrances to the pastures - the Swinemoor Gate House was built in 1869 (Allison 1989b, 215) (see Site 4 below).

- 3.30 As has been previously noted, Swine Moor was utilised for other purposes such as digging for clay and brick production in the 17th century. Although only lightly wooded, the woodland was also exploited, with willow loppings contributing to income from the sale of fagots of wood (Allison 1989b, 217), and trees were being cut down in 1838 (ERAO DDBC/4/28). In 1803 tenders were invited for “bassing” (the collection of dried rushes or sedges) from the common (MacMahon 1958, 87).
- 3.31 As well as having its agricultural and industrial uses, Swine Moor also became the site of various recreational activities. By 1684 a well dedicated to St John of Beverley had been dug on the north side of the common. The water was drunk for medicinal purposes and in 1684 the Pasture Masters visited it with a view to preparing it for a drinking and bathing “spaw” (spa) (Dennett 1932, 173). It was mentioned in Camden’s *Britannia*, published in 1695 (MacMahon 1958, xx) and in 1703 the well was dressed and “walled about” (Dennett 1932, 191). From c.1700 to 1815 it was also used for bathing, and two little houses were built there for the convenience of bathers in 1741 (MacMahon 1958, 23). In 1745, in an attempt to capture the fashionable spirit of the age, the Corporation let the well or spaw to a grocer, John Hornby, for 21 years on condition that he would construct a new building which was to include a tea room, ball room and pump room (Hopkins 2003, 210; ERAO DDBC/16/160). The Corporation built a new spa house in 1747, and by 1772 a full time keeper was employed (MacMahon 1958, 29 & 51; HSMR 623). However, there was no longer a keeper by 1816, and so it has been assumed that the spa, which was free to townspeople, was no longer in use from this time, but it may simply have fallen into some disrepair rather than being abandoned; it has been suggested that the cutting of the Beverley and Barmston Drain affected the supply of water to the baths (MacMahon 1958, xx). In the middle of the 19th century the spa is described as being “...three yards wide, and if taken inwardly is a great dryer” although “...at present it has no such celebrity...and is used only as a bath possessing the property of extreme coldness” (Sheahan & Whellan 1856, 295). The “Swinemoor Wells” and its associated building is shown on Ordnance Survey maps until 1950s, and the spa house was demolished in 1955 (MacMahon 1958, xx). By the 1960s it is only marked as a small wooded enclosure, as it remains today, although there is some evidence for brick foundations and floor surfaces in the ground, and a scatter of broken brick and masonry. In 1874 a swimming pool was also constructed to the south of the spa, but it had closed by 1884 (see Site 8 below).
- 3.32 Several of the surviving earthworks on the common probably owe their existence to this period of 18th-19th century recreational use. Some of the routes which cross the common are raised up on artificial banks, and they run between the site of the Spa, the main gate on the west side of the common, and the elaborate brick-built bridge which crosses the Beverley and Barmston Drain. It has been suggested that the brick construction of this bridge may be another element in the attempt to beautify this landscape, and it may have acted as an attractive route towards the Spa for those arriving by boat at Beverley Beck to the south (Trevor Pearson, English Heritage, *pers. comm.*). One of the embanked tracks, leading south from the Hull Bridge Road and across the impressive bank and ditch on the north side of the pasture to the spa, was built as a carriage road in 1773 (MacMahon 1958, 52; HSMR 8352). As well as the more practical considerations, there may have been an attempt to alter the surrounding landscape to give it more of a parkland feel, more suited to the surroundings of an elegant spa. For example, the “Intake” enclosure in the centre of the common, noted above, was adjacent to the 19th century swimming pool, and it is possible that the trees which line the banks were planted at this time to create a number of shaded walks.



## 4 THE STUDY AREA

### Physical Characteristics

- 4.1 The proposed development site lies in the angle of Swinemoor Lane (the A1174) and Hull Bridge Road (the A1035), on the north-east margin of Beverley (see figure 1). The development site comprises three co-joined pasture fields, on the east side of Swinemoor Lane (NGR TA 0450 4080 centred), which were being used as grazing for horses at the time of the site visit and surveys (see plate 1).
- 4.2 The three fields form a sub-rectangular area, aligned north-east/south-west and measuring c.280m long by c.155m wide; this equates to an area of 10.2 acres or 4.12ha (see figure 2). Within the site, the ground surface slopes downwards very gently from west to east, from c.4m AOD to c.2.50m AOD, and the three fields contain ridge and furrow earthworks standing up to c.0.5m high. The main access into the site is via a central gate on Swinemoor Lane, which opens onto a slightly raised chalk rubble and brick causeway leading to a modern single storey horse shelter. Apart from a short section of post and rail fencing along the north side of the area, the majority of the boundaries, and also the internal divisions, are formed by mature, predominantly hawthorn, hedgerows. The outer boundaries of the fields are also ditched. In the south-west corner of the site, the ditch is steep-sided, c.2.5m wide and c.1.0m deep, and there is the lower part of a mature ash tree here, and a concentration of horse chestnuts on the south side of the ditch. The ditch continues to the east, becoming gradually wider but shallower, and is c.3.0m wide and c.1.0m deep by the time it reaches the south-east corner of the site. It then returns to the north, and has similar dimensions along the full length of the eastern boundary of the site. In the east section of the northern boundary, the ditch is c.3.0m wide and c.1.5m deep. It maintains a similar width in the western section, but is much shallower at c.0.5m, with a concave rather than steep-sided profile.
- 4.3 The underlying geology throughout the study area is Cretaceous Flamborough chalk, which is overlain by till and boulder clay. The soils are typical stagnogley soils of the Holderness Association (Soil Survey 1983). The results from the geotechnical investigations reveal an average 0.3m depth of topsoil overlain by a c.0.5m depth of orange clay subsoil, over boulder clay; clayey sand is reached at a depth of 3.3m over the site as a whole (Opus Joynes Pike 2009, 15).

### Historical Development

- 4.4 The proposed development site now lies within the modern civil parish of Beverley, but it was formerly in the parish of St Nicholas, in the medieval Borough of Beverley. This parish, which was based on St Nicholas's church on Holme Church Lane, came into existence in 1269; the area of the parish, covering 960 acres (388ha), included Beckside, Norwood, Grovehill and Swine Moor pasture (Allison 1989d, 162). The municipal borough was created in 1835, and the town subsequently became part of the Beverley district of Humberside in 1974 and then the East Yorkshire Borough of Beverley in 1981 (Allison 1989d, 164). St Nicholas's parish was always contained in the manor of Beverley.
- 4.5 As noted in Chapter 3 above, the three fields of the proposed development site originally formed part of "Riding Field", which covered an extensive area on the east side of the town. It is not known when this open field was enclosed into the various crofts and closes which are depicted on the 18th and 19th century maps, but it was probably before the 14th century (Allison 1989b, 213). Hull Bridge Road

is a major medieval routeway, documented from 1367 onwards, while Swinemoor Lane is first recorded in 1519 (see below).

- 4.6 The first plan to accurately depict the proposed development site is that produced by William Burrow in 1747 (ERAO BC/IV/4/1). This shows that the site was divided into two fields on the east side of Swinemoor Lane, with the western field (no 59) being about twice as long as that to the east (no 58) (see figure 4). However, the boundary between these two fields is depicted as being aligned more north-south than the existing more skewed hedgeline, assuming this is an accurate representation. Two slightly later maps of the parish of St Nicholas, dating to 1806 and 1834 (ERAO DDBC/20/3 & DX/129) depict the site as three fields, representing the three fields and their boundaries as they currently survive, i.e. the field adjacent to Swinemoor Lane had been sub-divided into two equal parts by an east-west boundary, and the division between these and the field to the east is on the existing skewed north-west/south-east alignment; both maps label the fields as nos. 45, 46 and 47, but no list of field names is available. The three fields are similarly depicted on the 1847 tithe map (ERAO TA/6), with the fields numbered as 82, 83 and 84 (see figure 4; the tithe apportionment records that all three fields were owned by the Charitable Trustees of Beverley, were all called "Close", and were all down to grass; they covered a total of 10 acres and 12 perches. The 1847 tithe map also shows a small unnamed building or structure adjacent to the north side of the south-western field, towards the Swinemoor Lane end of the parcel (see Site 2 below).
- 4.7 The three fields are similarly depicted on the 1st edition 1855 Ordnance Survey 6" map, in their current form (see figure 3). The small structure shown on the 1847 tithe map does not appear, but there is possibly a small pond towards the centre of the north side of the north-western field, and perhaps a small structure in the north-east corner of the larger western field. The east and south boundaries of the site are shown as ditched water courses, which effectively mark a division from the adjacent Swine Moor. The Ordnance Survey 1893 6" and 25" maps show the same arrangement of fields and boundaries, although a small structure is again depicted against the north side of the south-western field, as in 1847, and there is a small pond against the north side of the north-west field as in 1855 (see figure 4); the small structure (if such it is) in the north-east corner of the western field is not shown. The 1928 edition 6" maps depicts the same arrangements.

### **Dalton's Charity**

- 4.8 The three fields are currently owned by the Beverley Consolidated Charities, and they originally formed part of Dalton's charity. This charity was initiated by Benjamin Dalton, whose will, proved in March 1713, set aside two fields called Swinemoor Closes (totalling 10 acres) to the Corporation so that an annual sum of £4 might be paid from the rents to the poor of the town by his six trustees, with the residue of the income to be similarly distributed by the Corporation (Poulson 1829, 804; Allison 1989e, 264).
- 4.9 The relevant clause from the will reads: "Item I give all those two closes called Swinemoore closes, lying within the precincts of Beverley aforesaid to the Mayor Alderman and Burgesses of the towne of Beverley, and their successors for ever for the uses intents and purposes following. That is to say first that they pay yearly out of the rents thereof four pounds in two payments that is to say fourty shillings on the fifteenth of January and the other fourty shillings on the fifteenth of July which shall happen first, after the first halfe year after my death ... which said sum of four pounds I doe appoint these my six trustees ... to dispose of it yearly to such

poor necessitous persons as they shall thinke most meet ... and further my will is that the remaining yearly rents of the aforesaid closes be deposited of by the Mayor and Alderman of Beverley aforesaid or by the major part of them, to the poore of the towne of Beverley aforesaid, yearly, for eve, in the manner following, that is to say fifty shillings or what shall be the remaining halfe of the yearly rent after the four pounds aforesaid is paide, to be given to so many poore and indigent people there, as the Mayor and Aldermen aforesaid in their discretion shall thinke fitt twelve pence to every such person as farre as it will goe, on the fift day of November in the morning, and the other halfe of the surplusage of the yearly rent to be disposed of on the twenty sixt day of March in like manner by the said Mayor and Alderman or major part of them, it being the day on which I came first to Beverley to be apprenticed” (BIHR Wills March 1713, vol 70, f.36).

- 4.10 Benjamin Dalton was an apothecary who had built up a substantial landholding in Beverley and elsewhere, and he may have been related to Lady Barbara Dalton, widow of Viscount Falconberg, from whom he bought three farms at Sutton near Hull. His numerous holdings in Beverley included a house in Flemingate (no. 15; Richardson *et al* 2008, 4), two properties in Keldgate, seven shops and a large house (Inglebert Hall) in Highgate, tenements in Walkergate and Silverster Lane, and a house in Saturday Market (BIHR Wills March 1713, vol 70, f.36; Bickford & Bickford 2007, 38). Dalton was a leading nonconformist, and was one of the trustees of the Presbyterian (later Independent) chapel built in Lairgate in 1702 (Shepherd 1950) ; as a result, his trustees gave the £4 generated from the rents of the Swinemoor Closes to the poorer members of the Lairgate congregation.
- 4.11 Dalton’s charity was originally vested in the Corporation, and from 1836-37 it and many others were managed by charitable trustees appointed under the Municipal Corporation Act of 1835; they were collectively known as the Municipal Charities but were administered separately. In 1911, some 44 of Beverley’s charities, including Dalton’s, were amalgamated into the Beverley Consolidated Charities. The Consolidated Charities were to have two branches, an almshouse and pensions branch (to maintain the almshouses and pay stipends to the inmates), and a poor’s branch.
- 4.12 In May 1754 the two “Dalton Closes” (i.e. the two fields as depicted on Burrow’s 1747 map) were leased by the Corporation to William Webster of Beverley, a cordwainer (shoemaker) (ERAO PE1/842). By 1807 the fields must have been sub-divided into the existing three fields, as the Corporation leased the “three closes of meadow or pasture ground” containing 10a 12p to Peter Dales, a butcher of Beverley; this six year lease started from Lady Day (25th March) 1807 and the yearly rent was £36 (ERAO DD/BC/16/318). Before this, the closes had been occupied by William Gibson, William Gommersall and John Elliot, who may have been trustees for Dalton’s Charity. Peter Dales retained the lease for another six years in 1813, for £42 per annum (ERAO DD/BC/374). In 1819, two of the fields were leased to John Dove the younger, a common brewer, for £30 a year while the third, south-west field of three acres, was leased to David Ouston, a coal merchant, for £18 10s a year (ERAO DD/BC 408 & 409). In 1825, this single field was leased to Joseph Knaggs, a servant, for £16 10s a year (ERAO DD/BC 439); it has not been established who held the other two fields at this time although Poulson (1829, 804) notes that they were let for £30 per annum. In 1831 the north-west field was leased to George Foster, a fishmonger, and the south-west field was held by Timothy Jefferson, a horse dealer (HUAO DDCV2/3/26-27). After another six years, the lease for the south-west field went to John Dunn, another cordwainer (HUAO DDCV2/3/36). The 1847 tithe apportionment (ERAO TA/6) shows that all three fields were occupied by John Dunn.

- 4.13 In 1848 the total income from Dalton's charity was £48, while in 1882 it was £35 (Allison 1989e, 264; HUAO DDCV/15/604). Between 1908 and 1911 the three fields on Swinemoor Lane were let to George Witty and the annual income was £32 10s; the majority of the money was distributed to the "Christmas Charities" (ERAO NCH/16/15). In 1914 the combined income of the Beverley Consolidated Charities was £1,649, it was £1,923 in 1944, and £114,000 in 1986 when there were 80 residents housed in the various almshouses (Allison 1989e, 261-262). Information from the Beverley Consolidated Charities shows that the three fields were let to a Mr E Robinson between 1963 and 1994, and in 1987 the gross annual income was £300.00. The present tenant, Mrs Fearn, took over the fields in 1994 when the rent was £550 per annum (information from Susan Thompson, Clerk to Trustees of BCC).

### **Identified Archaeological Sites**

- 4.14 The archaeological assessment has identified eleven sites or areas of interest within the study area, as set out below. Their locations are shown on figure 5. It should be noted that only Sites 1 and 2 lie within the proposed development area, and that the stated National Grid References (NGRs) only relate to the study area, and are not the full extent of the identified sites. There are no nationally important Scheduled Monuments within or adjacent to the study area.

*Site 1: Ridge and furrow and other earthworks, east side of Swinemoor Lane (NGR TA 0445 4080 centred)*

- 4.15 The three fields of the proposed development site contain ridge and furrow earthworks in relatively good condition (see plates 1 and 2). The ridge and furrow is also visible on aerial photographs dating to the 1946, and it extends into the adjacent fields (see Site 3 below). The earthworks within the site were sketched as part of the site inspection, and figure 6 depicts the results.
- 4.16 The majority of the earthworks are formed by two blocks of ridge and furrow. The southern block is aligned north-east/south-west, and measures c.265m long by 65m wide. The ridges are reverse-S shape in plan, and become more closely spaced within the block from south to north; on the south side, the average ridge to ridge measurement is c.8.0m, but this decreases to c.6.0m on the north side. The northern and southern sides of this block are defined by slightly wider ridges, up to c.4.0m across; a north-south aligned bank of similar width at the western end may be the remains of a headland. A line of disturbance crosses the ridge and furrow earthworks a short distance to the east of this bank. There is a similar bank at the eastern end of the block, but this may result from upcast excavated from the boundary ditch here (or a combination of both). The existing north-west/south-east hedgeline clearly cuts across the top of the ridge and furrow earthworks, and the east-west hedgeline lies on the top of a ridge.
- 4.17 The northern area of ridge and furrow is also aligned north-east/south-west, and measures c.200m long by a maximum of c.90m wide. The earthworks are just visible running right up to the boundary with Swinemoor Lane, but they are very denuded and disturbed here, and have been removed completely from a sub-square area immediately to the east of the shelter. The ridges have a slight curve towards their eastern ends, and appear to diverge somewhat in the same direction, the average ridge to ridge measurement being c.9.0m. Once again, the existing north-west/south-east hedgeline clearly lies on top of the ridge and furrow. There is a former pond on the north side of the block of ridge and furrow, represented by a shallow area of disturbed ground.

- 4.18 At the east end of the northern block of ridge and furrow, there is a much smaller area of ridge and furrow earthworks measuring c.70m long by c.40m wide, but set on a north-west/south-east alignment. The average ridge to ridge measurement is c.8.0m and, rather than overlying the ridges of the northern block, the ridges of the smaller block appear to form a herringbone pattern where they intersect. When viewed from the north-west, it appears that the smaller block runs across a slightly raised sub-square platform, although this is not certain.
- 4.19 To the east of the smaller block of ridge and furrow, the ground surface falls away into a shallow north-west/south-east aligned flat-bottomed linear depression, up to c.10m wide. There is a similar but much wider feature running north-east/south-west to the east. The slightly raised area of ground to the north of these two features contains a number of very slight earthworks of uncertain form and date. It is possible that two north-east/south-west aligned ridges run along the northern edge, but they are not well defined and one appears to incorporate a crescent shaped bend. At their east end, there is a shallow sub-circular depression caused by horses trampling a damp and muddy area.
- 4.20 The main features recorded within the proposed development site are the two long blocks of north-east/south-west aligned ridge and furrow. It is presently impossible to date these earthworks, as they evidently once formed part of a much larger medieval open field ("Riding Field"), and so need to be considered as part of the wider agricultural and tenorial landscape to be properly understood. The ridge and furrow almost certainly originates to the time when the open field was being ploughed either in its entirety or in a few very large blocks (i.e. before the 14th century), but the fact that the longer east-west hedged boundaries respect the alignment suggests that ploughing might also have continued for some time after enclosure. However, the shorter north-west/south-east aligned boundary clearly cuts across the ridge and furrow, and so this must have been established after the land had reverted to pasture, presumably at some point before the mid 18th century.
- 4.21 It is possible that the smaller differently-aligned block of ridge and furrow seen in the north half of the eastern field represents the ploughing out of a feature within the wider field system. However, there is similarly aligned ridge and furrow in the field immediately to the north (see figure 5), and so the smaller block could originally have been associated with this. This might also partially explain the apparent discrepancy in the alignment of the existing north-west/south-east hedge line as depicted on Burrow's 1747 map (see figure 4). This more north-south aligned boundary perhaps originally formed the division between the two blocks of differently aligned ridge and furrow. Within the development site, this section of boundary was later realigned to its existing line when Dalton's Closes were subdivided, between 1747 and 1809. The absence of ridge and furrow in the slightly raised north corner of the site is also at present unexplained; there may have been other features or even agricultural structures here, but the earthworks are not definitive, and this could simply be an area of later disturbance, perhaps shallow excavations for clay.

*Site 2: Possible building (site of), east side of Swinemoor Lane (NGR TA 0443 4074 exact)*

- 4.22 The 1847 tithe map (ERA0 TA/6) shows a small unnamed building or structure adjacent to and aligned with the north side of the south-western field, towards the Swinemoor Lane end of the parcel (see figure 4). There is nothing in the accompanying apportionment to suggest its function, but it was presumably a small

agricultural structure. This building is not shown on the earlier 1806 plan (ERAO DDBC/20/3) or the 1st edition 1855 Ordnance Survey 6" map, but it is depicted on the more detailed 1893 25" edition (see figure 4). It is also shown on the 1928 6" edition, slightly extended to the east, and by 1966 there is a small "pump" on the site.

- 4.23 The site of this structure roughly coincides with the modern single storey shelter which currently exists on the site. This shelter is aligned north-south, but there are no above-ground remains to suggest the presence of this earlier east-west aligned structure, although a small area of concrete hardstanding on the east side of the shelter might be associated with it.

*Site 3: Possible brickworks (earthworks), east side of Swinemoor Gate House (NGR TA 0461 4055 centred) (HSMR 19101)*

- 4.24 The English Heritage survey of Swine Moor identified a series of earthworks close to the western boundary of the common just to the east of Swinemoor Gate House. These seem to form a number of rectilinear enclosures that run on a parallel alignment to Swinemoor Lane. These small rectilinear enclosures were also identified by Rod Mackey from his examination of 1946 aerial photographs (HSMR 19101).

- 4.25 The main feature of these earthworks is a well defined west-facing scarp running on a north-west/south-east alignment for a distance of c.120m and up to c.1.2m high. At its north end, the scarp returns to the west and then south for a short distance, where it is c.0.7m high and c.1.5m wide, to define a large sub-rectangular flat-bottomed enclosure, c.30m square. To the south of this is another flattened depression terraced into the area on the west side of the main bank, with a further shallower flat sub-rectangular depression to the west. At the south end of the complex, near the southern edge of the common, is a higher platform c.20m square defined by scarps c.0.5m high, which contains a small square earthwork c.1.5m square in the south-east corner.

- 4.26 This complex of earthworks appears to represent the site of a former brickworks. The flat-bottom shallow enclosures are very characteristic of abandoned extraction pits, while the prominent platform at the south end could be the remains of the kiln structure with the small square earthwork being the base of a chimney. No such site is depicted on the historic maps consulted by this assessment, although the Ordnance Survey 1893 6" map does show a "brick works" with a large clay pit to the south of the survey area, in the area now occupied by the Industrial Estate between Barmston Close and Barmston Road (at NGR TA 0496 4015). However, several people were given permission to dig for clay in the common in 1662-63, in return for an annual payment, while in 1665 the digging of clay was forbidden under a penalty of a 20s fine or 20 days in gaol (Dennett 1932, 129 & 138). There was also a brickworks on Swine Moor in the 17th century, as on December 4th 1662 the Corporation let "as much ground in Swine Moor for William Sanderson as the said Pasture Masters shall think fit" for his kiln (Forster 1989, 106; ERAO BC/II/7/5, ff iii, 13); it is not known whether the documentary reference relates to these earthworks.

*Site 4: Swinemoor Gate House (NGR TA 0451 4054 exact) (HSMR 14431)*

- 4.27 The mid 19th century Swinemoor Gate House stands on the east side of Swinemoor Lane, and is aligned parallel to the road. It is of a rectangular but narrow single-pile plan and of two storeys, with a hipped slated roof oversailing the

eaves; a tall stack rises from the either end of the roof end hips. The house is built of brick, apparently originally brownish red and laid in stretcher bond, although it has been extensively rendered and painted at a later date. The front elevation facing the road and the two side elevations all rise from a chamfered brick plinth. The three bay front elevation is symmetrically arranged, with a central ground floor doorway flanked by windows, and a window to each bay of the first floor; the central window is blocked. The windows have stone lintels bearing shallow vermiculated panels with a dressed border, but all glazing, as throughout the rest of the building, is modern. The side elevations are largely blank, with very narrow windows to the road end, while much of the rear elevation is obscured by a number of single storey ranges which are set at a right angle to the house. Of these, one, brick built with a steep single-pitch roof, may be contemporary with the house. There is a yard and a modern farm building to the left hand side of the house, but also a pair of 19th century stone gatepiers with moulded caps which mark the entrance into Swine Moor.

- 4.28 The house was built in 1869 for the cowherd who managed the grazing on the common (Allison 1989b, 215); on 26th November 1869 it was agreed that the Swine Moor Pasture Masters would go “to view the new house being built by Mr Suddaby” (ERAO DDX/397/2). The house is not a Listed Building (DOE 1987), nor it is otherwise protected. It is depicted on the 1893 Ordnance Survey 6” map, named as “Swinemoor Gate House”, with no attached outbuildings evident although there is a small garden enclosure to the south. The earlier 1855 edition simply marks a footbridge accessing the common from Swinemoor Lane, over the drain which ran along the edge of the road and common.

*Site 5: Swinemoor Lane (NGR TA 0461 4030-TA 0428 4096 linear)*

- 4.29 The date or origin of Swinemoor Lane is not known, although it is first recorded in 1519-20 (Sherwood 2002, 103; Allison 1989f, 176), and it may be associated with the enclosure of Riding Field as it passed through the east end of this area. The very straight north-west/south-east aligned road is shown and named on Burrow’s 1747 map (ERAO BC/IV/4/1) and on the Ordnance Survey 1st edition 6” map, linking Grovehill Lane in the south with the Holderness Road in the north. In 1855 there was no housing on the road and, although it had started to be built up from 1893, it still passed through largely open fields in 1928. It is clear that the road has been improved and widened in the more recent past, possibly in the 1940-50s when the Swinemoor Estate was being constructed, and there will have been periodic improvements since then. Nevertheless, it still retains its mid 18th century, and probably earlier, alignment.

*Site 6: Hull Bridge Road (NGR TA 0400 4074-TA 0476 4125 linear) (HSMR 9242)*

- 4.30 The main road leading east out of Beverey, from Norwood to the Hull Bridge and beyond into Holderness (the present A1035), was a major medieval thoroughfare known as the road to Hull Bridge. In 1853 it was called Holderness Road, and by 1890-01 Hull Bridge Road (Allison 1989f, 173). Beyond the borough boundaries, the upkeep of the road was the responsibility of the various townships through which it passed, and in 1367 the village of Tickton was held to be responsible for its neglect (Allison 1989g, 166). Within the boundary, the town’s authorities were responsible, and they were indicted for the non-repair of the road in Storkhill township in 1407. The town then took a more active role in the repair of the road after 1573, perhaps as a consequence of the extension of its jurisdiction into the liberties after the granting of its Charter of Incorporation. For example, the road was repaired with chalk in 1611 and money was given for a man to maintain the

“wain way” from Stump Cross to Mantholme Gate at the borough boundary (see Site 11 below) (Allison 1989g, 167). Later repairs, in 1746, were paid for by St Nicholas’s parish, and it appears from the documentary record that the road consisted of a paved causeway (kept up by the Corporation) and an unpaved “low way” (maintained by the parish) (Allison 1989g, 167).

- 4.31 The Holderness Road was turnpiked in 1761, from Beverley to White Cross in Leven, and the trust continued to operate the route until 1867 (MacMahon 1964, 26 & 70). The turnpike started at the “stone pillars” at the west end of Norwood, and the first toll bar was positioned just on the west side of the bridge over the Beverley and Barmston Drain, c.200m to the west of Hull Bridge (Allison 1989g, 168, HSMR 12260). The low-lying nature of the road in Storkhill township needed special treatment in the late 18th century, with several “arches” built to allow winter floodwater to pass beneath it. In 1888 responsibility for the upkeep of the road passed to the newly formed County Council. The road past Storkhill was straightened in 1937-38, and the Tickton bypass was completed in 1974, together with new bridge over the river Hull (Allison 1989g, 168). The junction of Swinemoor Lane and Hull Bridge Road was improved in 1992, with the construction of a new roundabout at the south end of the Beverley north-east bypass.

*Site 7: Enclosure (earthworks), Swine Moor (NGR TA 0500 4080 centred) (HSMR 9873)*

- 4.32 There is a tree-lined enclosure in the approximate centre of the west side of the common, on the west side of the Beverley and Barmston Drain. It is defined by five or six almost straight sections of well preserved banks and ditches of varying forms, to create an area measuring c.120m east-west by c.140m north-south. On the east side, there is a central bank flanked by ditches on either side, the eastern ditch also has a bank running parallel to its east side; this outer bank is broken in at least one place by modern stock disturbance and gradually fades out to the south. On this side, the ditches are both c.2.0m wide and up to c.1.2m deep, and the central bank is c.2.0m wide and up to c.0.7m high. The bank and ditches then return to the south-west and run in this direction for some distance before returning sharply to the north, and then to the east for a short distance. The bank and ditches appear to have a definite terminate end, although poorly defined depressions to the north-east may represent their former course, and they may once have been continuous with the western side of the enclosure. The western side of the enclosure is slightly different in form to the others described above, in that the raised central area of the enclosure has a spread west-facing scarp which runs down into a flat-bottomed funnel-shaped area, c.12m across at the south end, narrowing to c.3m at the north end. On the west side of this area, there is a curvilinear bank c.2m wide and c.0.5m high. There are a number of mature oaks growing on the top of the bank here and the pattern of their roots suggests that the sides of the bank may once have been revetted. There are a number of prominent tree stumps on the top of the banks, defining the east and south sides of the enclosure.

- 4.33 There is a sub-circular water-filled depression on the north side of the enclosure, from which a ditched watercourse runs east, forming the north side of the enclosure, and this then continues east and then south for some distance towards the Beverley and Barmston drain. The eastern extension of the watercourse has a double line of trees forming an avenue on its south side, which extends along the watercourse as far as one of the main paths crossing the common. The watercourse is crossed in several places by small brick bridges. Off the south-



west corner of the enclosure, at a lower level, is a further sub-square feature, measuring c.15m by c.20m, which is also surrounded by a shallow ditch and which appears to be attached to the main enclosure. The main enclosure is sited on the highest part of the common, and the interior is relatively flat; part of the interior has recently been planted with a rectangular fenced area of trees. A shallow spread linear depression also appears to cut off the south-west internal corner - this depression may represent the original area of the enclosure, which was later extended to the south-west.

- 4.34 The main enclosure is depicted virtually complete on Burrow's plan of 1747 (ERAO BC/IV/4/1) as well on the 1855 Ordnance Survey 6" map where it is named as "Intake" (see figure 3). The latter shows it almost completely lined with trees, as it is on the 1893 6" map. The 1893 25" map shows there is a "seat" on the outside of the south side of the enclosure ditch. The 1928 edition still shows the feature, although it is not named and appears less well defined.
- 4.35 The function and date of this enclosure is unclear. Given that the common has not been ploughed since the medieval period, the earthwork has the potential to be late prehistoric in origin and modified at a later date. However, it is more likely to be a late medieval or early post-medieval feature, an area taken out of the common for a specific agricultural purpose as the name "intake" implies. This purpose was presumably associated with the management of the common, and it could have been used as a stock enclosure, or a fenced and drained area for drying a hay or grass crop, or even perhaps a rabbit warren. There do not appear to be any documentary sources to help explain its function, although there has not been any systematic search through the Pasture Masters' minute books. The enclosure could also have been utilised in the 19th century, when the common had a more recreational use, with the tree-lined banks, avenue and seats forming a fashionable promenade, perhaps associated with the operation of the spa and/or the adjacent swimming pool (see Site 8 below).

*Site 8: Swimming pool (site of), Swine Moor (NGR TA 0493 40850 exact)*

- 4.36 In 1874 a swimming pool was constructed on Swine Moor to the south of the spa, but it had been closed by 1884 in favour of a new pool in the town; the Pasture Masters were empowered to "do away with the bath ... it having become dangerous to the stock .." in 1884 (ERAO DDX/397/3 p210). However, it still evidently existed in the 1890s (Allison 1989c, 229), and it is marked but not named on the 1893 editions of the Ordnance Survey maps. It lies on the west side of the straight-sided enclosure (Site 7), and may be associated with it.
- 4.37 To the immediate west of the bank defining the western side of the large enclosure (Site 7), there is a slightly raised area of ground, sub-rectangular in plan, and extending c.10m west of the enclosure. To the west of this, there is a large expanse of bare soil with a dry cracked surface at the time of the visit, but presumably wet and boggy for much of the year. Either of these features could represent the site of the infilled swimming pool.

*Site 9: Possible ditch and enclosure (site of), Swine Moor (NGR TA 0463 4098 centred) (HSMR 4327)*

- 4.38 It has been noted that there is an ENE-WSW aligned ditch, with a small rectangular enclosure attached to its south side, on the west side of Swine Moor, just off the north-east corner of the proposed development site (Miller *et al* 1982, 35). It was also noted that the west end of the ditch may be overlain by ridge and

furrow. This site was not identified by English Heritage in their survey of the common, and no other evidence is present in the HSMR. There are numerous drainage ditches, ponds and other unclassified small earthwork mounds and enclosures scattered over the common, and there are some unspecified earthworks in the vicinity of this recorded site. However, a more detailed inspection and survey would be needed to positively identify this feature.

*Site 10: Moated site (site of), north side of Hull Bridge Road (NGR TA 0445 4117 centred) (HSMR 6556)*

- 4.39 A probable moated site, surviving as a slight earthwork, has been identified on the north side of pre-improved Hull Bridge Road, in the immediate vicinity of "Roselea". However, although there is some ridge and furrow in the area, no clear evidence for a moat was seen on the 1946 aerial photographs (HSMR 6556). The site lies within the "so called" manor of Mantholme, which is recorded in the 15th century, although a moated site or manorial complex is noted (Kent 1989, 292 & 293). Nothing is visible in this area on the 18th and 19th century maps consulted for this assessment.

*Site 11: Stump Cross (site of), north end of Swinemoor Lane (NGR TA 0426 4098 approximate)*

- 4.40 In 1611 money was given to a man to maintain the "wain way" from Stump Cross to Mantholme Gate (Allison 1989g, 167). Stump Cross evidently stood on the Hull Bridge Road near the end of Swinemoor Lane, and it may originally have been one of the town's "Sanctuary crosses"; it was mentioned in the 14th century, called Spay Cross in the 15th century, and was later known as Stump Cross (Horrox 1989, 8). No evidence for any remains of this cross survive, following improvements to the north end of Swinemoor Lane as part of the new Beverley North-East bypass.

### **Hedgerows**

- 4.41 As has been noted above, the three fields comprising the proposed development site originally formed part of "Riding Field", a former open medieval field which covered an extensive area on the east side of Beverley. It is not known when this open field was enclosed into the various crofts and closes depicted on the 18th and 19th century maps, but it was probably before the 14th century and presumably by agreement (Allison 1989b, 213). As detailed above, the earliest cartographic depiction of the site identified by this archaeological assessment is Burrow's map which dates to 1747 (ERAO BC/IV/4/1), which shows that the area originally comprised two unequal sized fields (see figure 4). The subsequent sub-division of the western field occurred soon after, and before 1809, and the realignment of the internal north-south boundary may also have occurred at the same time. The historic maps show that the east-west sub-division formerly extended west as far as Swinemoor Lane, although the western 50m has been removed in recent times.
- 4.42 All the boundaries within and around the site are now marked by mature, predominantly hawthorn, hedgerows, accompanied by ditches up to 1.5m deep; the ditches on the east and south sides mark the division between the enclosures and Swine Moor common. It is presumed that the fields were originally enclosed using hawthorn, as this species is quick-growing and forms an effective stockproof barrier, but this is more traditionally used for 18th and 19th century enclosure boundaries (Rackham 1986, 179). Therefore, while the external boundaries might

be late medieval in date, it would seem doubtful that the existing hawthorn hedges on them are also of this period. A number of significantly older trees and a greater concentration of species would be expected in any late medieval hedges and so it is more likely that they date from the 18th or possibly 17th centuries. Conversely, the internal boundaries and also presumably their hedges appear to have been established at a later date, at the beginning of the 19th century. However, there is no significant variation in the ecological data, which suggests that all the hedges are broadly of the same date range (Guy Morrison, Greengage Arboriculture and Ecology, *pers. comm.*).

- 4.43 In terms of the Hedgerow Regulations 1997, all the hedgerows within and forming the periphery of the proposed development site can be classified as “important”, as they form an integral part of a pre-parliamentary enclosure field system (i.e. one dating to before 1845). Further information regarding the ecological importance of the hedgerows can be found in the Ecological specialist report.

### **Geophysical Survey**

- 4.44 As noted in Chapter 2 above, a geophysical (magnetometer) survey of the proposed development site was undertaken by Archaeological Services WYAS on 8th June 2009 (Harrison & Harrison 2009). Appendix 1 contains an unedited version of the resulting survey report.
- 4.45 The ridge and furrow earthworks within the development site were identified by the geophysical survey (See Site 1 above), apart from those in the north half of the eastern field (see figure 7). The absence of the linear anomalies in this area is thought to have been due to underlying geological conditions, such as unmapped drift or a lower magnetic variation between the ridges and the furrows. There were several uncertain and vague magnetic anomalies in this area, most of which were interpreted as being geological in origin, and no definite archaeological features or structures were noted.

### **Other Sites or Areas of Cultural Heritage Value**

- 4.46 There are no registered Historic Parks and Gardens or Historic Battlefields within or around the study area, and the study area does not lie within a Conservation Area.

## 5 ASSESSMENT OF DEVELOPMENT IMPACT

### Introduction

5.1 For archaeological sites and monuments, the main impacts arising from development are likely to be:

- possible disturbance and/or destruction of above or below-ground archaeological structures/deposits from works associated with the development proposals, whether from actual construction or secondary works such as landscaping, site compounds etc;
- possible demolition or loss of parts of buildings or other structures;
- severance from other linked features such as field systems, agricultural complexes and landscapes;
- changes in the original landscape;
- increased visual intrusion and increases in noise, vibration and other disturbance;
- loss of amenity.

5.2 Possible mitigation measures to offset development impact can be summarised as:

- locate any disturbance away from archaeological remains and their settings;
- undertake appropriate recording works and other investigations in advance of construction;
- undertake appropriate recording works and other investigations during construction.

5.3 Such measures depend on the importance of the site and in practice a combination of measures is often used.

### Summary of Development Proposals

5.4 Full details of the proposed new Community Hospital are contained in the planning application documentation, including the Design and Access Statement. In summary, the main complex of buildings is to be located in the approximate centre of the site, and will be composed predominantly of single storey buildings with some two storey structures in the centre (see figure 8). The new access runs off Swinemoor Lane, in a similar position to the existing gate, and there are areas of parking positioned within the site along the Swinemoor Lane frontage. The main access road then runs along the north side of the site and there are further parking areas towards the north-east corner of the site. The eastern end of the site is taken up with a north-east-south-west aligned linear balancing pond, and the majority of the undeveloped areas will be left as a natural habitat.

### Assessment of Importance

5.5 Using the data gathered by the desk-top research and other surveys detailed above, an initial assessment of the grade of importance of each identified site or

area within the study area can be made. This assessment is based on professional judgement, and a combination of the Secretary of State for Culture, Media and Sport's criteria for scheduling Ancient Monuments or listing buildings of Special Architectural or Historic Interest, and the criteria developed by English Heritage in their Monuments Protection Programme.

- 5.6 An importance grading system can be applied to archaeological sites, namely National, Regional or County, District, Local, and sites which are so badly damaged that little now remains to justify their inclusion in a higher grade. The importance of the built environment can be graded according to whether the structures are listed or not. The various grades for Listed Buildings are also hierarchical, Grade I buildings being of exceptional interest, Grade II\* buildings being particularly important buildings of more than special interest, and Grade II buildings of special interest; irrespective of this grading, all Listed Buildings are considered to be of National importance.
- 5.7 The grades of importance given to each identified site or area is given below. This shows that the study area contains no sites of National Importance, no sites of Regional/County importance, six sites of District importance, and two sites of Local importance. Three sites are considered to have been totally destroyed, and so are scored as "No Grade". The proposed development area contains two sites, one of Local importance (Site 1) and one of No Grade (Site 2).

<i>Site No</i>	<i>Site Name</i>	<i>Importance</i>
1	Ridge and furrow and other earthworks, east side of Swinemoor Lane	Local
2	Possible building (site of), east side of Swinemoor Lane	No grade
3	Possible brickworks (earthworks), east side of Swinemoor Gate House	District
4	Swinemoor Gate House	District
5	Swinemoor Lane	District
6	Hull Bridge Road	District
7	Enclosure (earthworks), Swine Moor	District
8	Swimming pool (site of), Swine Moor	No grade
9	Possible ditch and enclosure (earthworks), Swine Moor	Local
10	Moated site (site of), north side of Hull Bridge Road	District
11	Stump Cross (site of), north end of Swinemoor Lane	No grade

- 5.8 It should be noted that the above grades have been based on data collected to date, and the importance of some sites may be graded higher or lower as or when more information is obtained. This might especially apply to the earthwork enclosure and possible brickworks on Swine Moor (Sites 7 and 3).

## **Archaeological Potential**

### *The study area*

- 5.9 The work undertaken by the Humber Wetlands Survey as summarised in Chapter 3 above has shown that the Hull valley has a considerable archaeological potential, particularly for sites of the pre-medieval period. This potential may extend into the study area, apart from those areas already disturbed by development. There is therefore some potential for Romano-British or earlier activity, but it should be noted that the study area lies below the 10m contour level, on or above which pre-medieval settlement is generally thought to have been

concentrated. The documentary record shows that Swine Moor and adjacent areas were subject to periodic flooding before the 18th century, and this is also likely to have been the case in the pre-medieval and medieval periods.

- 5.10 Swine Moor itself was established as a common pasture from at least the 13th century, and so is unlikely to contain any medieval or later settlement sites. However, the well-preserved earthworks on the common show that there are a considerable number of agricultural sites surviving, such as drains, ponds and enclosures, and there are also small-scale industrial sites such as a brickworks. In the 18th and 19th centuries, the common became more widely used for recreational purposes, with the establishment of a spa and a swimming pool, and some of the other landscape features such as tree planting and trackways, are probably associated with this activity. The fact that the common has not been significantly disturbed or ploughed since the mid-medieval period means that multi-period sites will survive virtually intact, both in terms of above-ground earthworks and below-ground buried deposits.

*The proposed development site*

- 5.11 As has already been established, the three fields comprising the proposed development site formed part of the medieval open field (Riding Field) on the east side of Beverley, and the extant ridge and furrow earthworks within the site are likely to date from this usage. Precisely when the fields were turned over to pasture is unknown, but it was certainly before the 18th century. The survival of the ridge and furrow shows that there was no later activity on the site, apart from some possible small-scale clay extraction or other disturbance in the north corner of the eastern field.
- 5.12 The geophysical survey did not identify any anomalies indicative of archaeological activity within the proposed development site, although it is always possible that some features may have been masked by the strong readings caused by the ridge and furrow. It is also possible that the masking effect that covers the ridge and furrow in the north part of the eastern field may also cover other undetected features in this area. There is therefore some potential for pre-medieval activity in the proposed development area, particularly in the north-east corner, although this potential is currently considered to be low.

**Impact of Development**

- 5.13 As can be seen from figure 8, large parts of the proposed development site will be occupied by new buildings and associated infrastructure, including car parking facilities and a balancing pond. The construction of these features will inevitably involve significant ground disturbance; the full depth of the proposed disturbance is not yet known, although this is likely to be greatest over the footprint of the new buildings and over the position of the proposed balancing pond. However, even in areas where ground disturbance is likely to be minimal, for example over the areas allocated for car parking, it is envisaged that most of the topsoil will need to be stripped to create a clean and level surface from which construction can be started.
- 5.14 This topsoil stripping will remove the majority of the two identified archaeological sites within the proposed development area, as well as the upper layers of any as yet undetected underlying archaeological features. The two identified sites (Sites 1 and 2) have been classified as being of Local and of No Grade importance. This, together with the results from the geophysical survey, suggest that the proposed development will not have any significant impact on the archaeological resource,

although there is still some limited potential for as yet undiscovered below-ground deposits or features.

- 5.15 Impacts relating to the visual and other effects of the development proposals have been considered by the separate Design and Access Statement.

## 6 RECOMMENDED MITIGATION MEASURES

- 6.1 Following an assessment of the development impact, and taking into account the archaeological potential of the study area, a series of recommendations can be made to offset the effects of the proposals on the identified archaeological resource.
- 6.2 It is not recommended to undertake any further pre-development archaeological investigation on the site, for example trial trenching, to confirm the results of the geophysical survey. It is also considered that the existing records of the ridge and furrow undertaken during by this assessment (sketch survey and photographs, see figure 6 and plates 1 and 2) are sufficient to achieve “preservation by record” of these earthworks.
- 6.3 However, it is recommended that the initial stages of groundworks over any part of the site, i.e. the topsoil stripping, are subject to a programme of archaeological observation, investigation and recording (a watching brief). If below-ground archaeological features or deposits are identified or suspected as a result of this work, detailed cleaning and recording of the exposed ground surface, in a manner appropriate to the scale and nature of the identified remains, will be undertaken. This will allow for the identification and recording of any archaeological deposits and/or structures affected by the development proposals, to achieve “preservation by record”. If it becomes clear during the monitoring work that little of archaeological interest survives within specific parts of the site, the recording work may be halted in that part of the site, in consultation with the Curatorial Officer of the Humber Archaeology Partnership. All the archaeological work mentioned above would be accompanied by an appropriate level of reporting and post-fieldwork analysis, commensurate with the scale of investigation and in accordance with standard archaeological procedures.
- 6.4 It is envisaged that the requirement for this archaeological recording will be made a condition of any planning approval. As a part of this condition, the archaeological mitigation work will be defined by a detailed specification of works, which will be approved by the Local Planning Authority and their archaeological advisors in advance of any site investigations.



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HUAO Hull University Archive Office, Brymore Jones Library, Hull

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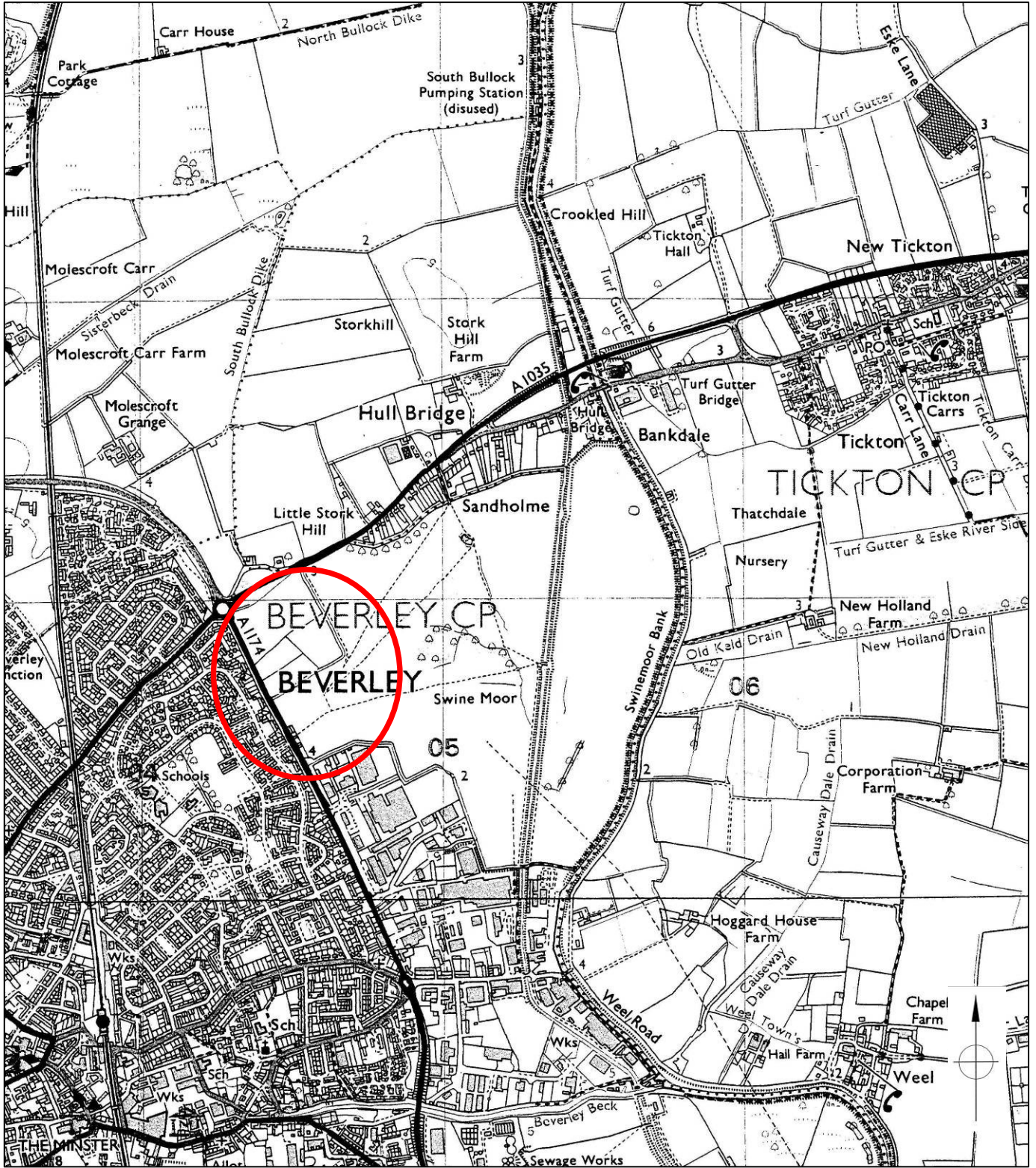
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## 8 ACKNOWLEDGEMENTS

- 8.1 This archaeological assessment report was commissioned and funded by Interserve Project Services Ltd, through GVA Grimley Ltd. Ed Dennison Archaeological Services (EDAS) are grateful to Mike Wareham and Roger Spark of Interserve and Anne Hargreaves of GVA Grimley for their assistance during the project. Thanks are also due to other members of the project team, especially Guy Morrison of Greengage Arboriculture and Ecology and Stephen Dale of the East Riding of Yorkshire Primary Care Trust. Susan Thompson, Clerk to the Trustees of Beverly Consolidated Charities, supplied information on Dalton's Charity, and Trevor Pearson of English Heritage kindly provided details of their Swine Moor survey. Base plans and topographical information were provided by Aedas Architects Ltd and First Point Surveys.
- 8.2 The desk-based research was carried out by Ed Dennison while the majority of the site survey work was done by Shaun Richardson, both of EDAS. The geophysical survey was undertaken by Archaeological Services WYAS, and their report was produced by Sam Harrison and Alex Harrison. The archaeological assessment report was produced by Ed Dennison, with whom the responsibility for any errors or inconsistencies in the text remains.



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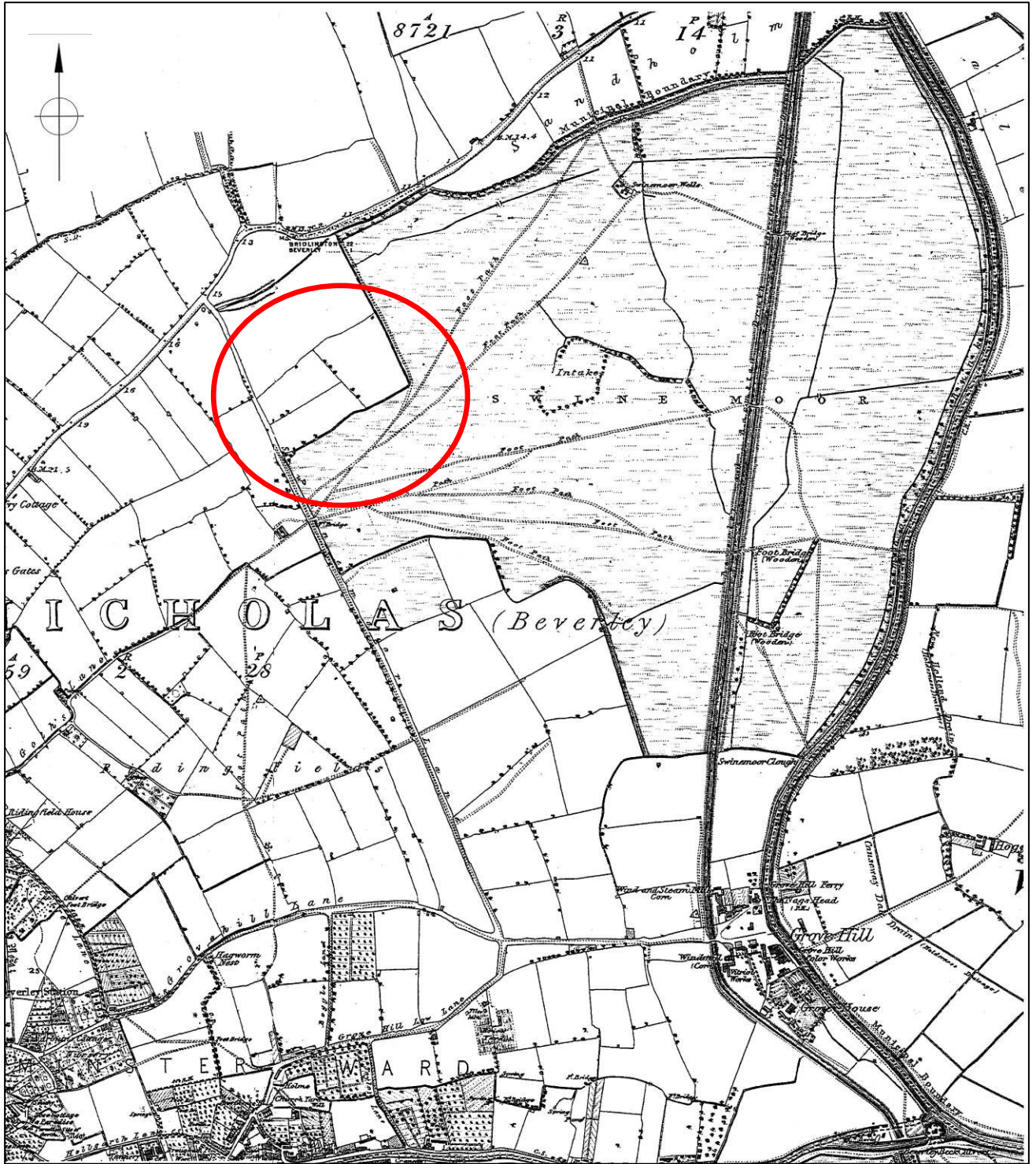
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SCALE	NTS	DATE	JUNE 2009
EDAS		FIGURE	1



Base plan provided by Aedas Architects Ltd.

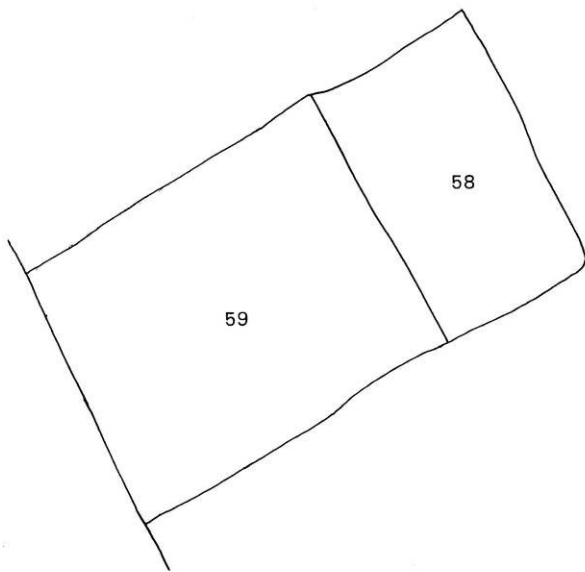
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TITLE		SITE PLAN	
SCALE	AS SHOWN	DATE	JUNE 2009
EDAS		FIGURE	2



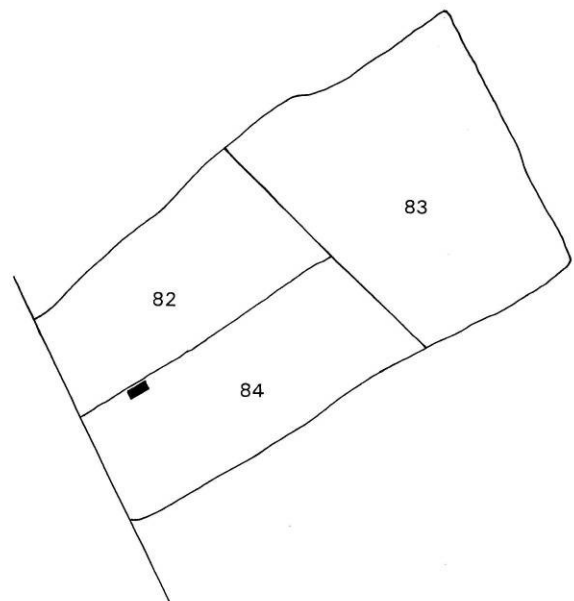


Source: Ordnance Survey 1855 6" maps sheets 210 & 211.

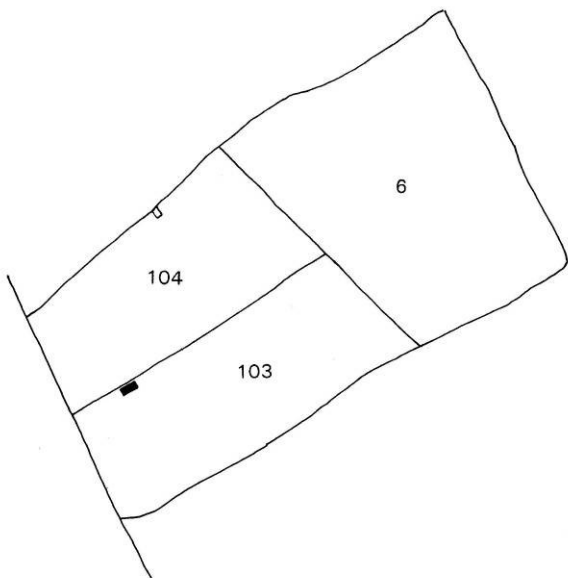
PROJECT		BEVERLEY COMMUNITY HOSPITAL	
TITLE		ORDNANCE SURVEY 1855 MAP	
SCALE	NTS	DATE	JUNE 2009
EDAS		FIGURE	3



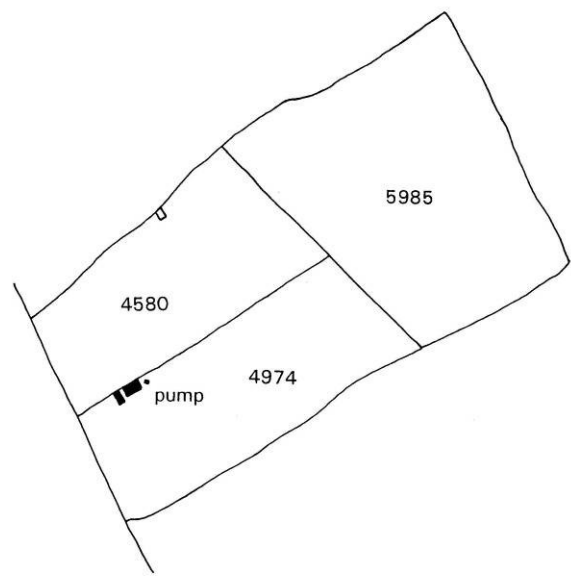
a) 1747 Burrow's map



b) 1847 tithe map



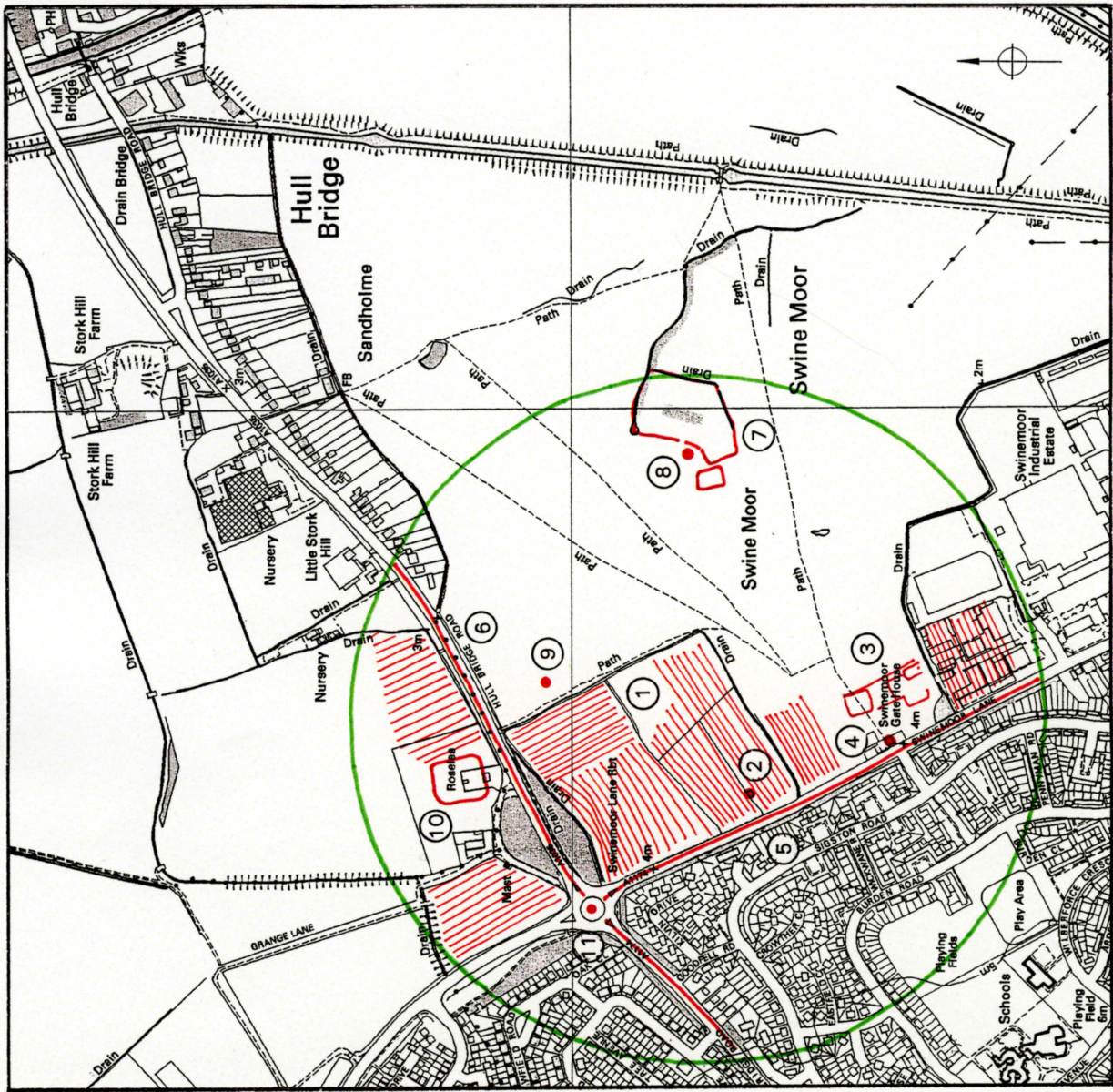
c) OS 1893 25" map



d) OS 1966 25" map



PROJECT BEVERLEY COMMUNITY HOSPITAL	
TITLE MAP REGRESSION	
SCALE AS SHOWN	DATE JUNE 2009
EDAS	FIGURE 4



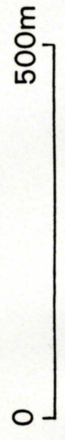
STUDY AREA

IDENTIFIED SITES

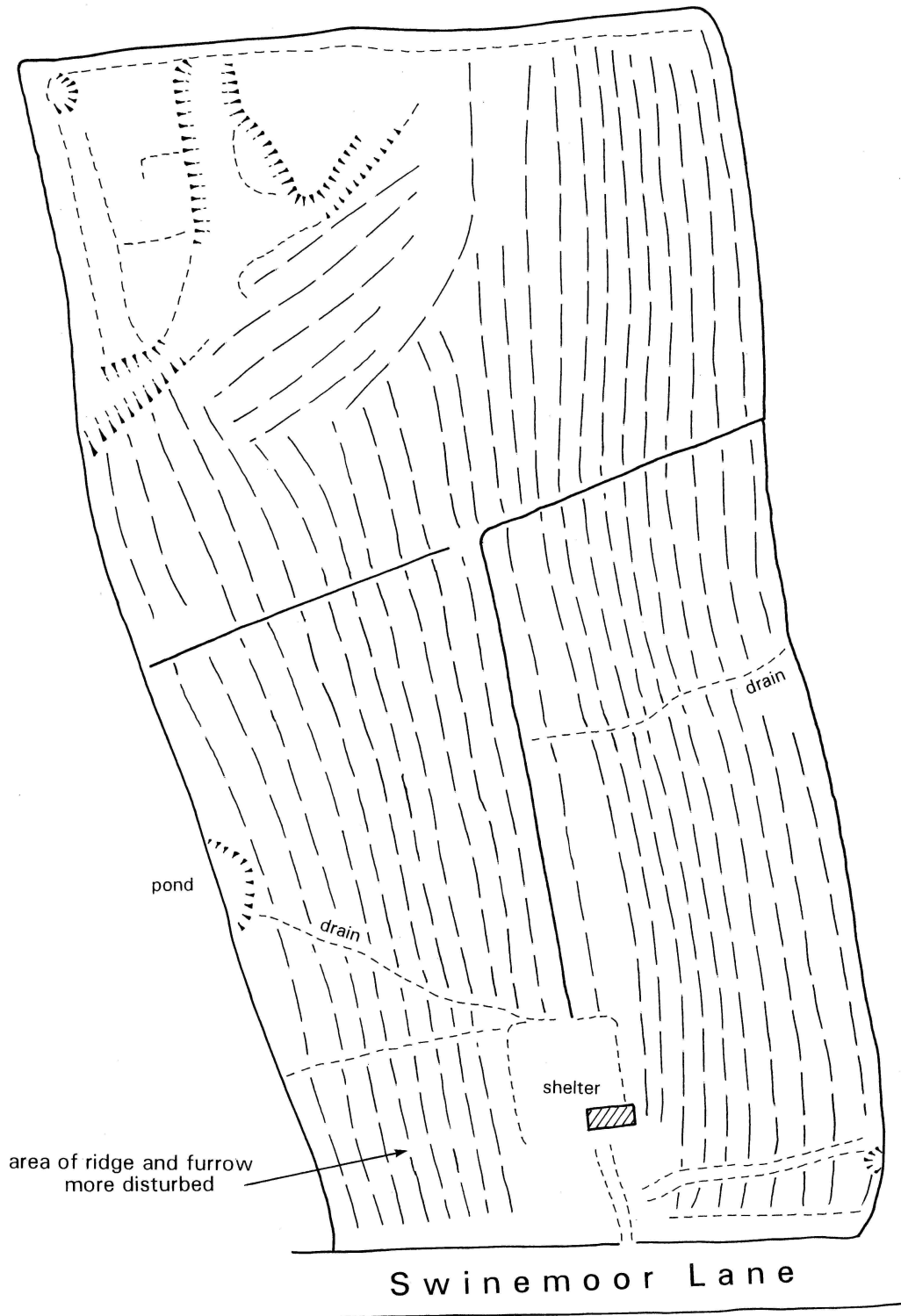
- 1 Ridge and furrow (earthworks)
- 2 Possible building (site of)
- 3 Possible brickworks (earthworks)
- 4 Swinemoor Gate House
- 5 Swinemoor Lane
- 6 Hull Bridge Road
- 7 Enclosure (earthworks)
- 8 Swimming pool (site of)
- 9 Possible ditch/enclosure (earthworks)
- 10 Moated site (site of)
- 11 Stump Cross (site of)



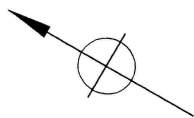
Ridge and furrow on 1947 aerial photos



PROJECT	BEVERLEY COMMUNITY HOSPITAL
TITLE	IDENTIFIED SITES
SCALE	AS SHOWN
DATE	JUNE 2009
FIGURE	5



area of ridge and furrow  
more disturbed



PROJECT BEVERLEY COMMUNITY HOSPITAL	
TITLE EARTHWORK SKETCH SURVEY	
SCALE AS SHOWN	DATE JUNE 2009
EDAS	FIGURE 6



Fig. 3. Processed greyscale magnetometer data (1:1000 @ A3)

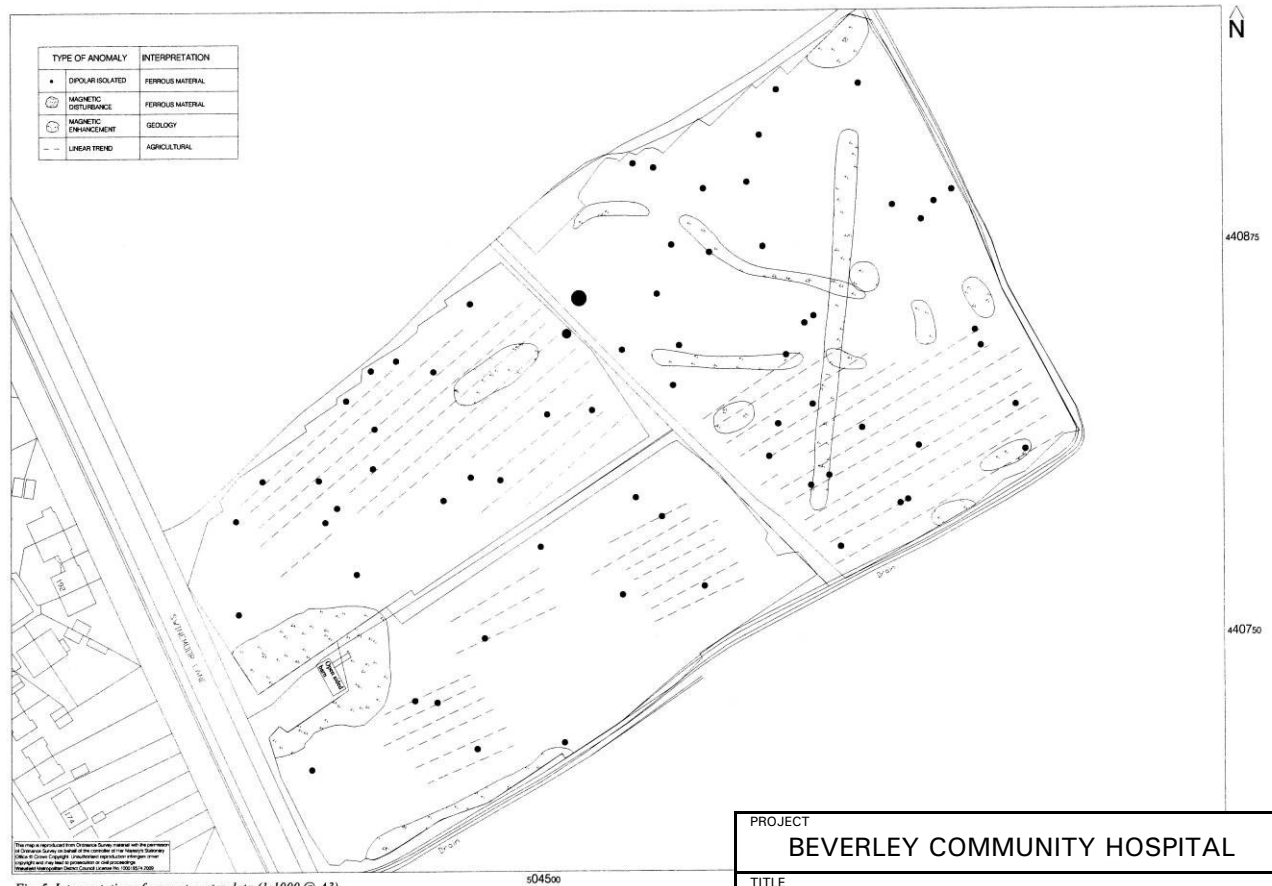
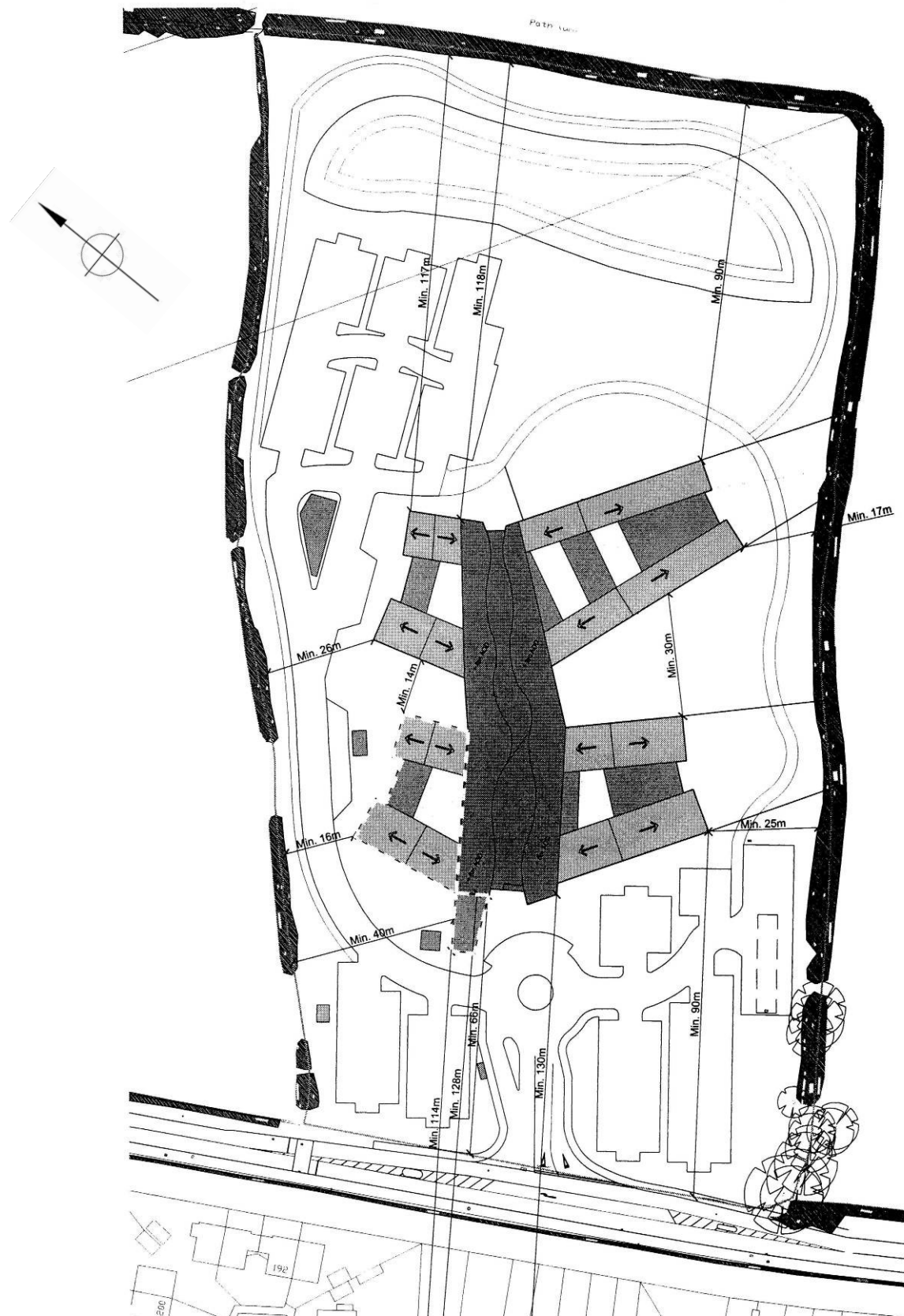


Fig. 5. Interpretation of magnetometer data (1:1000 @ A3)

PROJECT <b>BEVERLY COMMUNITY HOSPITAL</b>	
TITLE <b>GEOPHYSICAL SURVEY RESULTS</b>	
SCALE <b>AS SHOWN</b>	DATE <b>JUNE 2009</b>
<b>EDAS</b>	FIGURE <b>7</b>



Plan supplied by Aedas Architects Ltd.

PROJECT		BEVERLEY COMMUNITY HOSPITAL	
TITLE		INDICATIVE SITE LAYOUT	
SCALE	NTS	DATE	JUNE 2009
EDAS		FIGURE	8



Plate 1: General view across north-western field, looking N.



Plate 2: Detail of ridge and furrow earthworks in north-western field, looking N.

**APPENDIX 1**

**ASWYAS GEOPHYSICAL SURVEY REPORT**





**Proposed Community Hospital,  
Swinemoor Lane, Beverley,  
East Riding of Yorkshire**

*Geophysical Survey*

*June 2009*

*Report No. 1967*

NHS East Riding of Yorkshire Primary Care Trust

**Proposed Community Hospital,  
Swinemoor Lane, Beverley,  
East Riding of Yorkshire**

**Geophysical Survey**

*Summary*

*A geophysical (magnetometer) survey covering 4.1 hectares undertaken at land north-east of Beverley has not revealed any anomalies indicative of probable archaeological activity.*



ARCHAEOLOGICAL  
SERVICES  
WYAS

**Report Information**

Client: NHS East Riding of Yorkshire Primary Care Trust, Health House, Willerby, East Yorkshire HU10 6DT

Consultant: Ed Dennison Archaeological Services Ltd, 18 Springdale Way Beverley, East Riding of Yorkshire HU17 8NU

Report Type: Geophysical survey

Location: Swinemoor Lane, Beverley

County: East Riding of Yorkshire

Grid Reference: TA 045 408

Period(s) of activity represented: Unknown

Report Number: 1967

Project Number: 3442

Site Code: BEV09

Planning Application No.: -

Museum Accession No.: -

Date of fieldwork: June 2009

Date of report: June 2009

Project Management: Sam Harrison BSc MSc AIfA

Fieldwork: Alex Harrison BSc  
Emma Watson BSc

Report: Alex Harrison BSc  
Sam Harrison BSc MSc AIfA

Illustrations: Alex Harrison BSc

Photography: -

Research: -

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Authorisation for  
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- 4 Interpretation of magnetometer data (1:1000)

## 1 Introduction and archaeological background

Archaeological Services WYAS (ASWYAS) was commissioned by the NHS East Riding of Yorkshire Primary Care Trust to undertake a geophysical (magnetometer) survey of land to the east of Swinemoor Lane, Beverley approximately 1km north-east of Beverley to support a future planning application (see Figs 1 and 2).

### Site location and topography

The geophysical survey area, centred at TA 045 408, covered approximately 4.1 hectares and comprised of three fields (see Fig. 2). Swinemoor Lane delimits the site to the west with an open field and Hull Bridge Road to the north, and common land to the south and east (Swine Moor). The Beverley and Barmston Drain lies 0.8km to the east of the survey area. The geophysical survey was undertaken on 8<sup>th</sup> June 2009. Field 1 and 2 are located in the western half of the survey area, with Field 3 directly to the east. There is a small modern open-sided shed with associated concrete hardstanding towards the north-west corner of Field 2.

Topographically the site is flat, being approximately 5m above Ordnance Datum.

### Soils, geology and land-use

The solid geology comprises Flamborough chalk overlain by stony clay (till) deposits (BGS 1995). The soils are classified in the Landbeach association and are described as chalky till, slowly permeable, seasonally waterlogged, fine loamy soils with narrow strips of clayey alluvial soils (Survey of England and Wales 1983). At the time of survey the site was covered by grazing pasture. Ridge and furrow survives at variable levels of preservation across the majority of the site, with the exception of the northern most part of Field 3 where it is no longer visible.

## 2 Archaeological and Historical Background

Research currently being undertaken by Ed Dennison Archaeological Services Ltd (EDAS) suggests that the three fields in question were given to Beverley Corporation by Benjamin Dalton in 1713, with the rents to be distributed to the poor of the town. At this time, the site was divided into two fields, although the subsequent division of the western field (into Field 1 and Field 2) occurred soon after, at least by 1806. The site originally formed part of "Riding Field", a large medieval open field on the east side of Beverley. It is not known when the individual field and closes were created from the open field, but it is thought to have been before the 14th century. The three fields as they currently exist are depicted on historic maps dating from the early 19th century, with no internal features of interest shown. However, a small agricultural structure is shown on the site of the present modern open-sided shelter shed on maps dating to 1847 and 1893. The ridge and furrow visible over the majority of the survey area is likely to date from later medieval period, and the site appears to have been pasture from at least the early 19th century, and probably much earlier (Ed Dennison, EDAS, *pers. comm.*).

### 3 Aims and Objectives

The general aims of the geophysical survey were to obtain information that would contribute to an assessment of the archaeological potential of the site. This information would then enable further evaluation and/or mitigation measures to be designed in advance of, or in conjunction with, any proposed development of the site. These aims were to be achieved by undertaking a detailed (recorded) magnetometer survey across the whole of the defined area. Specifically the survey sought to provide information about the nature and possible interpretation of magnetic anomalies identified during the survey and thereby determine the likely extent, presence or absence of any buried archaeological remains in the proposed development area.

### 4 Methodology

#### Magnetometer survey

A Bartington Grad601 magnetic gradiometer was used to take readings at 0.25m intervals on zig-zag traverses 1m apart within 30m by 30m grids so that 3600 readings were recorded in each grid. These readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation. Geoplot 3 (Geoscan Research) software was used to process and present the data. Further details are given in Appendix 1. Detailed survey allows the visualisation of weaker anomalies that may not have been readily identifiable by less rigorous evaluation techniques such as magnetometer (magnetic) scanning.

#### Reporting

A general site location plan, incorporating the 1:50000 Ordnance Survey mapping is shown in Figure 1. Figure 2 shows the processed greyscale magnetometer data in relation to the surrounding landscape. The processed and 'raw' (unprocessed) magnetometer data from the survey, together with interpretation figures, are presented at a scale of 1:1000 in Figures 3, 4 and 5.

The geophysical survey methodology, report and any recommendations comply with guidelines outlined by English Heritage (David *et al.* 2008) and by the IfA (Gaffney *et al.* 2002). All figures reproduced from Ordnance Survey mapping are with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

Technical information on the equipment used, data processing and magnetic survey methodology is given in Appendix 1. Appendix 2 details the survey location information and Appendix 3 describes the composition and location of the survey archive.

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

## 5 Results & Discussion

### Ferrous material/magnetic disturbance

A number of ferrous ('iron spike') anomalies have been located in the survey area. These anomalies are indicative of ferrous objects or other magnetic material in the topsoil/subsoil and, although archaeological artefacts may cause them, they are more often caused by modern cultural debris that has been introduced into the topsoil.

The areas of magnetic disturbance in the western and southern parts of the survey block are due to the close proximity of fencing. The large area of disturbance in the west of the survey area is due to the presence of an open shelter for horses and feed trough.

### Geological anomalies

Weak areas of magnetic enhancement have been identified within the eastern part of the survey area. These low magnitude anomalies are not considered to be due to underlying archaeological features. The shape and extent of these anomalies suggests that they are probably due to geology. The ridge and furrow anomalies identified in the rest of the survey do not manifest themselves in the northern part of Field 3. It is possible that this is a consequence of geological factors, such as unmapped drift or a lower magnetic variation between the ridges and the furrows.

### Linear Trends

A series of parallel, linear trend anomalies have been identified running across site, on a south-west/north-east alignment. They are caused by ridge and furrow ploughing, the characteristic striped effect being caused by the magnetic contrast between the in-filled furrows and the former ridges. This ridge and furrow survives as medium-well preserved earthworks.

## 6 Conclusions

The geophysical survey has not identified any anomalies indicative of archaeological activity. Several areas of magnetic variation have been identified towards the north-eastern part of the survey area. It is considered that these anomalies are geological in nature. The possible masking effect that covers the ridge and furrow within the northern part of Field 3 may be responsible for covering other features. Overall, on the basis of the geophysical survey results, it is considered that this site has a low archaeological potential.

***The results and subsequent interpretation of data from geophysical surveys should not be treated as an absolute representation of the underlying archaeological and non-archaeological remains. Confirmation of the presence or absence of archaeological remains can only be achieved by direct investigation of sub-surface deposits.***



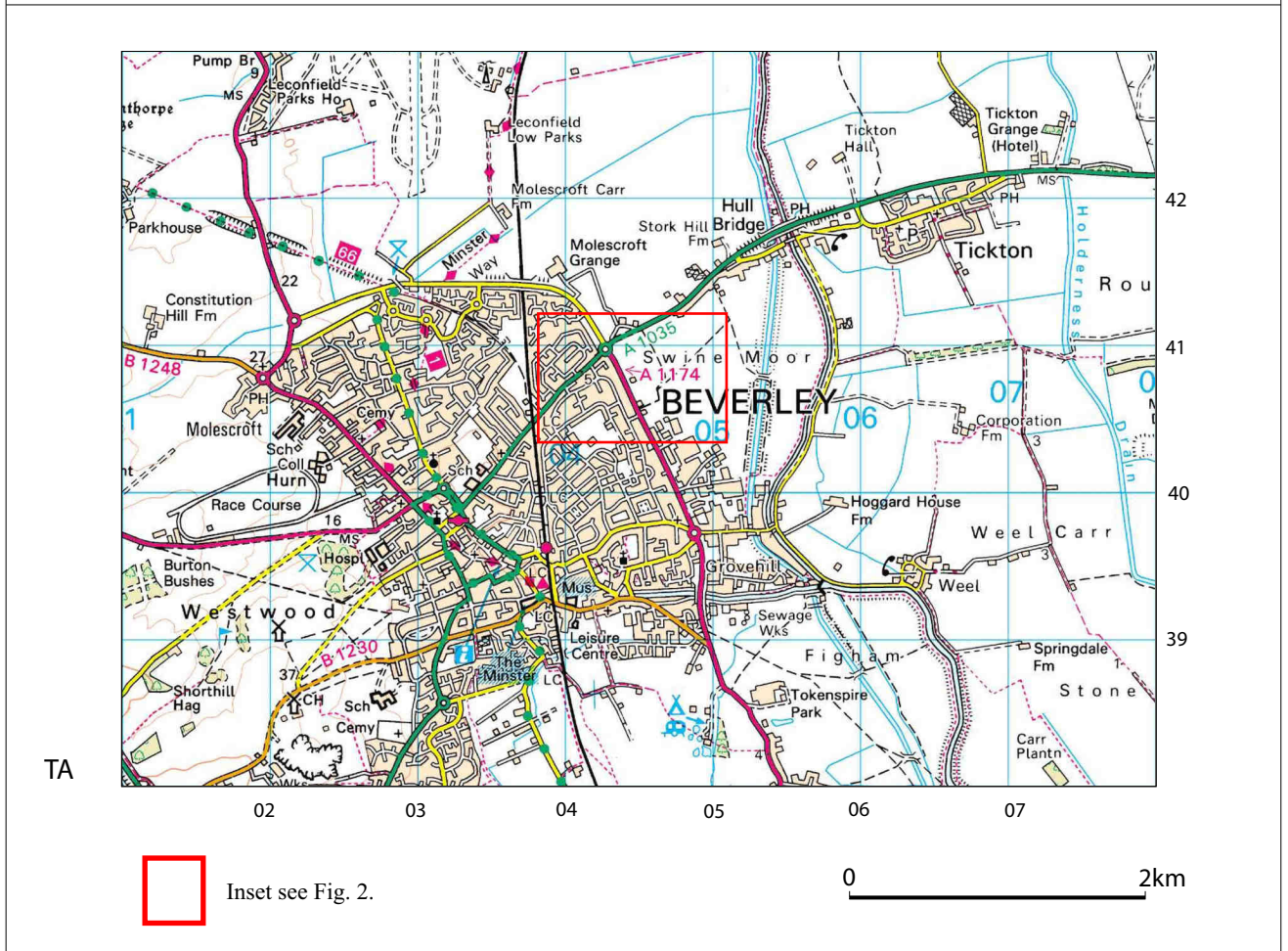
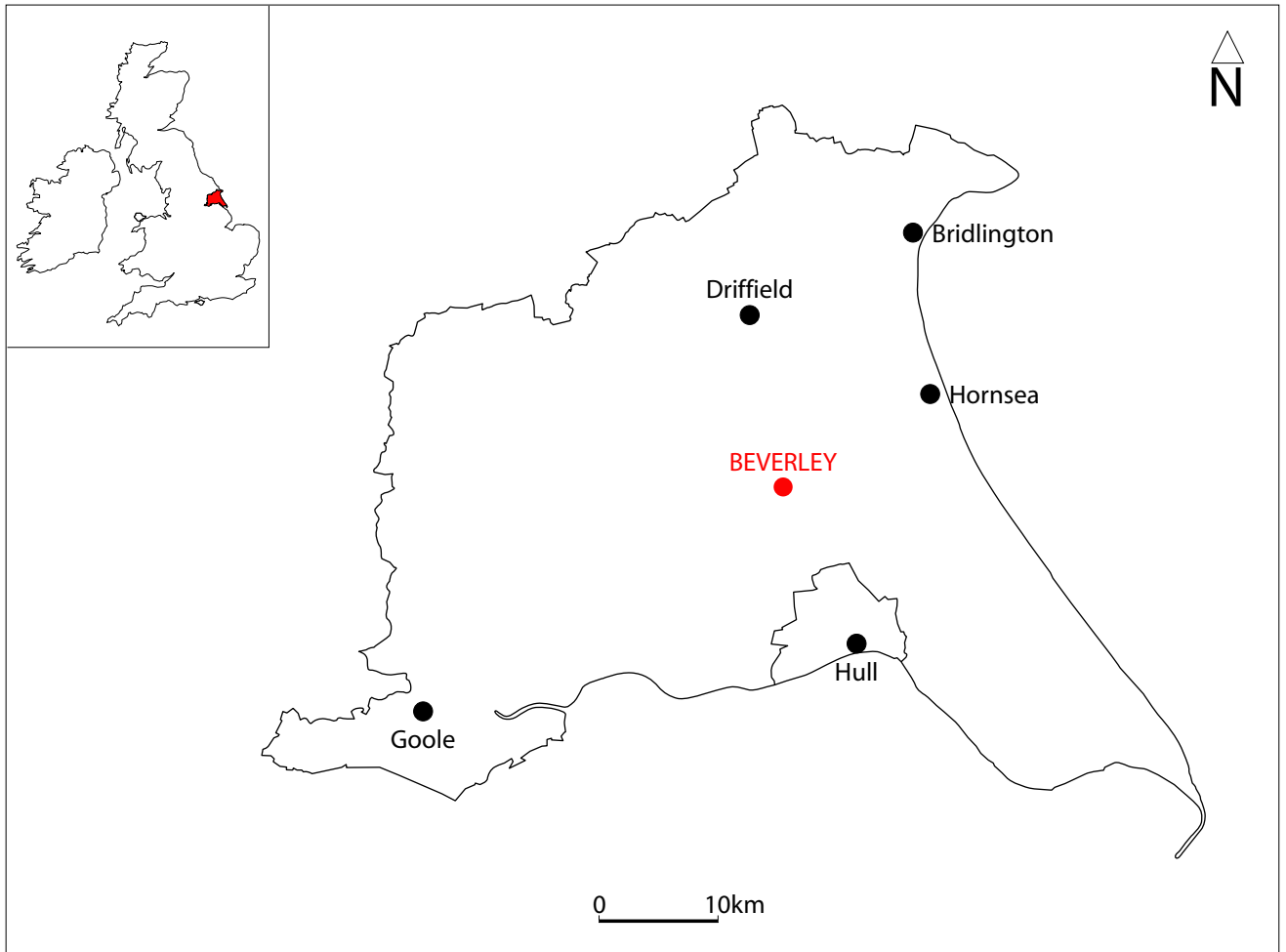
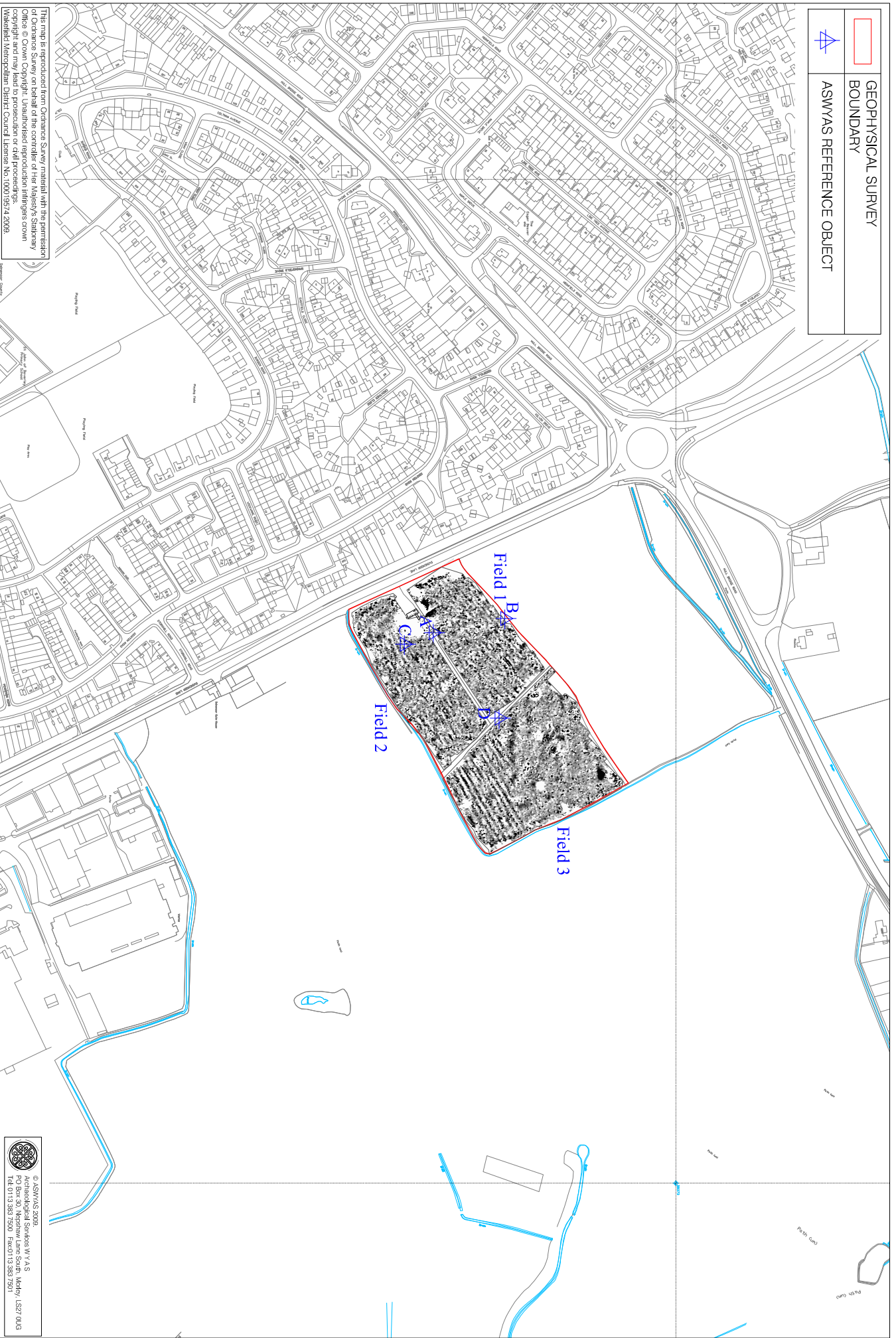


Fig. 1. Site location

	GEOPHYSICAL SURVEY BOUNDARY
	ASWYAS REFERENCE OBJECT



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Fig. 2. Site location showing greyscale magnetometer data (1:5000 @ A4)



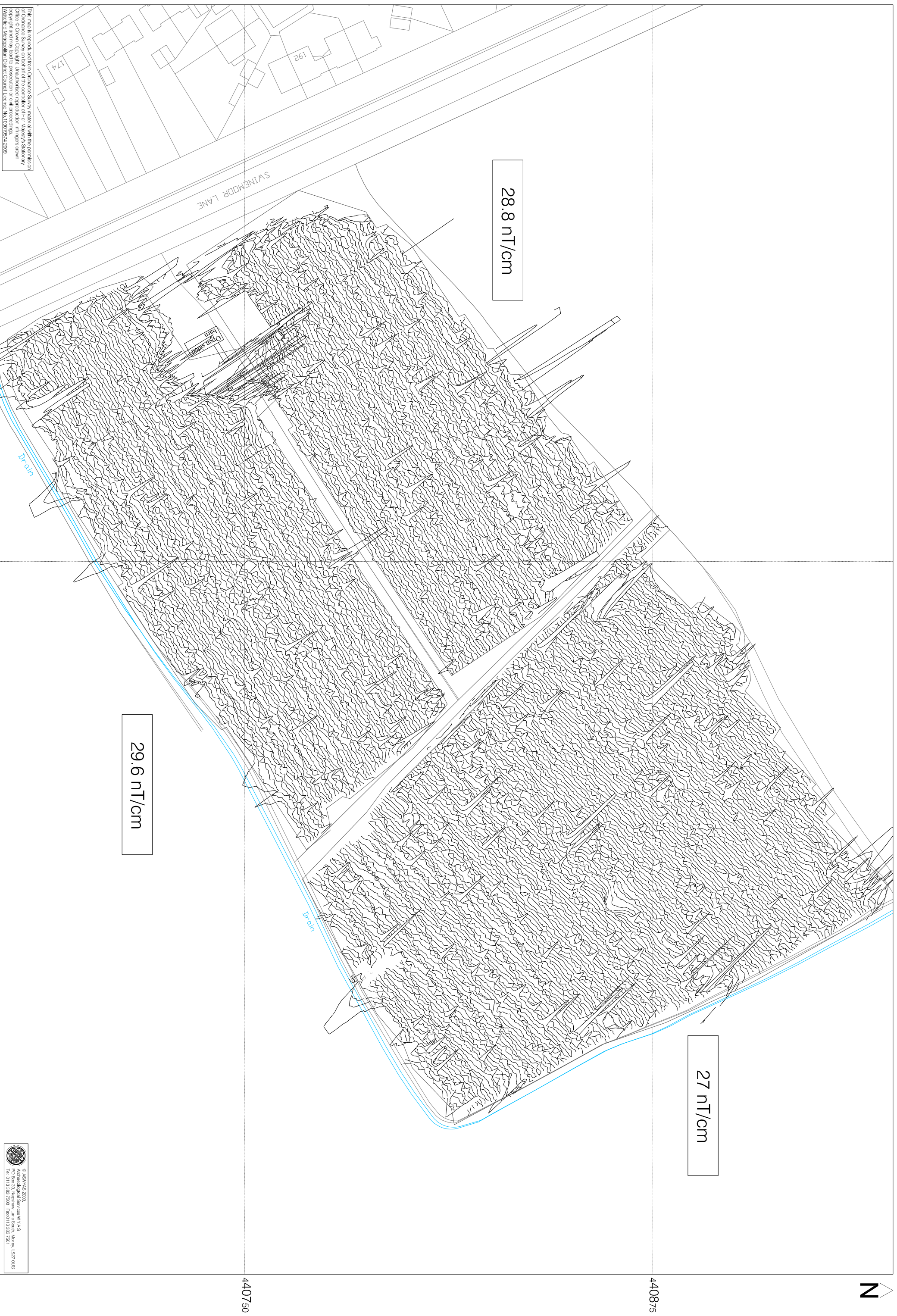


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Fig. 3. Processed greyscale magnetometer data (1:1000 @ A3)

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Fig. 4. XY trace plot of unprocessed magnetometer data (1:1000 @ A3)

0 50m

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TYPE OF ANOMALY	INTERPRETATION
•	DIPOLAR ISOLATED FERROUS MATERIAL
	MAGNETIC DISTURBANCE FERROUS MATERIAL
	MAGNETIC ENHANCEMENT GEOLOGY
- - -	LINEAR TREND AGRICULTURAL



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Fig. 5 Interpretation of magnetometer data (1:1000 @ A3)

## **Appendix 1: Magnetic survey: technical information**

### **Magnetic Susceptibility and Soil Magnetism**

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

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of topsoils, subsoils and rocks into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected. Less magnetic material such as masonry or plastic service pipes that intrude into the topsoil may give a negative magnetic response relative to the background level.

The magnetic susceptibility of a soil can also be enhanced by the application of heat. This effect can lead to the detection of features such as hearths, kilns or areas of burning.

### **Types of Magnetic Anomaly**

In the majority of instances anomalies are termed 'positive'. This means that they have a positive magnetic value relative to the magnetic background on any given site. However some features can manifest themselves as 'negative' anomalies that, conversely, means that the response is negative relative to the mean magnetic background. Such negative anomalies are often very faint and are commonly caused by modern, non-ferrous, features such as plastic water pipes. Infilled natural features may also appear as negative anomalies on some geological substrates.

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

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

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

*Isolated dipolar anomalies (iron spikes)*

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

*Areas of magnetic disturbance*

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

*Linear trend*

This is usually a weak or broad linear anomaly of unknown cause or date. An agricultural origin, either ploughing or land drains is a common cause.

*Areas of magnetic enhancement/positive isolated anomalies*

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

*Linear and curvilinear anomalies*

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

**Methodology: Magnetic Susceptibility Survey**

There are two methods of measuring the magnetic susceptibility of a soil sample. The first involves the measurement of a given volume of soil, which will include any air and moisture that lies within the sample, and is termed volume specific susceptibility. This method results in a bulk value that is not necessarily fully representative of the constituent components of the

sample. The second technique overcomes this potential problem by taking into account both the volume and mass of a sample and is termed mass specific susceptibility. However, mass specific readings cannot be taken in the field where the bulk properties of a soil are usually unknown and so volume specific readings must be taken. Whilst these values are not fully representative they do allow general comparisons across a site and give a broad indication of susceptibility changes. This is usually enough to assess the susceptibility of a site and evaluate whether enhancement has occurred.

### **Methodology: Gradiometer Survey**

There are two main methods of using the fluxgate gradiometer for commercial evaluations. The first of these is referred to as *magnetic scanning* and requires the operator to visually identify anomalous responses on the instrument display panel whilst covering the site in widely spaced traverses, typically 10m apart. The instrument logger is not used and there is therefore no data collection. Once anomalous responses are identified they are marked in the field with bamboo canes and approximately located on a base plan. This method is usually employed as a means of selecting areas for detailed survey when only a percentage sample of the whole site is to be subject to detailed survey.

The disadvantages of magnetic scanning are that features that produce weak anomalies (less than 2nT) are unlikely to stand out from the magnetic background and so will be difficult to detect. The coarse sampling interval means that discrete features or linear features that are parallel or broadly oblique to the direction of traverse may not be detected. If linear features are suspected in a site then the traverse direction should be perpendicular (or as close as is possible within the physical constraints of the site) to the orientation of the suspected features. The possible drawbacks mentioned above mean that a 'negative' scanning result should be validated by sample detailed magnetic survey (see below).

The second method is referred to as *detailed survey* and employs the use of a sample trigger to automatically take readings at predetermined points, typically at 0.25m intervals, on zig-zag traverses 1m apart. These readings are stored in the memory of the instrument and are later dumped to computer for processing and interpretation. Detailed survey allows the visualisation of weaker anomalies that may not have been detected by magnetic scanning.

During this survey a Bartington Grad601 magnetic gradiometer was used taking readings on the 0.1nT range, at 0.25m intervals on zig-zag traverses 1m apart within 30m by 30m square grids. The instrument was checked for electronic and mechanical drift at a common point and calibrated as necessary. The drift from zero was not logged.

### **Data Processing and Presentation**

The detailed gradiometer data has been presented in this report in XY trace and greyscale formats. In the former format the data shown is 'raw' with no processing other than grid biasing having been done. The data in the greyscale images has been interpolated and



selectively filtered to remove the effects of drift in instrument calibration and other artificial data constructs and to maximise the clarity and interpretability of the archaeological anomalies.

An XY plot presents the data logged on each traverse as a single line with each successive traverse incremented on the Y-axis to produce a 'stacked' plot. A hidden line algorithm has been employed to block out lines behind major 'spikes' and the data has been clipped. The main advantage of this display option is that the full range of data can be viewed, dependent on the clip, so that the 'shape' of individual anomalies can be discerned and potentially archaeological anomalies differentiated from 'iron spikes'. Geoplot 3 software was used to create the XY trace plots.

Geoplot 3 software was used to interpolate the data so that 3600 readings were obtained for each 30m by 30m grid. The same program was used to produce the greyscale images. All greyscale plots are displayed using a linear incremental scale.

## Appendix 2: Survey location information

The site grid was laid out using a Geodimeter 600s total station theodolite and tied in to the corners of buildings and other permanent landscape features and to temporary reference points (survey marker stakes) that were established and left in place following completion of the fieldwork for accurate geo-referencing. The locations of the temporary reference points are shown on Figure 2 and the Ordnance Survey grid co-ordinates tabulated below. The internal accuracy of the survey grid relative to these markers is better than 0.05m. The survey grids were then superimposed onto a map base provided by the client as a 'best fit' to produce the displayed block locations. Overall there was a good correlation between the local survey and the digital map base and it is estimated that the average 'best fit' error is better than  $\pm 1.5$ m. However, it should be noted that Ordnance Survey co-ordinates for 1:2500 map data have an error of  $\pm 1.9$ m at 95% confidence. This potential error must be considered if co-ordinates are measured off for relocation purposes.

Station	Easting	Northing
A	504451.7	440758.2
B	504437.4	440829.6
C	504462.9	440729.4
D	504536.7	440823.8

*Archaeological Services WYAS cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party or for the removal of any of the survey reference points.*

### **Appendix 3: Geophysical archive**

The geophysical archive comprises:-

- An archive disk containing compressed (WinZip 8) files of the raw data, report text (Microsoft Word 2000), and graphics files (Adobe Illustrator CS2 and AutoCAD 2007) files.
- a full copy of the report

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

## **Bibliography**

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- David, A., N. Linford, P. Linford and L. Martin, 2008. *Geophysical Survey in Archaeological Field Evaluation: Research and Professional Services Guidelines (2<sup>nd</sup> edition)* English Heritage
- Gaffney, C., Gater, J. and Ovenden, S. 2002. *The Use of Geophysical Techniques in Archaeological Evaluations*. IFA Technical Paper No. 6
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