Proposed redevelopment of Waterbeach MOD site and neighbouring land

Cambridgeshire



Desk-Based Assessment



May 2016

Client: Urban&Civic plc

OA East Report No: 1811 OASIS No: oxfordar3-219399

NGR: TL 49865 67263



Proposed redevelopment of Waterbeach MOD site and neighbouring land, Cambridgeshire

Desk-Based Assessment

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Report No: 1811

Site Name: Waterbeach MOD site and neighbouring land

HER Event No: ECB 4525

Date of Works: -

Client Name: Urban&Civic plc

Client Ref: 18306

Planning Ref: -

Grid Ref: centred on 549865, 267263

Site Code: -

Finance Code: WATBAR15 / WATBAR16

Receiving Body: -

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Summary

Oxford Archaeology East has been commissioned by Urban & Civic plc to undertake a desk-based assessment on 430 hectares of land immediately north of Waterbeach, Cambridgeshire (centred on NGR 549865, 267263), in order to assess the archaeological resource of the Site and the surrounding landscape.

The proposed redevelopment area has a mixture of current land uses, over half of the Site (292 hectares) is currently occupied by the former Waterbeach barracks and airfield and the eastern extents by agricultural farmland. Immediately north of the Site is the Scheduled Monument and medieval remains of Denny Abbey.

The Site is also bounded on its western side by Car Dyke Roman canal (portions of which are Scheduled Monuments) and the Roman road known as Akeman Street (along which the A10 runs).

Evidence for archaeological remains (in the form of cropmarks, spotfinds and subsurface remains) from the Lower Palaeolithic through to the modern period have been identified within the 1.5km study area. This evidence is predominantly located across the western and northern portion of the search area on the higher clay geology. Remains of a Roman date are most likely to be present within the Site, with assemblages of Roman pottery, worked stone, coins, other metalwork and human skeletal remains all having been recovered in the past. The eastern portion of the Site is least likely to hold any archaeological remains due to it being located on the periphery of the deeper peat fen.

It is quite likely that potential archaeological remains within the former barracks and airfield have been disturbed to some degree, particularly in the vicinity of the barracks. The airfield itself contains large areas of green space which could hold surviving archaeology.

The airfield was active during the Second World War and as a result there is the potential for military remains on the Site. It is known that a number of military aircraft crashed here. Therefore the potential for aircraft remains and even unexploded ordnance should be considered. The buildings within the barracks, whilst not formally listed are a testament to the Site's military past.

Effects on the historic landscape need to be considered ahead of development, particularly as the Site bounds the Scheduled Monument of Denny Abbey. The setting of these medieval monastic buildings (and the surviving earthworks located in the pasture fields that immediately surround them) form part of a heritage asset that is of high importance. Therefore there is a need to preserve the significance of this asset through appropriate treatment of its setting. This will require consultation with Historic England and the Cambridgeshire County Council Historic Environment Team (CCC HET).

Overall, it can be said that the proposed development of the Waterbeach MOD site and adjoining land has the potential to adversely affect sub-surface archaeological remains.

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1 Introduction

1.1 General background

- 1.1.1 Oxford Archaeology East (OA East) has been commissioned to undertake a deskbased assessment (DBA) of land immediately north of the village of Waterbeach, Cambridgeshire (Fig. 1).
- 1.1.2 This report has been prepared on behalf of Urban&Civic plc, a strategic development company appointed by the Defence Infrastructure Organisation (DIO) as project managers. The DBA covers, however, the whole of the proposed Waterbeach site including the farmland controlled by the RLW Estates to the east of the former barracks and airfield.
- 1.1.3 An additional Geophysical Survey and Deposit Model was added to the original DBA following a meeting (29.1.16) with (and recommendations from) Andy Thomas (Cambridgeshire County Council Historic Environment Team).
- 1.1.4 This report will consider the buried archaeological resource within the proposed development area (henceforth referred to as 'the Site') which could, if present, be directly impacted on by any construction. A cultural heritage appraisal was undertaken for the Site by Headland Archaeology in 2012 (Carter 2012). This report will incorporate and build upon these results.
- 1.1.5 The proposed development site is approximately 430 hectares in size and comprises land with a mixture of current uses. The central, western and southern parts of the Site contain Waterbeach barracks and airfield, under the control of the DIO. The former Waterbeach golf club is also located within this area. The eastern portion of the Site comprises largely agricultural land (under the control of RWL Estates) with an existing sewage works located toward the south-eastern end.
- 1.1.6 Encompassing the land to the immediate north of the development area is Denny Abbey and the Farmland Museum, managed by the Farmland Museum Trust on behalf of English Heritage. The setting of this Scheduled Monument will only be briefly dealt with in this report, as Urban&Civic have commissioned Beacon Planning to prepare a separate and more in-depth study on this, and it is intended that these reports are read in tandem.

1.2 Location, geology and topography

- 1.2.1 The area surrounding and encompassing Waterbeach is characterised by the historic, rural and the essentially modified landscape of the Cambridgeshire southern fen edge. The landscape is bisected at regular intervals by artificial waterways (lodes) which drain the area. As a result of this drainage which began in the 17th century, the landscape has remained essentially unaltered and primarily agricultural in nature ever since (Appleby *et al.* 2007).
- 1.2.2 Waterbeach village lies within South Cambridgeshire District, approximately 4km north of the urban edge of Cambridge. It is a large parish, whose boundaries include the River Cam (to the east), the Car Dyke and Akeman Street Roman road (on the west) and a 13th century drainage ditch (to the north).
- 1.2.3 The village lies on a spine of slightly higher ground at about 6m OD, where the bedrock geology of Gault Formation Mudstone is exposed. On the lower ground to the east and west, superficial deposits of river terrace sand and gravels are present; which (to the east) give way to alluvial deposits and peat (BGS 2015).



1.2.4 Topography across the Site itself varies from 2.1m OD to 5.8m OD. The southern limit of the proposed development where it meets Waterbeach village is the highest point at 5.8m OD. The land moves gently drops northward down to around 3m OD before rising up again to 5.2m around the location of Denny Abbey. To the west the land falls to around 4.6m and to the east it drops away to 2.1m OD gradually toward the river.

1.3 Aims and methodology

- 1.3.1 The purpose of this archaeological Desk-Based Assessment is to define the character, extent and significance of known heritage assets within and close to the proposed development Site, taking into account any past impacts which may have affected the survival of any archaeology present on the Site itself. It identifies any heritage constraints on the proposed development and provides an outline assessment of any potential impacts which may result from the proposal.
- 1.3.2 For the assessment of the heritage assets a 1.5km radius of the Site, centred on NGR 549865, 267263 was studied (hereafter known as 'the search area'), in order to provide a context for discussion and interpretation of the known and potential resource within the Site. This assessment draws on secondary historical sources, cartographic evidence, the Cambridgeshire Historic Environment Record (CHER), aerial photographs, a walkover survey and previous archaeological works. A comprehensive list of HER data, AP data, geophysical survey and historical maps can be found in Appendices A to D.
- 1.3.3 This Desk-Based Assessment (DBA) has been carried out according to standards set by the Chartered Institute for Archaeologists (ClfA) in their guidance paper *Standard and Guidance for Historic Environment Desk-Based Assessment* (2014).
- 1.3.4 A Deposit Model has also been produced for the site, which combines the results of the DBA with geophysical survey and LIDAR assessment, to consider those areas of the proposed development area are likely to have been too heavily truncated to preserve buried archaeology, land that has suffered perhaps only partial truncation and finally which areas are likely to contain undamaged archaeology (should it be present).

1.4 Planning policy legislation

National planning policy

- 1.4.1 Several pieces of legislation recognise the importance of the historic environment and provide protection for heritage assets of particular importance. For archaeology, the Ancient Monuments and Archaeological Areas Act of 1979, which covers Scheduled Monuments, is key. For the built heritage the Planning (Listed Buildings and Conservation Areas) Act of 1990 provides protection mechanisms for buildings or areas of architectural or historical significance.
- 1.4.2 At a national level, the National Planning Policy Framework (NPPF) 2012 replaces the 2010 Planning Policy Statement (PPS) 5. The NPPF covers all aspects of the historic environment within a common set of polices. These recognise that heritage assets are a non-renewable resource and that heritage conservation has wider benefits, while accepting that the level of conservation should be proportionate with the significance of the assets concerned.
- 1.4.3 The NPPF is based on twelve core land-use planning principles. The most pertinent of which states the need to:

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Conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations

1.4.4 The glossary to the NPPF (Annex 2) provides definitions of key terms relevant to the setting of heritage assets:

Archaeological interest: a heritage asset which holds or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.

Designated heritage asset: a World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.

Heritage asset: a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).

Historic environment: all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.

Setting of a heritage asset: the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.

Significance: the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage assets physical presence, but also from its setting.

- 1.4.5 Section 12, paragraphs 128-132 of the NPPF set out the approach to be adopted for assessing heritage assets in order that their significance, the impact of proposed development on that significance and the need to avoid or minimise conflict between a heritage assets conservation and proposed development, can be understood:
 - 128- In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.
- 1.4.6 In specific relation to designated heritage assets, paragraph 133 of the NPPF states that, where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss.

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- 1.4.7 Paragraph 134 states that, where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.
- 1.4.8 Paragraph 135 states that, the effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage assets.

Hedgerow regulations

- 1.4.9 With respect to ancient hedgerows, the Hedgerow Regulations 1997 make provision for the protection of hedgerows considered to be of archaeological, historical, landscape and/or natural importance (DEFRA 1997). The regulations state that a hedgerow can be considered to be 'important' if it meets certain criteria as defined in Schedule 1, Part II of the Regulations. The relevant criterion is:
 - 1- The hedgerow marks the boundary, or part of the boundary of at least one historic parish or township
 - 5- The hedgerow:
 - a. Is recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Inclosure Acts

Local planning policy

- 1.4.10 Relevant policy on the cultural heritage for South Cambridgeshire is found in the Local Development Framework (2007) and the Local Plan 2011-2031 (2014), specifically chapter 6 Protecting and Enhancing the Natural and Historic Environment.
- 1.4.11 Paragraph 6.48 of the Local Plan states:
 - Heritage is an essential component of plans from a village or neighbourhood level to that of the district. A full understanding of the historic environment is needed to inform plans, identify opportunities for conservation and enhancement, and to be able to reinforce local identity and create a sense of place
- 1.4.12 The most pertinent objectives of Policy NH/14: Heritage Assets, from the Local Plan are as follows:
 - 1- Development proposals will be supported when
 - a. They sustain and enhance the special character and distinctiveness of the districts historic environment including its villages and countryside and its building traditions and details
 - 2- Development proposals will be supported when they sustain and enhance the significance of heritage assets, including their settings, particularly
 - c. Designated heritage assets, i.e. listed buildings, conservation areas, scheduled monuments, registered parks and gardens
 - d. Undesignated heritage assets which are identified in conservation area appraisals
 - e. The wider historic landscape of South Cambridgeshire



h. Archaeological remains of all periods from the earliest human habitation to modern times

1.5 Acknowledgements

1.5.1 The author would like to extend thanks to Urban&Civic plc for commissioning and funding the work. The Historic Environment Record (HER) data was collated by Gaby Day of Cambridgeshire County Council. The walkover survey and visit to the Cambridgeshire Archives was undertaken by the author. The aerial photographic survey was undertaken by Air Photo Services and the geophysical survey by Pete Masters of Cranfield University. The Lidar assessment was carried out by Stuart Ladd. The project was managed by Stephen Macaulay.

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2 Archaeological and Historical Sources

2.1 Historical sources

- 2.1.1 Waterbeach was originally part of the Northstowe hundred, which was most probably created during the 10th century and is first recorded in the Domesday book of 1086 (Wright & Lewis 1989). The village has undergone a number of slight name changes over the years. In the beginning (1086) it was known as *Bechia*, meaning 'stream' and by 1169 this had changed to *Beche*. The prefix of 'Water' was added in the early 13th century in order to differentiate it from the village of Landbeach 2km to the west. Alterations in the spelling of the village continued throughout the 13th and 14th centuries: *Watirbeche* (c.1278), *Watterbech* (1281) and *Waterbecche* (1326), with the spelling known today first being seen in 1337 (Reaney 1943,184).
- 2.1.2 Waterbeach manor, located at the south-eastern end of of the village, was recorded in 1086 at being under the control of Picot, the sheriff of Osmand (Wright & Lewis 1989). By 1263 the manor had been granted for life to Denise, widow of William de Munchensy, who in turn, in 1294 granted the manor to a convent of Franciscan nuns (Salzman 1967), and thus Waterbeach Abbey was born. However the papal approval received for the abbey contained a caveat allowing for the removal of the community elsewhere, if necessary (Cra'ster 1966). This was owed to the location of Waterbeach Abbey being considered unsuitable due to the risk of flooding.
- 2.1.3 Located at the northern end of Waterbeach parish was another manor, Denny, which was recorded at the time of Domesday as being under the control of Count Alan, Lord of Richmond. In the mid 12th century under the patronage of Robert the Chamberlain, the monks of Ely established a small cell at the manor; but this was to be short lived as just 10 years later it was handed over to the Knights Templar (Wright & Lewis 1989). By 1308 however the Knights Templar had been removed from Denny.
- 2.1.4 In 1336 the Countess of Pembroke granted Denny manor to the Minoresses at Waterbeach, and by 1339 obtained permission to transfer the community to Denny Abbey (Salzman 1967). This was met with a degree of unwillingness by the nuns, some of whom had to be forcibly removed. The final abandonment of Waterbeach Abbey came in 1359 when the Pope licensed the removal of all burials, and for them to be reinterred at Denny Abbey (Cra'ster 1966).
- 2.1.5 Denny Abbey thrived over the ensuing two centuries. In 1512 Dame Elizabeth Throckmordon was made the abbess of Denny. There is no surviving record of the dissolution of Denny, but on the 28th October 1539, the site and all its possessions were granted to Edward Erlington, who demolished a number of the monastic buildings and converted the remainder into a farmhouse (Salzman 1967).
- 2.1.6 The first church at Waterbeach, located at the southern end of the village, is known to have been founded in *c*.1160 and is believed to have been named St John the Evangelist in 1299 (Wright & Lewis 1989). The only surviving Norman architecture within the building is seen as upright leaf decoration on pillars in the nave and south arcade (Cheason 1995). A number of renovations and alterations have been made to the church over the centuries, the most major of which took place during the 19th and 20th centuries (Wright & Lewis 1989).
- 2.1.7 In 1637 approximately 3,375 acres of the parish comprised common fen and wet ground, of which 750 acres were given over to the Adventurers of the Bedford Level in order to drain them (Wright & Lewis 1989, 237). This was done through embanking,

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the cutting of drains and the construction of mills; the result of which meant that parts of the land were able to be brought under cultivation. In 1740, after a number of years of consecutive flooding, an Act of Parliament was obtained to make some of this land, along with parts of the adjoining parishes of Strethem and Wicken, into a Level (Masters 1795). The Waterbeach Level Act was met with a degree of opposition due to an increase in local levy rates and a potential change in lifestyle for the peasants who, up until now, had been surviving on a life of fishing and fowling (Taylor 1998). Nonetheless a series of drains and windmills were constructed across the area during the ensuing two decades. In the early 1830s the windmills were replaced by steam engines (Wright & Lewis 1989).

- 2.1.8 The draining of the fens around Waterbeach resulted in profitable land cultivation, with crops of oats, coleseed (known today as rapeseed) and flaxseed being grown (Masters 1795). Further to this, commons were used by the inhabitants of the village who had the right to graze their animals on them (although the numbers allowed by each inhabitant was limited). They were also allowed to mow certain parts of the common to provide hay for foddering their cattle during the winter months (Masters 1795).
- 2.1.9 The Waterbeach Enclosure Award (28th September 1818) saw the drained fenland formally divided up into land parcels laid out in a rectangular pattern. Enclosure can be deemed as one of the most important processes in the evolution of the British landscape. The term 'enclosure' (also often spelt 'inclosure') has become synonymous with the idea of physically shutting land off (with a fence or hedge for example). However, its historical and legal meaning is rather: the removal of communal rights, controls or ownership over a piece of land and thus its conversion into 'severalty' where an owner has sole control over its use, and of access to it (Kain et al. 2004,1).

2.2 Heritage resource

- 2.2.1 The Cambridge HER is the main repository of cultural heritage data for the county. An HER search was undertaken of the proposed development area and a 1.5km radius around it. The HER is not a record of *all* surviving elements of the historic environment and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown.
- 2.2.2 The search area contains a total of 381 records. These consist of Scheduled Monuments, Listed Buildings, earthworks, cropmarks, findspots, and archaeological investigations (Figs 2-5). There are no examples of World Heritage Sites or Battlefields within the search area.
- 2.2.3 A gazetteer of all heritage assets (both designated and undesignated) can be found in Appendix A along with records of any archaeological investigations. Each record has an individual identifying number which is referred to in the text where relevant and marked on the figures.
- 2.2.4 Reference numbers for the Cambridgeshire HER records are prefixed with 'MCB' for 'monument' records (*i.e.* actual heritage assets) and 'ECB' for 'event' records (archaeological investigations).

Designated assets

2.2.5 The Cambridge HER holds 53 records of designated heritage assets within the 1.5km search area. These are made up solely of Scheduled Monuments and Listed Buildings.

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Scheduled monuments

- 2.2.6 There are a total of eight Scheduled Monuments within the search area, of which only one (Denny Abbey) is bordering the Site boundary. The Scheduled area of Denny Abbey (05394, Fig. 5) encompasses the surviving standing remains of this medieval monastic site along with the area of earthworks (05394a) which surround it, in all covering approximately 21 hectares.
- 2.2.7 Situated around 1.4km to the north is the Scheduled Romano-British settlement at Chittering (05703). Covering an area *c*.2.6ha in size, the site is covered in earthworks consisting of a number of trackways which run between rectangular platforms thought to be house foundations. Finds from the site recovered during the early 1900s include samian pottery and colour-coated wares along with human remains. The original settlement is believed to have extended both eastward and westward, but these areas have been lost to ploughing.
- 2.2.8 On the southern side of Waterbeach village are the Scheduled earthworks relating to Waterbeach Abbey (05309). Excavations carried out by Cra'ster in 1963 revealed substantial mortared limestone walls, large quantities of painted plaster, building footings, pits, ditches and quantities of medieval pottery (including imported French wares, St Neots and Stamford wares).
- 2.2.9 The south-western edge of the Site abuts up to the Car Dyke Roman canal, two sections of which (to the north-west and south-east) are Scheduled (05405, 05406). Artefactual evidence suggests that the canal was built in the 1st century AD with the aim of joining the Granta and the Ouse. The 22m wide and up to 4m deep dyke with bank on both sides, is particularly well preserved and still carried water in places. A number of archaeological investigations have been carried out on Car Dyke (or Old Tillage at Waterbeach) over the years in order to better understand it and aid in its future management (e.g. Macaulay & Reynolds 1994, Macaulay 1997a and Macaulay forthcoming).
- 2.2.10 The last three Scheduled Monuments within the search area all belong to the shrunken medieval village of Landbeach (01163, 01262, 08854), located approximately 1.2km south-west of the Site. They consist of the earthwork remains of the medieval village core and two moated manor sites (one at Manor Farm and the other at Worts Farm).

Listed buildings

- 2.2.11 Within the search area there are 45 Listed Buildings. Of these, just three are Grade I listed, namely Denny Abbey (DCB 4494), Denny Abbey Refectory (DCB 5619) and the Church of All Saints in Landbeach (DCB 6036). A further two are Grade II* listed, the Church of St John The Evangelist in Waterbeach (DCB 5712) and The Old Rectory in Landbeach (DCB 5206). Within Denny Abbey itself, there is also a Grade II listed barn (DCB 5213). The remaining 39 buildings are all Grade II listed.
- 2.2.12 The Grade I Denny Abbey is a Benedictine church built in *c*.1150 with later 12th and 13th century additions (by the Knights Templar). The building is of Barnack and ashlar limestone construction with 16th century red brick repairs.
- 2.2.13 The Grade I Franciscan Refectory was built in around 1340, with later 16th, 17th and 18th century partial rebuilds. Built from Barnack and ashlar limestone, it was converted prior to 1730 into an eight bayed barn with thatched roof.
- 2.2.14 The 17th century Grade II listed barn at Denny is built from reused medieval limestone ashlar blocks and gault brick.

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Undesignated assets

2.2.15 The Cambridge HER holds 328 records for undesignated heritage assets in the search area. These span all periods of human occupation from the Palaeolithic through to modern day.

Palaeolithic and Mesolithic (c.500,000-4000BC)

2.2.16 The majority of the evidence for Palaeolithic and Mesolithic activity within the search area comes from chance finds of stone tools. Two Palaeolithic polished stone axeheads (05358 and 05473) and one Mesolithic flint axehead (06352) have been recovered from the area, with the two Palaeolithic finds being located within the Site itself. Further to this, an assemblage of Palaeolithic animal bone was also found along with the polished axe (05358).

Neolithic (c.4000-2500BC)

2.2.17 As with the earlier prehistoric period, the Neolithic is represented by findspots. Within the search area a total of sixteen stone and flint tools have been collected. The majority of which have been recovered from land to the immediate east of the Site, in the peat close to the river. The most notable of these findspots is a cache of three Neolithic flint axeheads, one Neolithic greenstone axehead and one Middle Bronze Age palstave (CB15650). The only other activity from this period within the search area is an assemblage of Neolithic pottery and struck flints uncovered *c*.1km north-west of the Site (05395 and 08656B).

Bronze Age (c.2500-800BC)

- 2.2.18 Little evidence of Bronze Age activity has been uncovered within the search area. What definitive information there is is limited to three findspots of an unlooped bronze palstave axe (see above), a flint dagger (06356) and fragments of Beaker pottery (06337) to the immediate south-east of Site.
- 2.2.19 Situated just beyond the northern limits of the Site are the remains of two barrows which are attributed to the Bronze Age period (09655 and 09928). Approximately 1.5km north-east of these two barrows is a ring ditch cropmark (09239), also attributed to this period. Finally, an archaeological evaluation (ECB 537) approximately 1.2km north-west of Site identified a number of pits and postholes of a Late Bronze Age date (CB 14678).

Iron Age (c.800BC-AD43)

- 2.2.20 Information on Iron Age activity is slightly more prevalent across the search area, however no archaeological remains of this date are known within the Site itself. Evidence is seen primarily through findspots and archaeological investigations. To the east of the Site, a single findspot of a La Tène brooch has been found in Bottisham Fen (06526). To the west of the Site a greater number of findspots are known, consisting of pottery (08400, 08594A and 11560A) and human remains (08656).
- 2.2.21 Archaeological investigations within Waterbeach itself have produced low levels of remains, comprising a group of Middle Iron Age intercutting pits (MCB 19562) producing an assemblage of pottery and animal bone, and elsewhere a ditch with up to three parallel lines of postholes (ECB 4531), also producing pottery.

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Romano-British (c.AD43-410)

- 2.2.22 Remains of Roman date dominate the landscape across this area. Within the Site a number of findspots are recorded, namely pottery (05349, 11565) and quern stone (05474). Further to this, a large assemblage of finds was recovered from within the airfield whilst digging a cable trench in the mid 1980s (11331). The assemblage consisted of mortaria, imitation samian, colour-coated wares, hypocaust tiles, four coins, four nails, a bone comb, animal bone and a fragment of human skull.
- 2.2.23 Also situated within the airfield to the south of Denny Abbey is Soldiers Hill (05521). This earthwork is attributed to the Roman period, due to a collection of Roman pottery being collected from the location (Hall 1996), but its exact origin is unclear. It was originally recorded as a tumulus and is labelled on the 1st Edition Ordnance Survey map (1887) as such; however there are also a number of other linear earthworks surrounding it, which are labelled as 'entrenchments'. As a result, there are some reports which state it to simply be a spoil mound, left after digging these surrounding ditches.
- 2.2.24 Low levels of Roman remains have been collected from the grounds of Denny Abbey, in the form of pottery (05534) and a beehive quern (02038). Further findspots to the north and east of the Site consist of pottery (05475, 05629, 06467a, 06506), quern stone (05325) and human remains (05585). Roman remains within Waterbeach village have also been uncovered, namely pottery (05312a, 05410, 09024A and 11560), coins (02296), a 2nd century gilt and enamelled disc brooch (09702) and a wooden canoe (05454) recovered from Car Dyke.
- 2.2.25 The western side of the Site is bounded by Car Dyke (09823) and the Roman road known as Akeman Street (05725, 05766), constructed in the mid 2nd century AD, which runs north-east from Cambridge, past Landbeach, Stretham, Ely and on to Littleport (Macaulay 1997b). The modern A10 follows its course along the edge of the Site. To the west of the Site, a large number of cropmarks attributed to the Roman period have been identified (such as 05296, 08399, 08402, 08832, 08835, 08839, 08844, 08846, 11089, 11097 and 11127) along with findspots (e.g. 05233, 05235, 05236, 05296A, 05315, 05350, 05355, 05356, 06155, 08593 and 10482) of pottery, metalwork and quern stone. Sub-surface features of a Roman date have also been revealed during archaeological interventions in this area.

Anglo-Saxon (c.410-1066)

2.2.26 Little in the way of Anglo-Saxon remains are known within the search area; and where they have been uncovered, they are generally concentrated close to and within the surrounding villages. Within Waterbeach, a findspot of Anglo-Saxon pottery has been collected (11560B) and archaeological remains have been identified at three locations (05312, 09024 and CB14602) producing assemblages of Early Saxon pottery, worked bone and glass. Remains of this date have also been identified at Landbeach (CB15275). A single findspot of an Anglo-Saxon brooch (05357) has been found close to Car Dyke to the immediate west of the Site.

Medieval (c.AD1066-1500)

2.2.27 As with evidence from the Anglo-Saxon period, medieval activity in the search area is concentrated within the village cores. The Scheduled medieval abbeys of Denny and Waterbeach have previously been discussed (in paragraph 2.2.6), as has the shrunken medieval village of Landbeach (see paragraph 2.2.8). The majority of other known medieval remains have been identified through archaeological investigations but



chance findspots are also known (such as 05232, 06467, 06506A and 09024B). Further medieval activity is recorded in the immediate vicinity of Denny Abbey, with four middens having been identified (09657, 09658, 11566 and MCB16281).

Post-medieval and modern (c.1500-present)

- 2.2.28 Evidence for the post-medieval period is predominantly represented by structures dotted across the fens to the east of Site, built when they were drained. Bottisham mill (06355) was built in 1768 by the Swaffham and Bottisham Drainage Commission in order to drain Bottisham Fen. It was later also used to (unsuccessfully) drain Bottisham Lode. As a result, the Horningsea wind pump (06341) was built in 1821. This wind pump was taken down in 1849 and its materials used to build the new engine house. A number of farm buildings were constructed on this newly drained land, such as Lode Farm (06530) built in 1808 close to the River Cam and Fen Farm (06504), also built in 1808 on the edge of Bottisham Lode. Further adaptation of the fens can be seen at such places as Swaffam Lock (06532), located close to Lode Farm, which was built in the mid 19th century.
- 2.2.29 Within the Site itself, located to the south of Soldiers Hill is a well (MCB 19281). The age of the origin of the well is unknown, but its brick surround is believed to be of 19th century date. The surround has a stone lintel inscribed with the words "Spring Up, O Well", a biblical quote from the Old Testament, Numbers 21, verse 17. In the 19th century, this farmland was owned by James Toller, the Deacon of Waterbeach Baptist Church, who is attributed with building the surround.
- 2.2.30 Modern activity across the Site is dominated by Waterbeach barracks and airfield (CB 15155). This is discussed in detail in Section 4. In the south of the search area notable assets are seen in the form of three Second World War pillboxes (MCB 16404, MCB 16405, MCB 16406) and at the heart of Waterbeach village, the war memorial (MCB 20262).

2.3 Previous archaeological investigations

- 2.3.1 A total of 57 archaeological investigations (known in the HER as 'events') have taken place within the search area (Fig. 4). A number of these are located within the Site, however all bar two of these are confined to within the Scheduled grounds of Denny Abbey.
- 2.3.2 To the immediate north and east of Denny Abbey, a large evaluation was undertaken in 1989 (ECB 448). During the fieldwork an evaluation trench was excavated through one of the Bronze Age barrows (09928). Results showed that it was made up of two ring ditches surrounding a shallow mound of redeposited gravel which sealed an ancient ground surface. The trenching also identified Roman activity in the area and to the north (beyond the limits of the Site), with collections of animal bone and pottery being recovered.
- 2.3.3 In 2013 a watching brief (ECB 4356) on geotechnical test pits was carried out at Soldiers Hill, but no archaeological remains were observed.
- 2.3.4 A number of archaeological investigations have taken place around the periphery of the Site. In 2004 an evaluation on land adjacent to the entrance of Waterbeach barracks (ECB 2325) identified two west-northwest to east-southeast aligned parallel ditches of probable Roman origin. If these ditches continue westward, they would run through the southern end of the Site.

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- 2.3.5 A geophysical survey (ECB 4306) and trial trench evaluation (ECB 4299) were undertaken in 2014 immediately adjacent to the above site. A modern pipe trench running north to south was identified along with an extremely shallow east-northeast to west-southwest aligned ditch attributed to the medieval period. An evaluation to the immediate south-east of the Site conducted in September 2015 (ECB4343) identified a collection of pits containing assemblages of Roman pottery.
- 2.3.6 A series of archaeological works have been undertaken at the Waste Management Site over the years (ECB 539, ECB 2396, ECB2640, ECB 3062 and ECB 3438). Dense levels of 2nd to 4th century archaeology have been uncovered consisting of substantial boundary ditches, trackways and settlement activity with vast assemblages of finds being collected including pottery, worked bone, metalwork and guern stone.

2.4 Cartographic evidence

- 2.4.1 A search was undertaken of all historic manuscript maps and Ordnance Survey maps held at the Cambridgeshire Archives Office at Shire Hall in Cambridge. The maps available for study ranged in date from the late 16th century to present day.
- 2.4.2 The study of maps and associated historical sources helps to clarify the archaeological potential of the Site in two ways. Firstly, it suggests aspects of the medieval and later land-use prior to any modern development. Secondly, it pinpoints areas within the Site that as a result of development or quarrying potentially could have become archaeologically sterile. The maps relevant to the Site are listed in Appendix B.
- 2.4.3 Saxtons Map of Cambridgeshire, drawn in 1579 (Fig. 6) does not contain any detail of the Site itself but nonetheless does identify the Church of St John in Waterbeach and Denny.
- 2.4.4 The Map of the Great Levell of the Fenns by Jonas Moore from 1684 (Fig. 7) shows basic details of land division, some of which are still visible today; such as the division between Waterbeach Fenn and Waterbeach Joist Fenn. This north-south boundary is known as Bannold Drove on modern maps. Waterbeach Abbey is identified on this map, however Denny Abbey is not. Reference is made to Denny Abbey though, with fields to the north being labelled as Denny Abbey Hards and Denny Abbey Fenn. Two interesting landmarks are noted on this map. On the edge of the River Cam is the 'Garden Tree' illustrated by a tree and small square building. Further down the river another building is illustrated, called 'Brew House'. No HER data is known for either of these locations, nor are they shown on any later maps.
- 2.4.5 The Enrolled Inclosure Award Map, drawn up in 1813 (Fig. 8) shows how the parish of Waterbeach had been divided up and to whom the land now belonged. The vast majority of the Site is located on land labelled as Denny Bannold and Winfold Common, belonging to Persis Standley, the Lord of Waterbeach manor at the time of enclosure. Land to the east of Bannold Drove (labelled here as 'Private Road No. 9') has been divided up into thin field plots aligned broadly north-south and east-west. The vast majority of these boundaries are still in existence today.
- 2.4.6 First Edition Ordnance Survey Maps (e.g. Fig. 9) show that the land encompassed by the Site has not changed greatly prior to the construction of the airfield in 1940.

2.5 Aerial photographs

2.5.1 An aerial photographic survey of the Site was undertaken by Air Photo Services Ltd. (see Section 7). Figure 10 shows the location and extent of mapped cropmarks.

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- 2.5.2 The Scheduled earthwork remains of Denny Abbey to the immediate north of the Site have been mapped in detailed by (previous) topographic survey and are depicted accurately on the Ordnance Survey map base. Further associated banks and ditches can be seen to extend into the environs of the Scheduled area.
- 2.5.3 An extensive cropmarked landscape of droves, fields and enclosures which is likely to date to the Roman period lies to the immediate west of the Site. Some linear cropmarked ditches have also been identified outside and to the east of the Site.
- 2.5.4 Few archaeological features have been identified within the Site itself. These comprise a group of buried features that includes enclosure-like forms, mapped as possible ditches in the north-western area of the airfield which may be of prehistoric and/or Roman date. Some of the features shown within and beyond the search area on the west side of the map are thought likely to continue within/into the airfield perimeter. There are a large number of known Iron Age and Roman cropmark sites in the surrounding land and remains of this nature could reasonably be expected to extend into the development site.
- 2.5.5 Ditches on the south side of Denny Abbey may be contemporary with the use of the abbey and may extend into the north-western part of the proposed development area although none have specifically been recorded there. Traces of medieval ridge and furrow on the north side of Waterbeach may be identified when topsoil is removed, given the cropmark evidence (i.e. the below ground furrow will be present with the above ground ridge removed by later ploughing).

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3 Deposit Mapping

- 3.1.1 In this section, based on the mapping of all surrounding monuments and events, an attempt has been made to predict the existence of further remains, specifically within the Site. It should be borne in mind that only extremely limited archaeological investigations have been carried out within the Site itself. The opportunity therefore for archaeological remains to have come to light and be recorded within the Site is slight. This may be the reason for the scarcity of archaeological features, rather than reflecting an apparent absence of archaeology.
- 3.1.2 This report has shown that the Site lies within a wider landscape that contains a high degree of evidence for human occupation from the Palaeolithic period onwards. It is clear from the HER maps (Figs 2-5) that the land to the west and north of Waterbeach is dominated by known areas of archaeology. The land to the east has not been settled due to it being low, wet fen.

Palaeolithic and Mesolithic

3.1.3 Palaeolithic and Mesolithic evidence generally appears at low levels within the local landscape. The Site lies on sand and gravel deposits giving way to peat, within which artefacts of these periods are most often found. Even though two Palaeolithic finds have been collected from within the Site itself, it is considered that the potential for archaeological remains of this date to be **low**.

Neolithic

3.1.4 Neolithic evidence is more prolific across the search area, however it is still limited to findspots. As with the Palaeolithic and Mesolithic, the position of the Site on the edge of the peat gives explanation to the presence of these finds as a location of transhumic activity. Even though three polished axe heads have been recovered within 100m of the Site limits, the likelihood of Neolithic remains is considered to be **low**.

Bronze Age

3.1.5 Evidence for Bronze Age activity is confined to two barrows immediate north of the Site, close to Denny Abbey. Another double ring ditch further to the north adds extra weight to there potentially being a funerary landscape within this area. It is therefore considered that the potential for archaeological remains of a Bronze Age date (specifically across the northern portion of the Site) is **high**.

Iron Age

- 3.1.6 The Iron Age is represented within the search area by findspots and archaeological investigations. The archaeological remains uncovered through fieldwork are situated within Waterbeach village itself, approximately 0.5km from the southern limit of the Site. The closest findspot is located within 150m of the Site.
- 3.1.7 A large number of cropmarks are known to the west of the Site, and whilst these are predominantly believed to be of Roman origins, it would not be unreasonable to suggest that Iron Age remnants could also be at or near these locations. As a result, the potential for Iron Age remains is considered to be **moderate**.

Romano-British

3.1.8 The archaeological record within the search area is dominated by evidence of Roman activity. A number of Roman remains have been identified within the Site itself. The



most notable is findspot 11331, consisting of an assemblage of high status goods including mortaria, imitation samian, hypocaust tiles, coins and human remains, all of which were unearthed in the 1980s during the digging of a cable trench. The HER also states that what was transcribed was just a small selection of the total finds recovered. The implication of these finds suggests that there could be the remains of an affluent farmstead or villa in the immediate vicinity, along with potentially a cemetery.

3.1.9 Further to this, the location of the Site immediately adjacent to Car Dyke and Akeman Street would also indicate that this area was well settled during this period. The large number of cropmarks to the west of the Site reinforces this. Archaeological investigations to the north, west and south of the Site have uncovered a plethora of Roman remains. It is therefore considered that the likelihood of Roman remains of the Site itself is high.

Anglo-Saxon

3.1.10 Evidence of this period has been recorded within the search area, although not in great quantities. Apart from a lone findspot to the immediate west of Site, all other evidence has come from archaeological investigations within the cores of Waterbeach and Landbeach. Overall there is low potential for Anglo-Saxon archaeology to be present within the Site.

Medieval

- 3.1.11 The medieval period is well represented within the search area, however known remains are predominantly located within the Waterbeach and Landbeach villages. Within the Site itself are the medieval remains of Denny Abbey. In the fields which surround the extant buildings there are clear upstanding earthworks and cropmarks; along with a number of medieval midden spreads. The AP survey (see Appendix C) highlighted the presence of a series of ditches on the south side of Denny Abbey, which have the potential to be contemporary.
- 3.1.12 Extending southward from the Abbey is also a causeway (shown on the 1813 Inclosure Map). This causeway traverses the Site, merging with the High Street close to the Site entrance. The eastern side of the Site has been utilised as arable land ever since it was drained in the mid 1600s, and as such is unlikely to contain evidence of settlement or other non-agricultural activity (however the presence of ridge and furrow is possible).
- 3.1.13 The vast majority of field boundaries seen across the Site are still the same as those laid out after enclosure, showing that little modification has occurred. Overall there is considered to be **low-moderate** potential for medieval activity on the Site; which a greater chance of medieval remains in the fields adjoining the Scheduled area of Denny Abbey.

Post-medieval and modern

- 3.1.14 Historic maps show the Site to have been used for agricultural purposes throughout the post-medieval and early modern period. The only buildings of this date being shown within the Site on the First Edition Ordnance Survey are farm buildings belonging to Winfold Farm. These buildings are situated next to the causeway which runs south from Denny Abbey to Waterbeach High Street (see paragraph 3.1.12 above), indicating that this routeway was still in use during the late 1800s.
- 3.1.15 The first alteration to this landscape, occurring in the late 1800s was the construction of the London to Norwich Great Eastern railway, which runs through the search area and



marks the eastern limit to the Site. The construction of the barracks and airfield on the Site in 1940 was the only major significant alteration in the landscape for centuries (see Section 4 for greater discussion). Thus, there is considered to be **high** potential for post-medieval and modern remains.

4 WATERBEACH BARRACKS AND AIRFIELD

Introduction

- 4.1.1 In order to accurately assess any potential impacts the development might have on the wider historic landscape, a walkover survey of the proposed Site always is deemed necessary.
- 4.1.2 The walkover survey of Waterbeach barracks and airfield was carried out on the 6th August 2015. The area encompassing the barracks was fairly well maintained with a mixture of mown grassy areas and more wild looking long grass scrub. The airfield is partially being utilised by tenant farmers, with the main runway being used to dry hay. The fields to the immediate north of the airfield are still being farmed and contained wheat stubble. The eastern side of the airfield which used to house the Waterbeach Golf Club was very overgrown with long grass and scrub. The remaining green space across the airfield was taken over by a mixture of short grass and wild tall scrub.
- 4.1.3 The objective of the walkover survey was to view on the ground any recorded heritage assets such as buildings and cropmarks as well as any heritage assets which have so far remained unrecorded. The walkover survey also aimed to find any areas of modern disturbance that may have destroyed heritage assets. Photographs were taken of the Site and of views from the Site of the wider landscape (Fig. 11 and Plates 1 to 19) in order to assess impact and setting.
- 4.1.4 No unrecorded heritage assets were visible during the walkover survey and no new cropmarks or earthworks were seen.

History

- 4.1.5 The following historical information is taken from the Pastscape website (http://www.pastscape.org.uk/) and Historic England (https://historicengland.org.uk/).
- 4.1.6 The barracks and airfield at Waterbeach were built in 1940 and opened as RAF Station Waterbeach in 1941 with the arrival of 99 Squadron from RAF Newmarket. The airfield was under the control of Royal Air Force Bomber Command and also utilised by 1651 Conversion Unit and 514 Squadron. The wartime airfield was built as a Scheme 'M' airfield, consisting of an 'A' shaped flying field with three concrete runways and Type J, T2 and B1 aircraft hangars.
- 4.1.7 The perimeter track which linked the runways also gave access to 33 pan aircraft dispersal points. At the south-western end of the airfield, a single taxiway (still extant today) crossed Denny End Road to give access to a further three dispersal points (which are now lost beneath the Denny End Industrial Estate). The main role of the airfield was to launch bomber attacks on enemy territory and it is known to have been involved in the bombing of Cologne and Berlin.
- 4.1.8 After the close of the Second World War, the airfield was transferred to Transport Command, and its first new duty was as a centre for transporting returning servicemen. Later, during the Cold War it was a base for jet fighter-bombers and received visits from a series of foreign air forces. A number of new buildings were added during this time, including an armoury.



- 4.1.9 In 1963 the airfield was transferred to Maintenance Command, but was used specifically as the base for the RAF Airfield Construction Branch Depot, where personnel were trained in the construction trades. Then in 1966 the airfield transferred to the Army Royal Engineers and was renamed Waterbeach Barracks. It became the base for 39 Engineer Regiment, who were joined in 2007 by the 25 Engineer Regiment (both of which were part of 12 Air Support Engineer Group).
- 4.1.10 Until the closure of nearby RAF Oakington in the early 1970s, the main runway at Waterbeach remained active, along with the control tower; and was used as a relief landing ground by teams undertaking advanced pilot training. More recently the former airfield was used as a training area for troops, which included amphibious landings in the lake.
- 4.1.11 In July 2011 the Ministry of Defence (MoD) announced that Waterbeach Barracks was to close and the Site be disposed of. In the summer of 2012, the 39 Engineer Regiment was moved to RAF Kinloss, the 25 Engineer Regiment was also disbanded that summer and the headquarters of 12 Air Support Engineer Group was relocated to RAF Wittering in early 2013. The barracks finally closed on 28th March 2013.

Assessment

- 4.1.12 The purpose of the following section is to discuss the barracks and airfield, including some of the buildings within it. Thought will be given to the potential for sub-surface preservation across the Site, along with any notable historic landscape issues.
- 4.1.13 All of the domestic buildings, along with the Officers and Sergeants Mess within Waterbeach barracks conform to the 'M' Expansion Scheme designed by the Air Ministry's Directorate of Works and Buildings, Archibald Bulloch and his successor, J.H. Binge. However since their original construction, a large number of the roofs and windows at Waterbeach have been replaced.
- 4.1.14 A number of telling signs in its construction show that the barracks and airfield are a transitional form of airfield design, moving from pre-war permanent airfield ideals to austerity driven temporary wartime airfield standards the so-called Scheme 'M'. The principal buildings were executed in good quality dark red brick, but growing wartime concessions are represented by the two J-type hangars, which used more prefabricated parts and required less skilled labour to erect.
- 4.1.15 The adherence to pre-war standards is also reflected in the layout. The basic skeleton is formed of two interlocking rectangles of roads orientated north to south and east to west. Building density is generally low with grassed areas and tree planting between structures. It is known that in 1948, over 800 trees and shrubs were planted here (Cocroft 2012). The purpose of the spaced layout was the result of passive air raid measures, to minimise the damage that might be caused during an attack.
- 4.1.16 There is a single tree lined entrance to the Site from Denny End Road, which runs for around 350m northward, much in the manner of a country house driveway, in that the first building to come into view is the most significant. In this instance it is the Regimental Headquarters (known as the RHQ, labelled '4' on Fig. 12). The RHQ consists of a symmetrical two-storey red brick building with single-storey wings (Plate 1). In front of the building are kept lawns lined with mature trees and box hedge flanks the path up to the flagpole and building entrance.
- 4.1.17 In the south-easternmost corner of the Site is the Officers Mess ('5' on Fig. 12 and Plate 2). Approached by a sweeping road, the Mess is symmetrical in design and comprises a single-storey central red brick building which is flanked by two, two-storey



- 'L'-shaped wings. The façade has a projecting porch at the centre supported by four unfluted doric-style columns and three arched window openings in a Neo-Georgian style.
- 4.1.18 This area of the Site is the most exposed in terms of being visible to existing properties outside of the development area, with the Mess being enclosed on three sides by housing. The properties on Cody Road are likely to be most affected visually by the new development.
- 4.1.19 Located behind the RHQ, where the two rectangles of the roads intersect, is the parade ground (labelled '7' on Fig. 12), the central focus of all military stations. Here however, later redevelopment by the Army has seen the southern half of the parade ground given over to the construction of barrack blocks ('24' on Fig. 12). All the later constructed buildings across Site are identifiable by having been built in buff-coloured brick rather than red. The original barrack blocks ('22' on Fig. 12) consist of H-shaped buildings marked externally with a large white painted letter (Plate 3). Originally there were eight on the Site, but only four now remain (the remainder being superseded by the newer blocks).
- 4.1.20 The later barrack blocks located on the eastern side of the Site are overlooked by the flats on Abbey Place. Any redevelopment of this area will need to take into consideration the views both to and from these flats.
- 4.1.21 To the west of the parade ground are a number of technical buildings, which are dominated by the water tower and the tall brick chimney of the boiler house ('8' and '11' on Fig. 12 and Plate 4). Other buildings in this area include general stores, a turret trainer building, parachute store and Nissen huts ('9', '12', '13' and '28' on Fig. 12 and Plate 5).
- 4.1.22 The western and northern areas of the barracks contain squadron hangars and workshops (labelled '1', '2' and '3' on Fig. 12). Plate 6 shows one of the two J-type hangars (the other being located to the east of the control tower). The J-types are of brick and steel construct with curved steel lattice girder roofs and projecting steel roof braces. The hangar in this plate was used as the Royal Electrical and Mechanical Engineers workshop. The grey hangar partially visible behind is one of the T2 type hangars, used by 53 Squadron. The other two T2 hangars are located in the north-east of the barracks and were used for routine maintenance and light repair work. The B1 type hanger situated just to the east, was the location for repairing heavily damaged bombers.
- 4.1.23 On the western perimeter of the barracks is the air traffic control tower ('14' on Fig. 12 and Plate 7), which was built in the late Art Deco Moderne style. The original design included the use of a large glazed frontage with metal Crittall-type windows with horizontal banding (Cocroft 2012). The first floor control room has curved corners which are reflected in the railings of the outer balcony. This design is reminiscent of ocean liner design from the time and was followed through with porthole-like windows on the ground and first floors. During the 1980s the control tower was considerably altered. The original metal framed windows were removed and replaced with uPVC. On the upper storey, the curved windows were removed and bricked up. Further to this, two of the ground floor windows were also bricked up and two new doors put in on its eastern side. It was also at this time that the building was painted light green.
- 4.1.24 Situated to the north-east of the control tower is the site of the airfield's Underground Battle Command Headquarters (labelled '17' on Fig. 12). This has now been demolished and no obvious traces of it survive on the surface. However, evidence for



its underground chamber could potentially still remain. The purpose of this underground building was, in the event of a ground assault, to coordinate the defence of the airfield. This would have been in conjunction with other fixed defences across the Site, such as pillboxes. A pillbox is known to have been located at the north-western limit of the airfield, but all that is left to identify its location now is a small group of trees. It is improbable that this was the only pillbox to line the perimeter of the airfield, and so there may be others which have also been demolished or are potentially yet to be discovered.

- 4.1.25 In the main airfield itself, the eastern portion is occupied by the remains of the former golf course (Plate 8). Prior to creation of the golf course, this area contained a number of the aircraft dispersal points. Due to the overgrown nature of the area, it was not possible to determine the extent to which the area had been landscaped. However, if landscaping was carried out in order to create this golf course, then there is potential for loss of sub-surface archaeological remains across this area.
- 4.1.26 The north-easternmost point of the airfield is fairly exposed within the wider landscape. Views from this location across to Denny Abbey (Plate 9) are unobscured, reaffirming how the abbey is situated on a small fen island. These clear views to (and conversely from) Denny Abbey would directly affect the historic setting of this Scheduled Monument. The foreground of Plate 9 also highlights that parts of the Site are presently being farmed. Ploughing can directly affect the preservation of sub-surface remains, however there are a number of variables including the thickness of overburden and the actual depth of ploughing. Fieldwalking this area immediately post-ploughing would give an indication as to whether archaeological remains are being disturbed or not.
- 4.1.27 The main north-east to south-west orientated runway (Plate 10) extends for just under 2km and is 45m wide (with wider 90m sections at either end). At present the runway is being used for the drying of hay. The western side of the runway is lined by a row of large mature trees and the north-eastern side by two large copses of mature trees. Whilst the runway itself is not visible, both of these tree areas are highly visible from the wider landscape due to their size and height.
- 4.1.28 The land to the north of the east-west perimeter road is known to have been considerably altered throughout the life of the airfield. A small number of the aircraft dispersal points are still in existence at the north-western edge of the Site, immediately adjacent to the A10, but originally there were more. These were located on the southern side of the perimeter road, opposite the ammunition store. No evidence of these dispersal points can be seen on the surface, but there would be potential for them to be identified below ground. It is also possible that these dispersal points have disturbed sub-surface archaeological remains.
- 4.1.29 The bomb store seen on Site today is only a tiny fragment of the original area given over to the storing of ammunition. During the life of the airfield most of the larger bombs would have been held in open storage, with only the smaller and more sensitive components being held indoors. Originally it had a rectangular layout with a number of internal tracks and divisions. The unusual shape of the present ammunition storage area is the only remaining evidence for the original larger layout. Intrusive archaeological works would have the potential to identify the original extents of this area, along with ascertaining the degree of disturbance to archaeological remains.
- 4.1.30 The construction of this storage unit has interacted with and potentially disturbed Soldiers Hill (see paragraph 2.2.23), which is located in the north-east corner of the

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- area (Plate 11). The area encompassing this possible man-made mound is extremely overgrown, being almost completely covered in dense nettles. Nonetheless, the mound is still identifiable. A landscape survey of this monument would be an advisable step, as this would aid in clarifying its extent and level of preservation. Also located in this area is the well head (see paragraph 2.2.29, Plate 12).
- 4.1.31 Situated on the south side of the perimeter road, opposite the ammunition store, is a fairly substantial earth mound (Plate 13). A well rutted off-roading track runs from the perimeter road over the top of this mound and down to the east-west runway. The crest of this mound contains evidence for possible activity, a number of circular hollows reminiscent of quarrying could be seen (Plate 14). Nonetheless, considering the naturally flat landscape of the area, it would seem most plausible that this mound is man-made (potentially using earth removed from the lake to the immediate south), with the hollows seen on the surface being created by the earth sinking into voids within the mound itself. However intrusive archaeological investigation would be needed to confirm this hypothesis.
- 4.1.32 The western half of the east-west runway has been greatly modified, as has the top half of the north-west to south-east runway. The east-west runway has been reduced in width in places and a number large circular hay stores have been built, and subsequently removed (Plate 15). These hay stores consist of a large concrete sided circle being built into the runway and then filled with gravel. The purpose being to stack hay bales on the gravel which is free draining, so when it rains the lowest bales do not become saturated and rotten. It is clear from the plate that any archaeological remains in this area are likely to have been severely disturbed.
- 4.1.33 In the area between the two aforementioned runways is a large man-made lake (Plate 16), which was used by the Royal Engineers to train for amphibious landings. This is a substantial body of water (covering 7.5 hectares) which, undoubtedly, has meant the loss of archaeological remains.
- 4.1.34 The south-western side of the airfield runs parallel with Car Dyke. This area still contains the remains of some of the aircraft dispersal points, along with six concrete revetment walls, which were built in the 1950s to protect aircraft on the ground (Plate 17). It is likely that these revetments have substantial foundations, which would undoubtedly have disturbed any archaeological remains. Large areas of hardstanding have also been laid in this area.
- 4.1.35 The southern limit of the Site skirts around the edge of housing developments and office buildings which form the northern periphery of Waterbeach village. Views to and from these existing buildings will need to be considered. Further to this, Waterbeach cemetery is situated adjacent to the entranceway to the Site. At present, views out from the cemetery westward are dominated by one of the T2 hangars. The remaining three sides of the cemetery are lined by tall trees.
- 4.1.36 Overall the barracks and airfield show a variety of historical remains which tie the Site to its past. Taking in the area as a whole, there is evidence for a certain degree of disturbance from the original construction of the Site, particularly in the barracks area where underground utilities are likely to be prolific. Nevertheless, the large areas of open green space between and surrounding the runways are likely to hold the best chances for archaeological survival. Further to this, it has been recorded that during the war at least one Wellington bomber crashed on the airfield (Cocroft 2012). Therefore it is possible that traces of this crash site may be found.

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5 Degree of Survival

5.1.1 Based on the description of known finds and sites within the search area, as defined in the previous sections, a rating of low, moderate or high can be predicted for the survival of further remains within the Site:

Period	Rating
Palaeolithic-Mesolithic	Low
Neolithic	Low
Bronze Age	High
Iron Age	Moderate
Romano-British	High
Anglo-Saxon	Low
Medieval	Low-moderate
Post-medieval	High

- 5.1.2 It is necessary to assess the degree of survival of archaeological remains within the Site or in other words, what actions (either natural or man-made) may have affected any potential remains. Prior to the construction of the barracks and airfield in 1940, the entirety of Site is known to have been under arable cultivation since the early 1800s. Ploughing (through techniques such as medieval and post-medieval ridge and furrow along with modern mechanical farming equipment) will have truncated the tops of archaeological features, but depending of the depth of the ploughing will not have completely destroyed them. Ploughing will also have disturbed artefacts within the tops of features and brought them to the surface. As a result, it is likely that below ground features, if present, would be detected by fieldwalking after harrowing.
- 5.1.3 The construction of the barracks and airfield could potentially have had a severe impact on the survival of sub-surface remains. The land encompassed by the barracks in particular is likely to have been disturbed by building footings and pipe trenches for drains and electricity. There is greater potential for the survival of archaeological remains within the area of the airfield. Large areas of green space (in the form of both cut grass and overgrown scrub) are located between and around the runways.
- 5.1.4 Further to this, during the site visit it was noted that an area containing concrete hardstanding had been recently stripped by machine (Plate 18). This stripped area revealed that during the construction of the hardstanding, the overburden had been removed (with a flat-bladed ditching bucket) down to the natural land surface, then a layer of breathable geotextile had been laid. On top of this were two layers of gravel and hardcore, totalling approximately 0.3m in thickness; followed by a second geomembrane and finally by the concrete platform. If this approach has been employed across the rest of the airfield, then the potential for archaeological preservation could be good.
- 5.1.5 However, it is worthy to note that airfields are notorious for containing a very large number of sub-surface utilities. Whilst almost all of the buildings on Site are confined to the barracks area, a small number were also noted across the rest of the airfield. Further to this, during operation the runway would have undoubtedly been illuminated, meaning that there is a high probability for service trenches to be present across the area.

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6 POTENTIAL IMPACTS

- 6.1.1 Development undertaken within rural areas necessitates a number of considerations to be taken into account. These include the potential impact on the landscape, highway implications, impact on rights of way, impact on neighbouring properties and impact on archaeological and heritage assets (Fig. 13).
- 6.1.2 The impacts of development can be assessed as direct and indirect, temporary and permanent. A direct impact is an impact that will occur to the physical fabric or land of an asset and its curtilage, and will include any impact upon the setting of that asset. An indirect impact is one that might arise as a consequence of the construction scheme. For example it may affect viability of land, leading to changes in the management or land use of archaeological and/or historic landscape features.
- 6.1.3 A temporary effect (primarily upon the setting of archaeological monuments or historic landscape features) may occur during the construction scheme. These effects may be removed following the completion of the construction process and their effect upon the historic environment is therefore reversible. A permanent effect will occur for example as a result of the construction and operation of a scheme including landscaping, land intake, excavation of a reservoir and associated drainage, culverts and water control structures. A permanent effect is not reversible and will therefore include a below-ground impact upon archaeological deposits.

6.2 Sub-surface remains

6.2.1 It can be said that any proposed development on the Site has the potential to have a direct adverse and permanent impact on below-ground archaeological remains, namely from building foundations, as well as from the laying of underground services. The use of any temporary works compounds during the construction phase and permanent or temporary vehicle access ways into and within the Site can also involve considerable ground disturbance to a significant depth.

6.3 Historic landscape

- 6.3.1 The effects on the historic landscape and its setting need always be considered when planning a new development. It is important to consider whether the development would impact or alter the way in which people experience any heritage assets within this landscape, and whether it has the ability to reduce the positive contribution of their existing setting.
- 6.3.2 The Site is located in a broadly flat landscape on the periphery of an area which has been greatly altered by development. However, towards the north-east, the landscape quickly gives way to agricultural farmland containing dispersed farms and cottages, which has remained unchanged since the medieval period. The lack of topography means that there is little to provide a visual barrier to the Site. Nonetheless, approaching from Cambridge along the A10, the Site is hidden behind a large soil bank which runs parallel with it for 1.2km from Denny End Road to the Sunrise Business Park. The remainder of the western limit of the Site is partially obscured by a line of mature trees. Further planting along this line would bolster this visual barrier.
- 6.3.3 The northern and eastern portions of the Site are most exposed because this area is firmly placed in low open fenland. The visual envelope across the Site from Long Drove and Cross Drove is expansive, with only the occasional short sections of tree and hedge lines being present to break up this view.

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- 6.3.4 To a certain extent, the landscape within the Site has already had its historic character altered by the barracks and airfield. However when taking in the landscape setting, the airfield can be considered fairly low impact due to its necessity for flat open vistas in order to allow aircraft to land. The barracks, whilst being of 20th century construct, are situated on the immediate periphery of Waterbeach village; and so to a certain extent, merge with the village when taking in the landscape viewport from afar.
- 6.3.5 The Site is known to contain one public byway (Bannold Drove on the north-eastern side of the Site). In the wider search area, there is also a public footpath along the approach to Denny Abbey (to the north) and a number which run along the River Cam (to the east). It is unknown at present whether the public byway will be directly affected as a result of the development; however all these public routeways will be affected from a landscape point of view in that the wide vistas across this flat fen landscape will be altered to give views of the new town development.
- 6.3.6 The eastern side of the Site is marked by the railway line. The north-easternmost corner of the Site is situated where Cross Drove meets the railway line with a level crossing. If development on this portion of Site is eventually undertaken, there would be increased traffic on this crossing and therefore increased safety measures would need to be employed. As the railway line travels toward Waterbeach station, the line is raised up on an embankment. Portions of the embankment have been lined by trees, but the planting of more would reduce visibility along with noise.
- 6.3.7 Denny Abbey, situated to the immediate north of the Site, has the potential to have its historical landscape setting irreparably altered as a result of the development (this is discussed in further in paragraph 6.4.5 below).
- 6.3.8 Overall, the Site is located within an active landscape with partial views of roads, modern buildings and a limited sense of tranquillity (on the western side of the Site at least), meaning that the landscape is reasonably tolerant to change.

6.4 Heritage Assets

Car Dyke

- 6.4.1 The Car Dyke marks the south-western boundary to the Site. This canal is a nationally important heritage asset, protected in part as a Scheduled Monument (although not the section within the Site). The condition of the Car Dyke where it passes through the Site is not clear and may have been damaged during the period when the airfield was constructed or in use. However, it merits protection and could provide an opportunity to make it a strong and attractive wet ditch boundary to the Site.
- 6.4.2 Consideration should also be made in relation to the earthen bank which at present obscures the Site from the Car Dyke and A10. Maintaining the bank would reduce the development's impact on the landscape and reduce noise from the A10. Conversely however retention of this bank would obscure the Car Dyke from the occupants within the new development.

Soldiers Hill

6.4.3 The 90m by 130m area of earthworks occupied by Soldiers Hill, just 200m south of Denny Abbey is the only upstanding surviving remnant of Roman activity within the Site. Ditches and a possible tumulus were mapped in this area of uncultivated ground prior to the construction of the airfield.

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6.4.4 Assuming that their continued survival can be confirmed, these earthworks merit preservation as a rare extant fragment of the Roman landscape. It would be advisable for the area encompassing the earthworks to be surveyed in order to confirm the nature and condition of the earthworks. Assuming their survival is confirmed, it would be advisable considering its proximity to Denny Abbey that this area be kept in an undisturbed condition as part of the land area retained as the setting for the abbey (see below).

Denny Abbey

- 6.4.5 The complex of medieval monastic buildings and pasture fields that immediately surround them, including the surviving earthworks and sub-surface deposits which together form Denny Abbey, are a heritage asset that is both highly important and relatively well understood. They are also all protected as a Scheduled Monument.
- 6.4.6 The following is a brief assessment of the considerations for protecting the setting of Denny Abbey. Urban&Civic will be commissioning a separate and more robust report on this topic (Joanna Burton pers. comm.).
- 6.4.7 Whilst there is no question of any direct impact to Denny Abbey resulting from the new settlement, there are key issues to be considered by the proposed development. The most important of which being the need to preserve the significance of this asset through appropriate treatment of its setting (see Fig. 13).
- 6.4.8 The positive contribution that setting makes to the significance of Denny Abbey reflects our understanding of the relationship between its medieval history and the current landscape setting. When the original Benedictine abbey was founded in the 12th century, Denny was a small island of dry land on the fen edge, accessible from the south by a causeway. There was a second smaller island beyond Denny to the northeast at Chittering, also linked by a causeway. The subsequent draining of the fens has radically altered the landscape setting of Denny. It is no longer an isolated island of dry ground. It is now surrounded by arable fields with the airfield to the south and an industrial park to the west.
- 6.4.9 Plate 19 shows a panoramic view from the present Denny Abbey car park southward, taking in the Denny Abbey earthworks, the Site and its surrounding landscape. Within the view, the ammunition store located within the airfield to the south of Soldiers Hill can clearly be seen. Next to and just behind this, the large grassy mound to the immediate north of the lake can also be seen. This highpoint in the airfield is very noticeable. Immediately behind both the ammunition store and this mound is a line of mature trees. This is the tree line which runs south-southwest along the edge of the main runway.
- 6.4.10 Continuing across the viewport, the large mature tree line marks where the runway branches west. The stubble fields in front of this tree line are within the land owned by the DIO and fairly visible due to the low vegetation at the limits of the Denny Abbey land. At the very far end of the view (and outside of the limits of the Site), the building roofs belonging to the Cambridge Research Park can be seen.
- 6.4.11 Despite this encroachment of development, Denny Abbey still exists in an essentially rural landscape, detached from other settlements. This is what a visitor experiences today on approach to and whilst viewing the remains of the medieval buildings, along with views out from the abbey which are still largely to agricultural land.
- 6.4.12 It is inevitable that any development proposal will result in a certain degree of change to the visual envelope when looking out from Denny southward. However if the



- proposed new development is brought right up to the northern limits of the Site boundary (which borders the abbey's Scheduled area), then its historical setting will be compromised.
- 6.4.13 At present the zone between the northern limit of the Site and the border of the Scheduled Denny Abbey land is *c*.160m. Even with the introduction of new trees as screening to conceal the houses, which will take years to become established and thus fully effective, the current more open views across the landscape will certainly be reduced. Recommendations to protect the setting further would include consideration over the heights of building along with the type and use of vegetation along the boundary to minimise the visual impact. It is worthy to note that at present, the north-easternmost limits of the DIO land (from just east of Soldiers Hill) is marked by a tall earthen bank, similar to that seen adjacent to Car Dyke. If this bank were to be retained (or even extended) with natural planting, then it would greatly reduce the impact when taking in views of the historic landscape from Denny Abbey.
- 6.4.14 As discussed in paragraph 6.4.4, the retention of Soldiers Hill would increase the land buffer between Denny Abbey and the new development from 160m to almost 300m, which would far more protect the historic setting of Denny Abbey (see Fig. 13). The result of this clear buffer zone means that Denny Abbey would remain the focus of attention on its own island, with open views out into the fens to both the north and east.
- 6.4.15 Discussions with the Farmland Museum, Historic England and CCC HET over the implications of a new large local population and the approach to managing this within the Denny Abbey historic setting are mandatory and should be commenced at an early stage in the development process.

Waterbeach barracks and airfield

- 6.4.16 Waterbeach barracks (decommissioned in 2013) has its origins as a Second World War airfield, operational from 1941. The station contains evidence for 70 years of military history. The need to recognise the heritage significance of our recent military past has been a clear theme of English Heritage (now Historic England) policy through their National Heritage Protection Plan (NHPP), research for which has been carried out since 2011. The aim of the NHPP has been to assess the significance and character of 20th century military heritage, particularly for MoD sites which have been declared as surplus to requirement and put up for disposal. In many instances, due to their closed and secretive nature, their historical significance is not well understood, and many are inadequately recorded in national and local heritage databases.
- 6.4.17 In 2012 an historic asset appraisal was undertaken of the barracks and airfield by English Heritage (Cocroft 2012). A series of recommendations were given for further recording, investigation and management. The most pertinent are given below:
 - To inform initial master planning, a characterisation study should be considered to develop a deeper understanding of the built heritage of the airfield. Consideration should also be given to the airfields layout, the spacing of buildings, the use of materials and planting schemes. More information may be required on specific buildings to consider their rarity.
 - In the event of loss, or substantial alterations, a more detailed recording scheme may be required. Generally, most of the airfield buildings were built to standard Air Ministry drawings. Where drawings do survive a professional photographic record, with a short written note, will often constitute a sufficient record.

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- The operational history of the RAF airfield is reasonably well understood through the work of Hamlin (1987) and Bowyer (2010). However, its operational life as an army barracks has been almost twice as long as that as an RAF station. This history remains to be written.
- Attention is drawn to the constraints of the Site in terms of the potential for adverse impact on Denny Abbey and the appreciation of long views across the surrounding flat landscape. English Heritage would only be content with a sensitive scheme which respects and protects the setting of Denny Abbey.
- English Heritage recommends that any future proposals for the development of the Site should clearly identify any heritage assets, assess their capacity for retention or adaptation, identify opportunities for revealing and enhancing the significance of these assets.
- Given the emotive history of this place, and the close attachment people in Waterbeach feel towards the airfield and its service personnel, Statements of Significance might be prepared in consultation with the local community and other stakeholders.
- 6.4.18 As part of the asset appraisal and NHPP, Historic England also assessed whether the Site and/or any of the building contained within were worthy of Listed Building status, as defined by the Planning (Listed Buildings and Conservation Areas) Act 1990. After assessment, it was deemed that the Site would not be designated for the following principal reasons:
 - Architectural Interest: the aerodromes technical and domestic buildings have been extensively altered diminishing the architectural interest of such standardised buildings overall. The architectural interest of the well-head has been compromised by the loss of its historic landscape context and unsympathetic restoration.
 - Historic Interest: the operational importance of the base in Bomber Command is readily acknowledged, but does not outweigh the loss of historic fabric, fixtures and fittings.
 - Group Value: the Site has some group value with the Scheduled Monument at Denny Abbey and other national and locally designated assets, but this does not compensate for the loss of architectural interest through attrition.
- 6.4.19 Even though none of the buildings on the Site have been formally designated, the air traffic control tower has merited retention; the intention being for it to be restored and turned into an office for Urban&Civic plc. The preservation of the control tower is at present temporary, it will be retained until 2020, but may not necessarily be kept in the long term (Joanna Burton pers. comm). The well head located by the ammunition store is also likely to be preserved as part of the new town development (Andy Brading pers. comm.).
- 6.4.20 Whilst it is necessary to consider the barracks and airfield in the context of heritage significance, it is also important to recognise the potential for it to endow the new settlement with an identifiable character. Retention of the road and runway layout for example, would offer the opportunity to create a new settlement with a distinctive character, rooted in recent history.

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7 Assessment of Aerial Photographs



By Chris Cox

Summary

- 7.1.1 This assessment of aerial photographs was commissioned by Oxford Archaeology East to support a planning application for development at the site. It was researched and written as an update to an assessment of aerial photographs which was undertaken by Rog Palmer in 2007 (Palmer 2007) which considered a slightly different study area centred upon the former airfield at Waterbeach. The object of the assessment was to provide information on the location and nature of archaeological features which are visible on aerial photographs within and immediately adjacent to the site and to update the 2007 assessment.
- 7.1.2 Aerial photographs show considerable natural and developmental disturbance within the site. Natural disturbance comprises 'arcs and swirls' which show as crop marks that indicate either different soils, or different compaction within the geological substrates and is likely to extend ground throughout the site.
- 7.1.3 The Scheduled earthwork remains of Denny Abbey lie to the immediate north of the Site. These have been mapped in detailed by topographic survey and are depicted accurately on the Ordnance Survey (OS) map base. Their extent and location mapped by the OS corresponds exactly to their location and extent depicted very clearly at the 2008 timeline of Google Earth which was ortho rectified and checked against the map. This assessment can add nothing to the OS map extent for these earthworks. Further banks and ditches are likely to extend to the environs of the Scheduled area and visible remains of these are mapped for this assessment.
- 7.1.4 An extensive crop marked landscape of droves, fields and enclosures which is likely to date to the Roman period lies to the immediate west and outside of the site near the Roman Road Akeman Street and the Roman canal Car Dyke. Some linear crop marked ditches have been identified outside and to the east of the site. Few archaeological features have been identified within the site itself. These comprise:
- 7.1.5 A group of buried features that includes enclosure-like forms, mapped as possible ditches in the north-western area of the airfield which may be of prehistoric and/or Roman date. The site known as Soldiers' Hill which seems likely to be of Roman date where earthworks were levelled in 1941. Some continuation of features shown within and beyond the Study Area on the west side of the map must be expected to occur within the airfield perimeter. Ditches on the south side of Denny Abbey may be contemporary with use of the abbey and may extend into the northwest part of the Development Area although none has been recorded there. Traces of ridge and furrow of the medieval open fields on the north side of Waterbeach may be identified when topsoil is removed.
- 7.1.6 Post-war photographs have allowed the original extent of the airfield to be mapped of which the hard-standing of the dispersals and their access tracks may be encountered below the present topsoil. Photographs taken in 1943 show the airfield used by Lancasters of Bomber Command and in the 1950s there were Meteors on active service. One runway remained in use in the 1960s.
- 7.1.7 It is possible that further settlement and former landscape features may be buried within undeveloped areas in the site and that some features will have been destroyed



or buried by the construction of hard standings and airfield structures in the 1940s and 1950s. Original photo interpretation and mapping was at 1:2500 scale.

7.2 Introduction

- 7.2.1 This assessment of aerial photographs was commissioned by Oxford Archaeology East to support a planning application for development at Waterbeach Former Airfield, Cambridgeshire.
- 7.2.2 It was researched and written as an update to an assessment of aerial photographs which was undertaken by Rog Palmer in 2007 (Palmer 2007), which considered an area centred upon the former airfield at Waterbeach.
- 7.2.3 The object of this assessment was to provide information on the location and nature of any archaeological features which are visible on aerial photographs within and adjacent to the site.
- 7.2.4 It is important to note that aerial photographs usually only show part of the horizontal and vertical extent of buried and upstanding features. Their capacity to reveal features as crop marks, vegetation marks, soil marks or as the shadows cast by banks, ditches and walls, depends upon a number of environmental and agricultural factors prevalent at the time of the photographic survey.
- 7.2.5 Archaeological features within and immediately adjacent to the site were mapped in detail at 1:2500 scale to a digital Ordnance Survey map base.

7.3 The Assessment Area

Location

7.3.1 The site is located on agricultural land and land previously developed as an airfield to the north of Waterbeach. The site is centred at National Grid Reference 5327 2720 (TL 495 670). Figure 10 shows the extent of the Site and the archaeological features recorded from aerial photographs within and immediately adjacent to it.

Geology and soils

- 7.3.2 As Palmer has commented in 2007, the Soil Survey of England and Wales (SSEW 1983) shows the area to lie over slightly complex geological and soil deposits. The underlying substrate seems likely to be Oxford clay (which gives rise to soil association 411c: EVESHAM 3) of which a long north-south deposit is shown on the east side of the airfield. Clay soils have been considered 'difficult' for the recording of crop marked features, but in drier conditions have been seen to be productive of crop marks in the presence of buried features (Evans 2007) in this region.
- 7.3.3 The western part of the airfield to and beyond the A10 comprises river terrace and chalky drift (soil association 512f: Milton) on which most of the crop-marked information has been recorded outside and to the immediate west of the site.
- 7.3.4 The area from the River Cam west to the clay deposits (to about the TL50 easting) lies over river terrace drift (soil association 872b: Clayhithe).

The natural background and non-archaeological features

7.3.5 The soil deposits provide a general key to the visibility of archaeological features from the air and they also indicate some of the natural changes that may affect their clarity and understanding both from aerial photographs and during field investigation.



- 7.3.6 No geological features have been mapped because there appears to be a ubiquitous background comprising crop marked 'arcs and swirls' that show either different soils, or different compaction within the underlying substrates. These 'swirls' are most apparent on the Clayhithe deposit but are also visible over the Milton soils and to a lesser degree (maybe only because of masking by the airfield structures) on the Oxford clay.
- 7.3.7 On air photographs, the swirls are usually of sufficiently different character to archaeological and recent features that there is no confusion in their interpretation, although some of them make convincing circles that may suggest an archaeological origin to the unwary.
- 7.3.8 As Palmer points out, David Hall's work for the Fenland Survey shows the development area to be high and dry ground in prehistoric and Roman times (Hall 1996, fig 66) but with a fringe of peat that was most extensive in medieval times.
- 7.3.9 Within the development area the medieval peat extended from the river Cam to the lane that runs north-south along the TL505 easting (*ibid*, fig 68). Remnant peat deposits may mask any earlier archaeological features in this area.
- 7.3.10 The only mapped non-archaeological features are a few former field boundaries of which some are within the airfield, others to its east.

Previously recorded heritage assets

- 7.3.11 The Cambridgeshire Historic Environment Record (CHER) identifies the Scheduled earthwork remains at Denny Abbey and associated ditches and watercourses in the north. Some areas of medieval fields have been identified from aerial photographs. Various finds, including axes, a fossilised bison horn, pottery and middens dating from the Palaeolithic, Roman and Medieval periods have been recorded, alongside the former WW2 airfield and barracks.
- 7.3.12 Possible crop marked enclosures have been recorded just outside the site to the west, and within the site on the area of the former airfield by Palmer (2007). These will be discussed below. A likely Roman former earthwork is also recorded at Soldiers Hill within the Site.
- 7.3.13 The course of a Roman road, Akeman Street, runs to the immediate west of the site boundary, in addition to remains of the Roman canal, Car Dyke, some of which has been removed by modern quarrying. Several areas of crop marked remains of former settlement and land use have been recorded from aerial photographs to the immediate west of the site.
- 7.3.14 As Palmer has stated, these buried features are likely to have extended into the development site, but have been destroyed or lie beneath the hard standings and structures associated with the airfield. Some similar features have been observed and recorded to the east of the site boundary as cropmarks.

7.4 Archaeological and Natural Features

Introduction

7.4.1 In suitably cultivated soils, sub-surface features – including archaeological ditches, banks, pits, walls or foundations – may be recorded from the air in different ways in different seasons. In spring and summer these may show through their effect on crops growing above them.

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7.4.2 Such indications tend to be at their most visible in ripening cereal crops, in June or July in this part of Britain, although their appearance cannot accurately be predicted and their absence cannot be taken to imply evidence of archaeological absence. In winter months, when the soil is bare or crop cover is thin (when viewed from above), features may show by virtue of their different soils. Upstanding remains, which may survive in unploughed grassland, are also best recorded in winter months when vegetation is sparse and the low angle of the sun helps pick out slight differences of height and slope.

Limitations of the data

- 7.4.3 Aerial photographic evidence is limited by seasonal, agricultural, meteorological and environmental factors which affect the extent to which either buried or upstanding archaeological features can be detected from the air. The visibility of archaeological features may differ from year to year, dependent on the type of crop or land use, prevailing weather and levels of moisture in the soil over the crop growing season.
- 7.4.4 Individual photographs often thus record only a small percentage of the actual extent of buried or upstanding features, and a wide range of photos taken over a long timescale may be needed to reveal the extent of buried features from the air.
- 7.4.5 It is thus advantageous to be able to examine a range of photos taken under a variety of environmental conditions in order to build up a comprehensive interpretation of the archaeological landscape.

7.5 Air Photograph Interpretation and Mapping

Examined photographs

- 7.5.1 The most immediately informative aerial photographs of archaeological subjects tend to be those resulting from observer-directed flights. This activity is usually undertaken by an experienced archaeological observer who will fly at seasons and times of day when optimum results are expected.
- 7.5.2 Oblique aerial photographs, taken using a hand-held camera, are the usual products of such investigation. Although oblique photographs are able to provide a very detailed view, they are biased in providing a record that is mainly of features noticed by the observer, understood, and thought to be of archaeological relevance. To be able to map accurately from these photographs it is necessary that they have been taken from a sufficient height to include surrounding control point information to match fixed points on both the photograph and the ground.
- 7.5.3 Vertical aerial photographs have been taken over the whole of Britain and provide information on a series of dates between (usually) 1946–7 and the present. Many of these vertical surveys were not flown at times of year that are best to record the archaeological features sought for this assessment and may have been taken at inappropriate dates to record crop and soil responses that may be seen above subsurface features.
- 7.5.4 Vertical photographs are taken by a camera fixed inside an aircraft and with its exposures timed to take a series of overlapping views that can be examined stereoscopically. They are often of relatively small scale and their interpretation requires higher perceptive powers and a more cautious approach than that necessary for examination of obliques.

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- 7.5.5 Use of these small-scale images can also lead to errors of location and size when they are rectified or re-scaled to match a larger map scale.
- 7.5.6 Aerial photographic cover searches were obtained from the Cambridge University Collection of Aerial Photographs (CUCAP), and the Historic England Archive.
- 7.5.7 Photographs used for the assessment included those resulting from observer-directed flights and routine vertical surveys.
- 7.5.8 The ortho-rectified mosaics of vertical aerial photographs at Google Earth Pro (www.earth.google.com) were consulted online for this assessment in September 2015, along with the Birdseye and aerial images at www.Bing.com.
- 7.5.9 These sites displayed photographs which were taken (or accessioned to the site) between 1945 and 2008.
- 7.5.10 Photographs which were consulted are listed at the end of this report.

Methodology

- 7.5.11 All photographs were interpreted and mapped at a level compatible with a 1:2500 scale base map. The photographs were closely examined by eye and under 1.5x and 3x magnification and interpreted with the aid of a mirror stereoscope where appropriate, or in detail on screen when consulted as digital files.
- 7.5.12 Aerial photographs were originally digitally rectified to an OS map base using AirPhoto 3.58 software in order to remove perspective distortion and ensure correct rectification of aerial photographs to the OS map (Scollar 2002 & 2014).
- 7.5.13 Images from Google Earth displayed at all timelines in September 2015 were also interpreted and some were rectified to OS map bases (Scollar and Palmer 2008).
- 7.5.14 AirPhoto calculates mismatch values of control points taken from the photos and the map base. In all transformations prepared for this assessment the mean mismatches were less than ± 1.5m. There are instances where the stated mismatch figures for rectifications are less than the accuracy stated for the OS map bases, and there is thus the need to relate these mismatches to the expected accuracy of OS maps from which the mapping control information was derived (OS 2007).
- 7.5.15 The rectified files were originally set as background layers in AutoCAD Map, and updated and additional features were added in Quantum GIS 2.6. The two layers of drawings were combined in QGIS as vector layers, and their accuracy was checked to the original photographs and transcriptions prior to finalising the Shape files which cover the whole of the present site.
- 7.5.16 Layers from this final drawing have been used to prepare the illustration for this report and are provided digitally for import to a Geographic Information System (GIS) in ESRI Shapefile SHP format derived from QGIS 2.6.

7.6 Results

Introduction

- 7.6.1 The assessment area was photographed on a number of occasions when crop or soil marked features were visible over some parts of the site and its immediate environs.
- 7.6.2 The Earthworks at Denny Abbey are shown particularly clearly in strong light with some shadow at the 2008 timeline displayed at Google Earth in September 2015 along with some further crop marked features to the north of the Abbey.



- 7.6.3 Palmer assessed aerial photographs over this area and its environs in 2007 and recorded extensive buried settlement access and farming features to the immediate west and north of the site, but little crop marked evidence within the area itself. This is likely to be due to the extensive re development as an airfield in the 1940s and later quarrying.
- 7.6.4 The present study area includes the statutorily protected earthworks at Denny Abbey, a Scheduled Monument, and is configured slightly differently to the original area examined by Palmer in 2007.
- 7.6.5 The Scheduled earthwork remains of the Abbey have been mapped in detail by topographic survey and are depicted accurately on the Ordnance Survey (OS) map base. Their extent and location mapped by the OS corresponds exactly to their location and extent depicted very clearly at the 2008 timeline of Google Earth which was ortho rectified and checked against the map. This assessment can add nothing to the OS map extent for these earthworks. Further banks and ditches are likely to extend to the environs of the Scheduled area and visible remains of these are mapped for this assessment.

Pre-medieval features

- 7.6.6 As Rog Palmer has indicated in 2007, 'The Milton soil series shows a buried past landscape of fields, droves and settlements as marks in crops that have a roughly eastwest alignment of which a greater extent was mapped as part of the Fenland Survey (Hall 1996, fig 67).
- 7.6.7 The apparent dearth of information within the development area, in particular on its western side, is more likely to be due to the presence of the airfield on all aerial photographs than to an absence of information. The hard-standing of the airfield would obviously mask any sub-surface features it covers and the remaining ground within the airfield perimeter was sown with grass. The rare exception occurred on photographs taken on 25 July 1952 on which possible ditches were recorded north of the east-west runway (area TL488674). These do not appear to follow alignments seen to the west although they are close to some – but they do appear to include several enclosure-like forms. This area may thus have been a focus of past occupation. Continuation of features that have been mapped to the west may be expected within the development area where they lie close to the airfield's western perimeter. For example, the map shows there to have been considerable past activity in or near the northwest corner of the development area. The cluster of small enclosures shown at TL489683 are of unusual form but have been photographed on several dates and appear to be genuine archaeological features with adjacent pits. There has been no photographic evidence that this group extended into the development area, but it remains a possibility that some associated features will be identified in its northwest parts. Note also the regular system of fields just to the west and the one single ditch within the study area that suggests its continuation. Other features in the northwest corner seem more likely to be associated with Denny Abbey and are discussed below.
- 7.6.8 One other possibility of past activity within the development area is near its southwest corner (area TL486659) where there is clear evidence of enclosures and their associated ditches that are cut by the modern A10. These almost certainly extended into the development area but there is no photographic evidence to confirm that continuation or the extent of it.
- 7.6.9 The present **updated assessment** has added some crop marked ditches outside the site to the north east and west of Denny Abbey and to the east of the site boundary,



- from aerial images displayed at the Google Earth 2008 timeline. These add to the landscape that Palmer mapped and confirm the accuracy and extent of this mapping.
- 7.6.10 Additions of this nature are to be expected, and show that the detail of the crop marked remains is always changing in its visibility and complexity in response to changing environmental conditions over time.

Soldiers Hill

- 7.6.11 In 2007, Palmer commented that 'This site, mapped by the Ordnance Survey (First Edition six-inch map and later editions) and noted by David Hall during his Fenland Survey, needs further elaboration because of the range of possibilities it offers.
- 7.6.12 The OS First Edition shows a tumulus possibly the feature on the current OS digital data at TL49156794 and 'Intrenchments'. Both words are in Gothic script which then signified mapped antiquities. The Intrenchments comprised a simple enclosure north of the tumulus and a slightly more complex system of banks to the west.
- 7.6.13 In the final volume of parish surveys for the Fenland Project, David Hall's medieval map includes the earthwork named Soldiers Hill (Site 11) which he suggested to be a very small motte with a bailey (Hall 1996, 124). There is no definite trace of this on the aerial photographs examined, but an area of rough pasture much disturbed remained within the munitions area of the airfield (at TL491680) which would correspond with his 'overgrown area'. The photographic evidence here is varied and the site is now under cultivation.
- 7.6.14 Cambridgeshire HER, record number 05521, suggests the site to be of Roman date because of the quantity of Roman pottery that was uncovered during its destruction during WW2 airfield works.
- 7.6.15 The air photograph record was confusing in this area before making reference to the HER. Features, including what has been mapped as compacted ground, were visible immediately west of the site of the rough ground marking the position of the simple enclosure and were thought to indicate earlier activity during the Second World War. These were visible on photographs taken in 1946, 1947 and 1952 and, because of the fresh look of the compacted ground, were thought likely to reflect changes made between the opening of the airfield and the earliest available air photos although it could be questioned why such features were levelled as part of the war effort. It was also fairly easy to imagine that among the compacted features were one, perhaps two, of similar shape and size to the munitions revetments. With the information from the HER that these were levelled in or just prior to 1941, the freshness of the features on photographs taken during the next decade is more likely to be reflect their recent destruction.
- 7.6.16 This broad range of possible dates can perhaps be resolved by taking the Roman pottery as factual evidence and knowing that, at the time of the OS First Edition survey, there were many extant remains of Roman and earlier earthwork features in this part of Cambridgeshire. The First Edition shows other, not too dissimilar, examples to the north of which one, Hall's site Waterbeach 14: TL502694, remained in upstanding form until recently. Hall noted that this site produced Roman pottery when it was ploughed (1996, 123). To this writer, it seems that a Roman date is more probable for the Soldiers' Hill features than the others suggested above'.
- 7.6.17 The present **updated assessment** has not added anything to the knowledge of the site at Soldier's Hill and has confirmed Palmer's mapping and interpretation at the site.



Medieval features

- 7.6.18 Regarding the medieval features, Palmer comment that 'David Hall identified a medieval core in the modern village of Waterbeach (Hall 1996, fig 68: north of Site 1) and noted that the open fields on its north side '... are mostly obliterated by the aerodrome ...' (ibid, 126). Slight traces have been mapped from aerial photographs and include fragments of headlands and some ridge and furrow cultivation, but the evidence is extremely partial.
- 7.6.19 Denny Abbey is north of the Development and study areas but air photographs show a series of ditches or channels on its south side (area TL491681). These, or some of these, may have been contemporary with the abbey. Most are north of the actual development area, but they may extend into it. These ditches may have linked with the two parallel ditches that are curving towards the study area from the west of Denny Abbey (see area TL487685) and may date from the abbey period rather than being part of an earlier (or later) landscape.'
- 7.6.20 Some additions were made during the present **updated assessment** as detailed above to the mapped extent of the buried eroded ditches which may be more extensive elements of the landscape around Denny Abbey, in the agricultural land outside the extent of the SM boundary.

Military features

- 7.6.21 In 2007, Palmer stated that 'According to the catalogue of UK airfields, Waterbeach airfield was opened in 1941 and used by 3 Group of Bomber Command. The earliest of the aerial photographs examined were taken by the USAF in December 1943 and show Lancaster bombers dispersed around the airfield perimeter. In the 1950s the aircraft in service are Meteors after which as far as the air photo record can indicate the airfield no longer served as a base that was primarily for flying although one runway remained open at least into the 1960s.
- 7.6.22 The design of the airfield is has standard A-form of three runways with dispersals around the perimeter and a munitions store away from the administrative area, in this case in the northwest part of the airfield that is also at some distance from Waterbeach village. While the runways and perimeter track remained more-or-less unchanged during the base's active service, the munitions area was altered and now most is now under arable cultivation. The maximum extent of the munitions area has been mapped and comprises a series of square earthwork revetments, within which munitions were stored, and their access tracks.'
- 7.6.23 The present **updated assessment** has confirmed and not updated this information.

Land use

- 7.6.24 Palmer also stated that 'During the date range of aerial photographs examined fields outside the airfield perimeter have been in arable use while those within it were managed grass. The main changes have been the quarrying within the airfield (as shown on the current OS map) and the creation of a golf course immediately east of the airfield. Both were visible on 1982 photographs.
- 7.6.25 In terms of the usefulness of aerial photography for recording archaeological features this means that the airfield has had very low potential whereas, soils and date of photography permitting, the land around the airfield has been more likely to show archaeological sites. This higher potential has been apparent on many of the photographs examined on which there have been extents of geological disturbance



visible through their effect on crop growth. The fact that archaeological features have not been apparent on these same dates could be taken to suggest that there are none in the area although this may be an unwise assumption as there have been examples from parts of England where geological features have been visible on one date, archaeological features a week or two later or, in other places, not at all in the same year.'

7.6.26 The present **updated assessment** is in accordance with this statement. An area of crop marked cut features to the south of Denny Abbey, at TL 493 681, are interpreted by Palmer as former post Inclosure field boundaries. Further remains of the buried premedieval landscape which lie immediately to the west, and remains associated with Denny Abbey to the immediate north, may be buried and concealed within this area.

7.7 Conclusions

- 7.7.1 This updated assessment has demonstrated the presence of extensive likely Roman features outside and in the immediate environs of the site.
- 7.7.2 There are some indications of ditched buried features within the site, and these are possibly further deposits associated with the Roman landscape which is identified to the west and north.
- 7.7.3 The construction of the airfield and later quarrying has disturbed or destroyed subsurface deposits, although some may persist in undisturbed locations. This is particularly true of the undisturbed areas to the south and north of Denny Abbey and the areas which show crop marks within the grassed areas between the former runways.
- 7.7.4 There is also some potential for discovery of medieval cultivation ridges and furrows.
- 7.7.5 It is likely that the site will contain further archaeological features which are not visible on aerial photographs, or features which have been partially destroyed or levelled by 20th century development and quarrying.

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8 LIDAR SURVEY

By Stuart ladd

Introduction and methodology

- 8.1.1 LIDAR data was obtained from the UK Government's Environment Agency survey, recently made freely available for commercial use from: http://www.geostore.com/environment-agency/survey.html. The Digital Surface Model (DSM) was used in order to preserve the appearance of less substantial features, retaining buildings etc. The processed Digital Terrain Model (DTM) was not used as process of removing modern features such as roads and buildings tends to smooth out archaeological features.
- 8.1.2 The data came in fifteen 1km grid squares covering 548000E to 551000E and 265000N to 270000N at 1m horizontal resolution in ASCI (.asc) format. The date range for the full UK data set is 1/1/1998 to 30/9/2014, but the latest flights over the study area appeared to be in 2010. The tiles were merged into a single TIF file covering the study area using QGIS, retaining the 1m horizontal resolution. The combined file was coloured according to height, with continuous colouring averaged between contours. This was a somewhat trial and error process, seeking colour combinations that best highlight archaeological features as they cross natural contours.
- 8.1.3 Point heights within the resulting file varied between -10m OD (within a quarry outside the study area) and 31.18m OD (on a building within the barracks). Null data, reflecting water bodies was represented as -9999m and thus ignored. Surfaces, archaeological features and low level buildings were best illustrated applying colours in the range 0-15m. Attempts were made to overlay a hill-shade model on the coloured DSM, however, the slightness of the archaeological features and the density of structures within the barracks area meant this did not aid interpretation.
- 8.1.4 The primary aim of this survey was to assess the potential for survival of archaeological features across the site. Larger bank features were digitised as polygons. Ploughing was digitised in lines only where it appeared to pre-date the modern (post-enclosure) field system. Larger features have been interpolated across modern structures between extant portions in order to clarify their orientation.
- 8.1.5 Modern plough lines were evident, cut by the modern structures, and were discarded. The data from the aerial photographic (AP) survey (see Section 7 above) was overlaid in the same GIS to see if they were also represented topographically. In general the two sets of interpreted features were mutually exclusive, with the exception of some features around Denny Abbey.
- 8.1.6 A high density of earthworks within the Denny Abbey Scheduled Monument (SM) area were recorded in the LIDAR data. These exceeded the detail recorded on the modern Ordnance Survey map. Due to the level of complexity, these were not digitised as part of this project.

Results

8.1.7 Somewhat unexpectedly, earthworks were clearly visible within the airfield area, between runways and in other open spaces. These features are described below and illuminated in Figure 14.

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- 8.1.8 The largest features were a series of three headlands aligned north-south. The central one marks the route of the old causeway leading south from Denny Abbey to Waterbeach village, still shown on the 1819 Ordnance Survey Drawing. This was visible in segments along a 1.8km length represented by a bank from 56m wide to around 110m wide where it has perhaps been damaged or ploughed out between runways. This was generally raised 0.4-0.8m above surrounding land.
- 8.1.9 Some 125m east of the causeway is another headland which survives in two segments either side of a runway with a total surviving length of 485m. To the west of the causeway, another headland survives in small segments with a total length of 651m from north to south. Another 700m further south, a short bank 165m long and 34m wide could have represented a southern continuation of this headland. However, the area in between show preserved plough lines but no evidence of a bank or headland, suggesting it was never there.
- 8.1.10 On the eastern side of the built up barracks area, a sinuous bank following the 5m OD contour. It is generally 25m wide and covers a length of 1.1km. It is raised around 0.3-0.6m from the land either side. This represents a track which is shown on the 1819 Ordnance Survey Drawing for Ely. Further east, a fainter, more sinuous slight bank follows the 4-5m contour. This appears to follow a line, now cut by the Capper Road and Kirby Road estates, joining a modern field boundary.
- 8.1.11 Across the southern half of the site, the airfield and barracks area, plough lines are abundant generally following north-south and east-east alignments. Some are wider than others, potentially representing medieval ridge and furrow or post-medieval furrows. Others are tightly spaced and evidently modern. Only the wider examples have been digitised, however, their survival is evidence of the lack of truncation in these areas during the modern period. Several possible furrows can be seen extending into the fenland in the north-east of the area, but these may well relate to the modern field system.
- 8.1.12 In the north of the site, surrounding Denny Abbey were two features which were also identified in the AP survey. A bank to the west of the Abbey site's western corner corresponds with a ditch cropmark. This sweeps in a north-easterly to easterly direction for around 160m. South of the Abbey site, a slightly curving bank 150m long forms part of a linear cropmark, one side of a track leading westwards to the A10.
- 8.1.13 On the north-eastern side of the Denny Abbey SM, an intermittent bank up to 15m wide extends north-eastwards 130m from from the abbey's boundary. This may represent another lost causeway leading from the Abbey. It parallels the scheduled field boundary and earthworks that spur from the abbey site's eastern corner.
- 8.1.14 About 350m north of this, a pair of parallel slight banks (only identified with the aid of the AP survey) and parallel sets of track ditches are recorded as cropmarks. These are around 100m long and aligned north-south.
- 8.1.15 Finally, north-west of Denny Abbey are two depressions left by gravel pits, of which only one is recorded on historic maps.

Conclusion

8.1.16 Evidently some of the medieval landscape, represented by earthworks of causeways, headlands and possibly ridge and furrow, survives (albeit much reduced) within the study area. This is true within the airfield and green spaces around the barracks as well as in the undeveloped land north of the area.



8.1.17 The exclusivity between the Aerial Photographic survey and the LIDAR survey is probably down to the fact that silted up or ploughed over ditches are easier to spot in aerial photographs, whereas reduced or ploughed out banks show up clearer on LIDAR. Where features do appear in both surveys, it is generally the bank that appears on LIDAR and the corresponding ditch that has been seen on APs. In addition the historical APs allow the capture of features that have since been destroyed prior to the sampling of LIDAR data.

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9 GEOPHYSICAL SURVEY



By Peter Masters

Summary

- 9.1.1 A geophysical survey was carried out on land at Waterbeach Barracks, Cambridge, Cambridgeshire. The work was undertaken in March 2016. The purpose of the survey was to determine and locate the extent of any archaeological remains within the application area as part of the pre-planning requirements for this site.
- 9.1.2 Few archaeological anomalies have been detected within the areas surveyed. Majority of the anomalies recorded modern ferrous debris or buried services (cables) associated with the former airfield.
- 9.1.3 A circular shaped anomaly detected in the Field A may represent a ring ditch. A single linear anomaly recorded in Field D may represent a ditch but is more likely to reflect a modern drainage feature associated with the airfield. Field C revealed a rectilinear anomaly that appears to reflect a ditch-like feature but it is more likely to represent a feature associated with the former airfield.
- 9.1.4 Field F revealed few archaeological anomalies considering that cropmarks have been mapped in this area. The few linear and short rectilinear anomalies detected in this field may denote remnants of ditches of unknown date.
- 9.1.5 Other anomalies detected represent the underlying remains of the medieval field system of ridge and furrow. In some cases, Fields A and B, they have been ploughed in both directions.
- 9.1.6 No other anomalies of archaeological significance were recorded.

Introduction

- 9.1.7 Oxford Archaeology East commissioned the Centre for Archaeological and Forensic Analysis, Cranfield Forensic Institute, Cranfield University to undertake a gradiometer survey of land at Waterbeach, Cambridge (Fig 1). This work was carried out in May 2016.
- 9.1.8 The purpose of the survey was to locate the extent of any archaeological remains as part of a pre-planning process to develop a new town.
- 9.1.9 The survey methodology described in this report was based upon guidelines set out in the Historic England (formerly English Heritage) document 'Geophysical Survey in Archaeological Field Evaluation' (HE 2008).

Location and geology

- 9.1.10 The information contained here is based on information supplied by Oxford Archaeology East.
- 9.1.11 The site is located about 5.5m miles (9km) to the north of Cambridge City centre (NGR TL 4826 6709). Waterbeach Barracks and Airfield lies on the edge of Waterbeach village within the South Cambridgeshire District.
- 9.1.12 The area of investigation is a large area encompassing the former runway and associated dispersal points as well as the former Waterbeach golf course and agricultural land covering an area of approximately 100ha in extent (Fig 1). The site is



currently disused since its closure in 2013 and the northern end of the site is currently under arable cultivation at the time of the survey whilst the rest comprises the former airfield including the runway. The survey area is mostly flat apart from the tees on the former golf course and where soil has been piled to form raised areas for military purposes.

9.1.13 The underlying geology of the site is comprised of two separate geologies. The majority of the area is comprised of Gault Formation Mudstone overlain by Second River Terrace Gravels. The area encompasses the golf course and the northern end of the runway is comprised of Gault Clay formation (Geological Map Data ©NERC 2016). The magnetic susceptibility of these types of geologies is generally good.

Methodology

- 9.1.14 Gradiometry is a non-intrusive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological as well as other detectable remains (Clark 1990; Gaffney and Gater 2003).
- 9.1.15 The use of gradiometry is used to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features.
- 9.1.16 The Geophysical Exploration Equipment Platform (GEEP) system was used which allowed the geophysical surveyor to gather high quality data at a faster rate than is possible with other magnetic techniques. This was mounted on to a mobile platform which was towed across the field using a Kawasaki Mule. GPS is completely integrated in to the system, eliminating the need to mark up a set of survey lines. All instrument outputs can be seen in real time allowing instant quality control and analysis.
- 9.1.17 The survey was undertaken with c.8 readings per metre taken (a sample interval of 0.15m). The zigzag traverse method of survey was used, with 1m wide separation between magnetometers covering a 4m swathe at a time. An area of between 8-10ha was covered per day. The sensitivity of the caesium magnetometers is set to record magnetic variation in the order of 0.1 nanoTesla. Data was downloaded onto a laptop computer, analysed and processed using TerraSurveyor v.3. The results are plotted as greyscale and trace plot images (Figs 5-29).
- 9.1.18 A high pass median filter was used along each traverse that was adjusted to zero by subtracting a running median value calculated over a 60m window to correct for any slight biases added to the measurements owing to the diurnal range of the Earth's magnetic field. The data was then de-striped in order to equalise each line when the survey is recorded in a zigzag fashion and setting each line's average value the same. It was also processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings caused by stray iron fragments and spurious effects due to the inherent magnetism of soils. The data was also clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous metal.

Results

9.1.19 A magnetometer survey covering an area of *c*.100ha was surveyed over a large area which revealed few significant anomalies.



- 9.1.20 Generally, a series of isolated individual anomalies were detected (Fig. 5, examples circled pink) that reflect areas of modern ferrous debris, which lie just below or on the surface of the ground. These are more than likely to be related to the former airfield.
- 9.1.21 A series of bipolar linear anomalies (Figs 5-31, **light blue lines**) represent buried services possibly cables especially in the vicinity of the runway where cables would have been connect to the lights.
 - Fields A E (areas to the east and west of the runway)
- 9.1.22 A series of parallel linear anomalies (Figs 7-11, 30 & 31, **green dashed lines**) were recorded in all four areas. These represent the remains of ridge and furrow. Some are orientated in the east-west direction whilst others depict these in the north-south direction or both as in Field B.
- 9.1.23 At the north-western corner of Field B, a strong magnetic anomaly (Figs 8-9 & 31, circled pink) was detected possibly representing ferrous debris left by the military.
- 9.1.24 At the southern end of Field D, a linear positive anomaly (Figs 11 & 31, **red line**) was recorded running north-south may denote the presence of a ditch or it could represent a drainage channel. Close to the north end of Field D is a strong positive linear anomaly representing a track that leads to the Waterbeach Station Memorial Garden.
- 9.1.25 Field E to the north of D did not reveal any significant anomalies.
 - Fields F J (north-western area of airfield)
- 9.1.26 There is known cropmark evidence in Field F to the north-west of the survey area. A linear positive anomaly (Figs 13-14 and 30, **green line**) was recorded on the south-west side of this field. This may represent a ditch of unknown date but could reflect former military activity in the area. A short rectilinear and linear positive anomalies (Figs 13-14 and 30, **red lines**) may indicate the presence of fragmented ditch alignments and these appear to correlate with the known crop marks in this area. No further anomalies were recorded in this area considering the known extensive crop marks.
- 9.1.27 A series of parallel linear anomalies (Figs 13-14, green line) were also detected in Field F indicating the presence of underlying remains of the medieval field system of ridge and furrow.
- 9.1.28 Fields G and H (Figs 15-16 and 30) revealed no significant anomalies except for a wide linear bipolar anomaly (Fig 30, **circled pink**) which relates to the access track running parallel to the compound that once housed explosive munitions.
 - Fields L to S (Waterbeach old Golf Course)
- 9.1.29 Fields L to S (Fig 19-26) contains the former old golf course and the most of the raised tees and fairways still exist amongst the trees that line them. No significant anomalies were recorded in these areas except modern ferrous disturbances or buried cables and other services. The area is also subject waterlogging and during the survey of Field S, difficulties were encountered whilst carrying out the survey. The survey was abandoned partway across due to this reason.
- 9.1.30 Fields T and U (Figs 27-29 & 31) revealed no significant archaeological anomalies. The only anomalies present in these areas relate to the former airfield such as services and other modern ferrous material that still lie on the surface or is partially buried beneath the overgrown scrub.



Conclusion

- 9.1.31 The survey has identified very few significant archaeological anomalies within the area of investigation. The majority of the anomalies represent modern services, airfield installations and debris that has been left after the former airfield went out of use.
- 9.1.32 Field A revealed a circular anomaly that may represent a ring ditch or it may reflect remains of a military feature.
- 9.1.33 Fields D and F indicated possible ditch-like anomalies that may reflect underlying archaeological features such as ditches.
- 9.1.34 Based on the survey results, it can be concluded that the site possesses archaeological remains of low potential considering the landscape around the area of investigation contains a number of Iron Age/Roman sites. In addition, Deny Abbey is situated immediately to the north of the proposed development site.

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10 Deposit Model

- 10.1.1 The Site has undergone a series of different landuse changes and alterations which will have differentially affected the potential survival of archaeological deposits, should they have been present. Areas of the Site also remain unaffected by the later landuse impacts and should archaeology be present, these areas will have preserved any remains.
- 10.1.2 Geophysical survey, Aerial Photographic data along with Lidar data have been combined with desk-based records of the landuse history and a Site walkover survey to produce a Deposit Model.
- 10.1.3 Areas of the Site where the barracks and accommodation have been constructed, where ponds have been excavated, the runways and turning heads will likely have removed any buried archaeology due to the deep foundations, deep excavations and associated services related to these later developments.
- 10.1.4 Land beneath the golf course may have suffered partial truncation as a result of landscaping.
- 10.1.5 Land between the runways and the land which have remained in pasture and/or arable cultivation to the north and east of the Site will have suffered the least truncation. Should archaeology have survived in these areas, then they will likely to have been preserved to some degree, although plough damage might be a factor on shallower remains. Aerial photography has revealed cropmarks and geophysical survey have both indicated that archaeological remains will be present in some parts of these fields.
- 10.1.6 Figure 16 shows the Deposit Model for the Site and identifies the areas of the Site that are likely to have been truncated and thus any archaeological remains will have been destroyed, those parts of the Site which might have suffered only partial truncation and those which have had no significant impact and thus may contain archaeology, should it be present in those locations.
- 10.1.7 Approximately 150 hectares of the total area of 292 hectares would appear to have suffered truncation and will not contain archaeology. This leave c140 hectares on the site where archaeology may be preserved.

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11 Conclusions

- 11.1.1 The Site has been identified as having archaeological potential due to the high levels of known archaeology within the search area (particularly to the west of Waterbeach). Archaeological remains (including Scheduled Monuments, Listed Buildings, earthworks, cropmarks, a known findspot, and archaeological investigations) from all periods from the Lower Palaeolithic through to modern have been recorded; thus showing that this area has been settled and utilised without any clear periods of absence or abandonment from around 500,000BC through to modern day.
- 11.1.2 The period from which finds on the Site are most likely to be made is Roman, with cropmarks and known activity of this date located to the immediate west and finds from a probable high status building, along with human remains being recovered from within the Site itself.
- 11.1.3 Ridge and Furrow, the remnants of later medieval and post-medieval cultivation is present across the site, although these remains are not clearly visible as upstanding earthworks but have been recorded from both Geophysical survey, Lidar data and to a lesser extent from aerial photography. Their presence does however suggest that should earlier archaeology be present it may yet survive beneath the furrows.
- 11.1.4 The eastern portion of the Site has remained completely unaffected by development since the fens were drained in the mid 17th century and has been cultivated as agricultural land ever since enclosure. This area however is least likely to hold archaeological remains due to it being located on the fringes of the lower, wet fen. The central and western parts of the Site were given over to RAF Waterbeach in 1940. Prior to this, this area was also utilised for arable cultivation. Whilst the barracks and airfield will have inevitably disturbed a certain amount of sub-surface remains, the identification of concrete hardstanding being laid over layers of gravel and geotextile, could indicate good levels of archaeological preservation.

12 Recommendations for Managing Archaeological Risk

- 12.1.1 The nature of the nearby known archaeological remains means a programme of archaeological investigation (through trial trench evaluation) would be deemed necessary to effectively manage the archaeological risk. Other non-intrusive measures such as further geophysical survey (in those areas which were too waterlogged to survey in March 2016), fieldwalking (of the arable farmland), an earthwork survey (of Soldiers Hill) and an historic building recording survey (of the barrack buildings) may also be requested. The specific archaeological works required to meet mitigation will be stipulated by CCC HET.
- 12.1.2 Decisions on the extent, scope, nature and timings of any future management of archaeological risk will need to be undertaken in consultation with, and accordance to, Historic England, due to the proximity of a Scheduled Monument (Denny Abbey) and the local authority archaeology advisor at CCC HET.

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APPENDIX A. HER DATA

Monument List

HER Number	Monument ID	Name	Evidence	Date	
00343	MCB450	Neolithic axeheads, Waterbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
01163	MCB1505	Moated site, Landbeach	Earthwork	Medieval (1066 AD to 1539 AD)	
01262	MCB1625	Worts Farm moated site, Landbeach	Earthwork	Medieval (1066 AD to 1539 AD)	
02038	MCB2601	Quern find, Denny Abbey	Findspot	Early Iron Age to 5th century Roman (800 BC to 409 AD)	
02131	MCB2711	Elongated polished axe, Waterbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
02296	MCB2905	Roman coin, Waterbeach	Findspot	Roman (43 AD to 409 AD)	
05225	MCB6350	Sub-rectangular enclosure, Cottenham	Cropmark	Undated	
05231	MCB6356	Medieval market cross, Landbeach	Documentary evidence	Medieval (1066 AD to 1539 AD)	
05232	MCB6357	C16th purse mount, Landbeach	Findspot	Medieval (1066 AD to 1539 AD)	
05233	MCB6358	Roman brooch, Landbeach	Findspot	Roman (43 AD to 409 AD)	
05234	MCB6359	Neolithic axe, Landbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
05235	MCB6360	Roman brooch, Beach Road, Landbeach	Findspot	Roman (43 AD to 409 AD)	
05236	MCB6361	Roman hand mill, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05263	MCB6412	Roman pottery, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05266	MCB6415	Cropmarks and Roman pottery, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
05267	MCB6416	Roman pottery dredged from Car Dyke	Findspot	Roman (43 AD to 409 AD)	
05296	MCB6458	Mitchell Hill Farm	Cropmark	Undated	
05302	MCB6465	Roman pottery, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05309	MCB6471	Waterbeach Abbey	Earthwork	Medieval (1066 AD to 1539 AD)	
05312	MCB6476	Saxon settlement remains, The Lodge, Waterbeach	Sub-surface deposit	Saxon (410 AD to 1065 AD)	
05315	MCB6480	Roman pottery, Landbeach	Findspot	Roman (43 AD to 409 AD)	
05320	MCB6487	Roman remains and finds, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
05321	MCB6488	Roman cropmark and finds, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
05322	MCB6489	Roman site, Green End, Cottenham	Cropmark	Roman (43 AD to 409 AD)	

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HER Number	Monument ID	Name	Evidence	Date
05323	MCB6490	Roman settlement, Landbeach	Cropmark	Roman (43 AD to 409 AD)
05325	MCB6493	Roman remains, Denny Lodge, Waterbeach	Cropmark	Roman (43 AD to 409 AD)
05335	MCB6506	Roman ditch system, Cottenham	Cropmark	Roman (43 AD to 409 AD)
05343	MCB6515	Roman ditch, Landbeach	Sub-surface deposit	Roman (43 AD to 409 AD)
05345	MCB6517	Benson's Mill, Waterbeach	Documentary evidence	Medieval to 19th century (1066 AD to 1900 AD)
05346	MCB6518	Section through Akeman Street Roman road, Landbeach	Sub-surface deposit	Roman (43 AD to 409 AD)
05347	MCB6519	Polished Neolithic axe, Landbeach	Findspot	Neolithic (4000 BC to 2201 BC)
05348	MCB6520	Roman ditch containing pottery, Landbeach	Sub-surface deposit	Roman (43 AD to 409 AD)
05349	MCB6521	Roman pottery, Waterbeach	Findspot	Roman (43 AD to 409 AD)
05350	MCB6522	Roman pottery, Landbeach	Findspot	Roman (43 AD to 409 AD)
05354	MCB6526	Roman pottery, Landbeach	Findspot	Roman (43 AD to 409 AD)
05355	MCB6527	Roman pottery, Landbeach	Findspot	Roman (43 AD to 409 AD)
05356	MCB6528	Roman pottery, Landbeach	Findspot	Roman (43 AD to 409 AD)
05357	MCB6529	Saxon brooch, Landbeach	Findspot	Saxon (410 AD to 1065 AD)
05358	MCB6530	Fossilized bison horn and Palaeolithic axe, Waterbeach	Findspot	Palaeolithic (500000 BC to 10001 BC)
05359	MCB6531	Roman pottery, Landbeach	Findspot	Roman (43 AD to 409 AD)
05360	MCB6532	Cropmarks, Cottenham	Cropmark	Undated
05361	MCB6534	Roman roadway and ditches, Cottenham Green End, Landbeach	Findspot	Roman (43 AD to 409 AD)
05363	MCB6538	Roman ditch, Landbeach	Cropmark	Roman (43 AD to 409 AD)
05364	MCB6539	Ditches and Roman pottery, Cottenham	Cropmark	Roman (43 AD to 409 AD)
05365	MCB6540	Top Moor	Cropmark	Roman (43 AD to 409 AD)
05366	MCB6541	Roman ditch system, Landbeach	Cropmark	Roman (43 AD to 409 AD)
05367	MCB6542	Roman pottery and quern, Cottenham	Findspot	Roman (43 AD to 409 AD)
05394	MCB15753	Denny Abbey	Extant building	Medieval (1066 AD to 1539 AD)
05395	MCB6574	Flint implement, Cottenham	Findspot	Prehistoric (500000 BC to 42 AD)
05396	MCB6575	Roman enclosure and finds, Cottenham	Cropmark	Roman (43 AD to 409 AD)
05397	MCB6576	Roman pottery, Landbeach	Findspot	Roman (43 AD to 409 AD)

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HER Number	Monument ID	Name	Evidence	Date	
05398	MCB6577	Roman pottery, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
05405	MCB6584	Car Dyke Roman canal	Earthwork	Roman (43 AD to 409 AD)	
05405	MCB6584	Car Dyke Roman canal	Earthwork	Roman (43 AD to 409 AD)	
05406	MCB6586	Car Dyke between Green End and Top Moor	Earthwork	Roman (43 AD to 409 AD)	
05410	MCB6590	Roman pottery, Waterbeach	Findspot	Roman (43 AD to 409 AD)	
05447	MCB6642	All Saints' Church, Landbeach	Extant building	Medieval to Modern (1066 AD to 2050 AD)	
05454	MCB6653	Dug-out canoe, Waterbeach	Findspot	Prehistoric (500000 BC to 42 AD)	
05473	MCB6680	Probable Palaeolithic axe, Waterbeach	Findspot	Lower Palaeolithic (500000 BC to 150001 BC)	
05474	MCB6681	Roman rotary quern, Waterbeach	Findspot	Roman (43 AD to 409 AD)	
05475	MCB6682	Roman pottery finds, Denny Lodge, Waterbeach	Findspot	Roman (43 AD to 409 AD)	
05476	MCB6683	Denny Point, Cottenham	Documentary evidence	Undated	
)5477	MCB6684	Village at Causeway End Farm/Chittering End Farm	Documentary evidence	Undated	
05485	MCB6692	The Rectory, Landbeach	Extant building	Medieval (1066 AD to 1539 AD)	
05521	MCB6735	Roman earthwork, Soldiers Hill, Waterbeach	Earthwork	Roman (43 AD to 409 AD)	
05523	MCB6737	Roman site, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
05524	MCB6738	Roman remains, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05525	MCB6739	Roman remains, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05526	MCB6740	Roman oven or kiln, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05534	MCB6750	Roman pottery, Denny Abbey	Findspot	Roman (43 AD to 409 AD)	
05560	MCB6783	Saint John the Evangelist's Church, Waterbeach	Extant building	Medieval to Modern (1066 AD to 2050 AD)	
05585	MCB6816	Human remains, Cottenham	Findspot	Undated	
05609	MCB6841	Roman pottery, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05629	MCB6862	Roman remains, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05630	MCB6863	Roman pottery, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05703	MCB6943	Romano-British settlement, Chittering Hill	Cropmark	Roman (43 AD to 409 AD)	
)5725	MCB6970	Roman road (course of), Cottenham	Structure	Roman (43 AD to 409 AD)	
05766	MCB7015	Cropmarks of Akeman Street Roman Road and associated linear features, Landbeach	Cropmark	2nd century AD to 4th century AD (101 AD to 400 AD)	

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HER Number	Monument ID	Name	Evidence	Date	
06155	MCB7493	Roman pottery, Cottenham	Findspot	Roman (43 AD to 409 AD)	
06156	MCB7494	Roman tesserae, Cottenham	Findspot	Roman (43 AD to 409 AD)	
06157	MCB7495	Roman pottery, Cottenham	Findspot	Roman (43 AD to 409 AD)	
06158	MCB7496	Roman pottery and cropmarks, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
06159	MCB7497	Roman remains, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
06337	MCB7695	Bronze Age handled beaker, Bottisham Locks	Findspot	Bronze Age (2500 BC to 701 BC)	
06341	MCB7701	Site of wind pump, Horningsea	Documentary evidence	Post-medieval (1540 AD to 1900 AD)	
06352	MCB7713	Mesolithic axe, field next to Waterbeach Station	Findspot	Mesolithic (10000 BC to 4001 BC)	
06355	MCB7716	Bottisham Mill	Documentary evidence	Post-medieval (1540 AD to 1900 AD)	
06356	MCB7717	Bronze Age flint dagger, Horningsea	Findspot	Bronze Age (2500 BC to 701 BC)	
06357	MCB7718	Polished stone axe, Waterbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
06358	MCB7719	Polished axe, Waterbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
06359	MCB7720	Windmill/wind pump, Waterbeach	Sub-surface deposit	Post-medieval (1540 AD to 1900 AD)	
06391	MCB7755	Neolithic axe, Hinge Farm Cottages	Findspot	Neolithic (4000 BC to 2201 BC)	
06467	MCB7839	Medieval and post-medieval pottery, Lode	Findspot	Medieval to 19th century (1066 AD to 1900 AD)	
06504	MCB7880	Fen Farm	Extant building	Post-medieval (1540 AD to 1900 AD)	
06505	MCB7881	Neolithic axe hammer, Waterbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
06506	MCB7882	Roman pottery finds, Waterbeach	Findspot	Roman (43 AD to 409 AD)	
06507	MCB7884	Flint chisel, Joist Fen, Waterbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
06523	MCB7901	Mesolithic axe, Lode Farm	Findspot	Mesolithic (10000 BC to 4001 BC)	
06525	MCB7903	Mesolithic axe, Lode Farm	Findspot	Mesolithic (10000 BC to 4001 BC)	
06526	MCB7904	Iron Age brooch find, Bottisham Fen	Findspot	Iron Age (800 BC to 42 AD)	
06530	MCB7908	Lode Farm	Extant building	Post-medieval (1540 AD to 1900 AD)	
06532	MCB7910	Swaffham Lock	Structure	19th century (1801 AD to 1900 AD)	
06672	MCB8056	Causeway End Farm/Denny Lodge Roman settlement	Earthwork	Roman (43 AD to 409 AD)	
06735	MCB8121	Polished flint and hornstone axes, Waterbeach	Findspot	Neolithic (4000 BC to 2201 BC)	
06811	MCB8220	Post-medieval fenland drainage, Lode	Documentary evidence	Post-medieval (1540 AD to 1900 AD)	

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HER Number	Monument ID	Name	Evidence	Date	
06813	MCB8222	Bottisham Lode	Earthwork	Roman to 19th century (43 AD to 1900 AD)	
06838	MCB8254	Neolithic axe, Waterbeach Fen	Findspot	Neolithic (4000 BC to 2201 BC)	
06857	MCB8276	Old course of River Cam	Earthwork	Undated	
06875	MCB8307	Swaffham Bulbeck Lode	Earthwork	Roman to 19th century (43 AD to 1900 AD)	
07969	MCB9601	Polished stone axe, Bottisham Lode	Findspot	Neolithic (4000 BC to 2201 BC)	
08333	MCB9992	Trackway and enclosure cropmarks, Landbeach	Cropmark	Undated	
08399	MCB10069	Burnt flint, Cottenham	Findspot	Prehistoric (500000 BC to 42 AD)	
08400	MCB10070	Iron Age settlement, Cottenham	Cropmark	Iron Age (800 BC to 42 AD)	
08401	MCB10072	Mitchell Hill	Cropmark	Undated	
08402	MCB10073	D-shaped enclosure, Landbeach	Cropmark	Undated	
08403	MCB10074	Rectilinear enclosures, Landbeach	Cropmark	Undated	
08593	MCB10304	Roman settlement site, Landbeach	Cropmark	Roman (43 AD to 409 AD)	
08594	MCB10305	Roman settlement site, Landbeach	Cropmark	Roman (43 AD to 409 AD)	
08595	MCB10307	Roman settlement site, Landbeach	Cropmark	Roman (43 AD to 409 AD)	
08596	MCB10308	Roman settlement remains, Landbeach	Cropmark	Roman (43 AD to 409 AD)	
08597	MCB10309	Roman settlement site, Landbeach	Cropmark	Roman (43 AD to 409 AD)	
08656	MCB10376	Iron Age pottery and bone, Cottenham	Findspot	Iron Age (800 BC to 42 AD)	
08832	MCB10606	Rectilinear enclosure, Landbeach	Cropmark	Undated	
08833	MCB10607	Possible enclosure system, Landbeach	Cropmark	Undated	
08834	MCB10608	Roman cropmark complex, Landbeach	Cropmark	Undated	
08835	MCB10609	Romano-British settlement, Car Dyke Farm	Cropmark	Undated	
08838	MCB10612	Trackway, Landbeach	Cropmark	Undated	
08839	MCB10613	Semi-rectangular enclosures, Landbeach	Cropmark	Undated	
08840	MCB10614	Linear cropmarks, Cottenham	Cropmark	Undated	
08841	MCB10615	Linear features, Cottenham	Cropmark	Undated	
08843	MCB10617	Linear features, Cottenham	Cropmark	Undated	
08844	MCB10618	Roman remains, Landbeach	Cropmark	Roman (43 AD to 409 AD)	

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HER Number	Monument ID	Name	Evidence	Date
08845	MCB10619	Trackways, Landbeach	Cropmark	Undated
08846	MCB10620	Trackways, Landbeach	Cropmark	Undated
08847	MCB10621	Roman settlement site, Landbeach	Cropmark	Roman (43 AD to 409 AD)
08848	MCB10622	Enclosures and trackways, Landbeach	Cropmark	Undated
08849	MCB10623	Enclosures, Cottenham	Cropmark	Roman (43 AD to 409 AD)
08850	MCB10624	Cropmarks, Waterbeach	Cropmark	Undated
08851	MCB10625	Probable field system, Cottenham	Cropmark	Undated
08852	MCB10626	Possible watercourses, Denny Abbey	Cropmark	Medieval (1066 AD to 1539 AD)
08853	MCB10627	The Lots	Cropmark	Undated
08854	MCB10628	Landbeach shrunken Medieval village	Earthwork	Medieval (1066 AD to 1539 AD)
08856	MCB10630	Trackways, Landbeach	Cropmark	Undated
08857	MCB10631	Tracks and enclosure, Landbeach	Cropmark	Undated
08865	MCB10639	Ring ditch and field boundaries, Waterbeach	Cropmark	Roman (43 AD to 409 AD)
08866	MCB10640	Cropmarks, Cottenham	Cropmark	Roman (43 AD to 409 AD)
08867	MCB10641	Cropmarks, Cottenham	Cropmark	Undated
08908	MCB10687	Sub-rectangular enclosures, Landbeach	Cropmark	Undated
09024	MCB10814	Saxon site, Waterbeach	Sub-surface deposit	Early Saxon (410 AD to 650 AD)
09239	MCB11046	Ring ditch, Waterbeach	Cropmark	Undated
09253	MCB11060	Linear features, Lode	Cropmark	Undated
09655	MCB11480	Bronze Age barrow, Denny Farm, Waterbeach	Cropmark	Bronze Age (2500 BC to 701 BC)
09656	MCB11481	Prehistoric settlement site, Waterbeach	Cropmark	Prehistoric (500000 BC to 42 AD)
09657	MCB11482	Medieval midden, Waterbeach	Findspot	Medieval (1066 AD to 1539 AD)
09658	MCB11483	Medieval midden, Waterbeach	Findspot	Medieval (1066 AD to 1539 AD)
09659	MCB11484	Roman settlement, Waterbeach	Findspot	Roman (43 AD to 409 AD)
09702	MCB11528	C2nd disc brooch, Waterbeach	Findspot	Roman (43 AD to 409 AD)
09823	MCB11671	Car Dyke (Roman canal), Landbeach	Cropmark	Roman (43 AD to 409 AD)
09901	MCB11757	Bannold Lodge Roman settlement	Sub-surface deposit	Early Neolithic to 5th century Roman (4000 BC to 409 AD)

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HER Number	Monument ID	Name	Evidence	Date
09928	MCB11784	Barrow, Waterbeach	Sub-surface deposit	Undated
10330	MCB12269	Worts Farm Barn, Landbeach	Extant building	19th century to 20th century (1801 AD to 2000 AD)
10482	MCB12441	Roman coin, Cottenham	Findspot	Roman (43 AD to 409 AD)
11088	MCB13028	Enclosure, Landbeach	Cropmark	Undated
11089	MCB13029	Double-ditched trackway, Cottenham	Cropmark	Undated
11090	MCB13030	Field system, Cottenham	Cropmark	Undated
11097	MCB13037	Rectangular ditched enclosure, Cottenham	Cropmark	Undated
11127	MCB13067	Ditch, Landbeach	Cropmark	Undated
11128	MCB13068	Parallel ditches, Car Dyke	Cropmark	Undated
11129	MCB13069	Enclosure, Landbeach	Cropmark	Undated
11175	MCB13125	Settlement cropmarks, Landbeach	Cropmark	Undated
11180	MCB13131	Earthworks - possible lazy beds, Waterbeach	Earthwork	Undated
11181	MCB13132	Romano-British earthwork, Waterbeach	Cropmark	Undated
11182	MCB13133	Parallel ditches, Waterbeach	Cropmark	Undated
11331	MCB13330	Roman finds, Waterbeach	Findspot	Roman (43 AD to 409 AD)
11560	MCB13596	Roman remains, Waterbeach	Sub-surface deposit	Roman (43 AD to 409 AD)
11561	MCB13599	Roman settlement, cemetery and pottery production site, Waterbeach	Sub-surface deposit	Roman (43 AD to 409 AD)
11565	MCB13604	Roman pottery, Waterbeach	Earthwork	Roman (43 AD to 409 AD)
11566	MCB13605	Medieval remains, Waterbeach	Findspot	Medieval (1066 AD to 1539 AD)
11568	MCB13608	Roman settlement, Landbeach	Cropmark	Roman (43 AD to 409 AD)
11571	MCB13612	Roman settlement site, Cottenham	Cropmark	Roman (43 AD to 409 AD)
11572	MCB13613	Iron Age settlement, Cottenham	Cropmark	Iron Age (800 BC to 42 AD)
11725	MCB13799	Unknown observations, Denny Abbey	Findspot	Undated
11867	MCB13958	Medieval and Post-Medieval pottery finds, Denny Abbey	Findspot	Medieval to 19th century (1066 AD to 1900 AD)
12136	MCB14261	Moat opposite "Accasias", Landbeach	Documentary evidence	Undated
12228	MCB14352	Denny Abbey Park	Documentary evidence	Undated
12229	MCB14353	The Rookery, Denny End	Documentary evidence	Undated

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HER Number	Monument ID	Name	Evidence	Date	
12230	MCB14354	Denny Lodge, Waterbeach (park)	Documentary evidence	Undated	
12231	MCB14355	Earthworks west of Vicarage Cottages, Waterbeach	Destroyed monument	Roman (43 AD to 409 AD)	
05296A	MCB6459	Mitchell Hill Farm	Findspot	Roman (43 AD to 409 AD)	
05309a	MCB6472	Roman pottery finds, Waterbeach Abbey	Findspot	Roman (43 AD to 409 AD)	
05312a	MCB6477	Roman pottery finds, Waterbeach Lodge	Findspot	Roman (43 AD to 409 AD)	
05360A	MCB6533	Roman pottery, Cottenham	Findspot	Roman (43 AD to 409 AD)	
05394a	MCB6572	Earthworks around Denny Abbey	Earthwork	Medieval (1066 AD to 1539 AD)	
05394B	MCB6573	Denny Abbey refectory	Extant building	Medieval (1066 AD to 1539 AD)	
05405a	MCB6585	Belgic pottery from Car Dyke	Findspot	Iron Age (800 BC to 42 AD)	
05485A	MCB6693	The Rectory, Landbeach	Extant building	Post-medieval (1540 AD to 1900 AD)	
06467a	MCB7840	Roman pottery, Lode Farm	Findspot	Roman (43 AD to 409 AD)	
06506A	MCB7883	Medieval pottery finds, Waterbeach	Findspot	Medieval (1066 AD to 1539 AD)	
06672a	MCB8057	Human remains, Waterbeach	Findspot	Undated	
08312a	MCB9971	Trackway and other cropmarks, Landbeach	Cropmark	Undated	
08400A	MCB10071	Roman settlement site, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
08594A	MCB10306	Possible Iron Age pottery, Landbeach	Findspot	Iron Age (800 BC to 42 AD)	
08656A	MCB10377	Roman pottery and bone, Cottenham	Findspot	Roman (43 AD to 409 AD)	
08656B	MCB10378	Neolithic pottery, Cottenham	Findspot	Neolithic (4000 BC to 2201 BC)	
09024A	MCB10815	Roman pottery, Waterbeach	Findspot	Roman (43 AD to 409 AD)	
09024B	MCB10816	Medieval pottery, Waterbeach	Findspot	Medieval (1066 AD to 1539 AD)	
11560A	MCB13597	Iron Age or Saxon pottery, Waterbeach	Findspot	Iron Age (800 BC to 42 AD)	
11560B	MCB13598	Iron Age/Saxon pottery, Waterbeach	Findspot	Saxon (410 AD to 1065 AD)	
11566A	MCB13606	Post-medieval occupation debris, Waterbeach	Findspot	Post-medieval (1540 AD to 1900 AD)	
11572A	MCB13614	Roman settlement site, Cottenham	Cropmark	Roman (43 AD to 409 AD)	
CB14602	MCB14602	Saxon features, Denny End	Sub-surface deposit	Early Saxon (410 AD to 650 AD)	
CB14626	MCB14626	Prehistoric remains, Bannold Lodge, Chittering	Sub-surface deposit	Early Neolithic to Late Bronze Age (4000 BC to 701 BC)	
CB14627	MCB14627	Medieval remains and causeway, Bannold Lodge, Chittering	Sub-surface deposit	Roman to 19th century (43 AD to 1900 AD)	

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HER Number	Monument ID	Name	Evidence	Date	
CB14658	MCB14658	Roman remains, Cottenham-Landbeach pipeline	Sub-surface deposit	Roman (43 AD to 409 AD)	
CB14678	MCB14678	Late Bronze Age settlement features, The Undertakers'	Sub-surface deposit	Late Bronze Age (1000 BC to 701 BC)	
CB14679	MCB14679	Roman remains, Graves' Field	Sub-surface deposit	Roman (43 AD to 409 AD)	
CB14680	MCB14680	Roman features, Webster's Field	Sub-surface deposit	Roman (43 AD to 409 AD)	
CB14681	MCB14681	Romano-British occupation activity, Waste Management Park, Waterbeach	Cropmark	Roman to 19th century (43 AD to 1900 AD)	
CB15155	MCB15155	RAF Waterbeach	Extant building	World War II (1939 AD to 1945 AD)	
CB15275	MCB15275	Saxo-Norman features, Landbeach	Sub-surface deposit	11th century to Medieval (1001 AD to 1539 AD)	
CB15518	MCB15518	?Roman ditch, Gravel Digger's Farm, Cottenham	Sub-surface deposit	Roman (43 AD to 409 AD)	
CB15519	MCB15519	Post-Medieval bush drains, Gravel Digger's Farm, Cottenham	Sub-surface deposit	18th century to 19th century (1701 AD to 1900 AD)	
CB15520	MCB15520	Roman remains, Gravel Digger's Farm, Cottenham	Sub-surface deposit	Roman (43 AD to 409 AD)	
CB15650	MCB15650	Axe finds, Waterbeach	Findspot	Early Neolithic to Late Bronze Age (4000 BC to 701 BC)	
CB15737	MCB15737	Roman road and later features, Green End, Landbeach	Sub-surface deposit	Roman to 20th century (43 AD to 2000 AD)	
CB15752	MCB15752	Undated ditch, Waterbeach	Sub-surface deposit	Unknown	
MCB16281	MCB16281	Possible midden, The Farmland Museum, Denny Abbey, Waterbeach	Sub-surface deposit	15th century to 17th century (1401 AD to 1700 AD)	
MCB16403	MCB16403	Pillbox, Waterbeach station yard	Structure	World War II (1939 AD to 1945 AD)	
MCB16404	MCB16404	Pillbox, Waterbeach sailing club	Structure	World War II (1939 AD to 1945 AD)	
MCB16405	MCB16405	Pillbox, Waterbeach rail crossing	Destroyed structure	World War II (1939 AD to 1945 AD)	
MCB16406	MCB16406	Pillbox, Joist Fen, Waterbeach	Structure	World War II (1939 AD to 1945 AD)	
MCB16776	MCB16776	Route of Car Dyke canal, Waterbeach	Sub-surface deposit	Roman (43 AD to 409 AD)	
MCB16779	MCB16779	Undated linear features, Landbeach	Sub-surface deposit	Unknown	
MCB16781	MCB16781	Roman remains, Landbeach	Sub-surface deposit	Roman (43 AD to 409 AD)	
MCB16782	MCB16782	Roman remains, Landbeach	Sub-surface deposit	Roman (43 AD to 409 AD)	
MCB16782	MCB16782	Roman remains, Landbeach	Sub-surface deposit	Roman (43 AD to 409 AD)	
MCB17201	MCB17201	Waterbeach Baptist Chapel, Chapel Street	Extant building	19th century to Modern (1801 AD to 2050 AD)	
MCB17241	MCB17241	?Roman gullies, Bannold Road, Waterbeach	Sub-surface deposit	Roman (43 AD to 409 AD)	
MCB17340	MCB17340	Barn, Station Road, Waterbeach	Extant building	15th century to 16th century (1401 AD to 1600 AD)	

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HER Number	Monument ID	Name	Evidence	Date	
MCB17348	MCB17348	Prehistoric, Medieval and Post-Medieval features, High Street, Waterbeach	Sub-surface deposit	Early Neolithic to 20th century (4000 BC to 2000 AD)	
MCB18330	MCB18330	Milestone, A10, Landbeach	Structure	Post-medieval (1540 AD to 1900 AD)	
MCB18331	MCB18331	Milestone, A10, Landbeach	Structure	Post-medieval (1540 AD to 1900 AD)	
MCB18333	MCB18333	Milestone, A10, Landbeach	Structure	Post-medieval (1540 AD to 1900 AD)	
MCB18419	MCB18419	Prehistoric features, Waste Management Park, Waterbeach	Sub-surface deposit	Late Prehistoric (4000 BC to 42 AD)	
MCB18420	MCB18420	Post-medieval features, Waste Management Park, Waterbeach	Sub-surface deposit	Post-medieval (1540 AD to 1900 AD)	
MCB19281	MCB19281	Well south of Soldiers' Hill, Waterbeach	Extant building	19th century to 20th century (1801 AD to 2000 AD)	
MCB19545	MCB19545	Medieval and 19th century walls and rubble, Denny Abbey	Sub-surface deposit	Medieval to 19th century (1066 AD to 1900 AD)	
MCB19548	MCB19548	Field boundary ditch, Denny Lodge Business Park	Sub-surface deposit	Undated	
MCB19562	MCB19562	Features at 12 Pieces Lane, Waterbeach, Cambridgeshire	Sub-surface deposit	Early Iron Age to 5th century Roman (800 BC to 409 AD)	
MCB19993	MCB19993	Prehistoric and Roman features at The Waste Management Park, Waterbeach	Sub-surface deposit	Lower Palaeolithic to 19th century (500000 BC to 1900 AD)	
MCB20078	MCB20078	Ditches at 17 Robson Court, Waterbeach	Sub-surface deposit	Unknown	
MCB20218	MCB20218	Linear feature at Cody Road, Waterbeach	Sub-surface deposit	Medieval (1066 AD to 1539 AD)	
MCB20248	MCB20248	Roman remains at The Waste Management Park, Waterbeach	Sub-surface deposit	2nd century AD to 4th century AD (101 AD to 400 AD)	
MCB20262	MCB20262	War memorial, Waterbeach	Structure	20th century (1901 AD to 2000 AD)	
MCB20441	MCB20441	Residual finds, Waterbeach	Findspot	Roman (43 AD to 409 AD)	

Scheduled Monument List

HER Number	Monument ID	Name	Evidence	Date
05309	DCB352	Waterbeach Abbey (site of)	Scheduled monument	Medieval (1066 AD to 1539 AD)
05405	DCB264	Car Dyke	Scheduled monument	Roman (43 AD to 409 AD)
01163	DCB394	Shrunken medieval village of Landbeach	Scheduled monument	Medieval (1066 AD to 1539 AD)
01262	DCB392	Shrunken medieval village of Landbeach	Scheduled monument	Medieval (1066 AD to 1539 AD)
08854	DCB393	Shrunken medieval village of Landbeach	Scheduled monument	Medieval (1066 AD to 1539 AD)
13219	DCB69	Denny Abbey	Scheduled monument	Medieval (1066 AD to 1539 AD)
1012359	DCB73	Romano-British Settlement at Chittering, Cambs	Scheduled monument	Roman (43 AD to 409 AD)

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Listed Buildings

Designation ID	Name	Grade
DCB4374	Worts Farm Granary	II
DCB4381	House on High Street	II
DCB4494	Denny Abbey	1
DCB4495	Berry House	II
DCB4496	The Hall	II
DCB4504	Milestone South of Junction with Waterbeach Road at NGR 487 649	II
DCB4505	Milestone Half Mile North of Goose Hall at NGR 485 679	II
DCB4506	Tithe Barn the East of Number 14 (The Old Rectory)	II
DCB4507	Old Beach Farmhouse	II
DCB4508	Skatchbow Cottage	II
DCB5206	The Old Rectory	*
DCB5207	Manor Farmhouse	II
DCB5208	Cottage on Green End	II
DCB5208	Cottage on Green End	II
DCB5209	North Farmhouse	II
DCB5213	Barn to North of Denny Abbey	II
DCB5214	House on Green Side	II
DCB5215	Denny House	II
DCB5216	Barn to north west of the Hall	II
DCB5247	House on Cambridge Road	II
DCB5249	Milestone One and One Half miles North of Goose Hall at NGR 492 693	II
DCB5604	The Gables	II
DCB5609	Barn to West of Old Beach Farmhouse	II
DCB5619	Denny Abbey Refectory	I
DCB5711	Small Barn to South of Denny House	II
DCB5712	St Johns Parish Church	II*

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Designation ID	Name	Grade
DCB5892	The Black Bull	II
DCB5902	Wiles Cottage	II
DCB6036	Parish Church of All Saints	1
DCB6217	Barn to North of Lock Farm	II
DCB6223	Causeway Farmhouse	II
DCB6370	Cottage on High Street	II
DCB6371	The Plague House	II
DCB6546	Box Tree Cottage	II
DCB6560	K6 Telephone Box	II
DCB6563	Milestone Half Mile South of Green End Junction and Goose Hall at NGR 484 664	II
DCB6690	Gate Piers	II
DCB6691	Orchard House	II
DCB6869	Barn to South West of Number 2 (Orchard House)	II
DCB6882	Worts Farmhouse	II
DCB6986	Milton Cottage and Oak Cottage and Plough Cottage	II
DCB6986	Milton Cottage and Oak Cottage and Plough Cottage	II
DCB6986	Milton Cottage and Oak Cottage and Plough Cottage	II
DCB6987	Jasmine Cottage	II
DCB6993	Cottage on Burgess Road	II

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Fieldwork Events

Event number	Name	Organisation	Date of work
ECB94	Recording brief at Hill Farm, Waterbeach	CCC AFU	October 1997
ECB95	Recording brief at Denny Abbey	CCC AFU	1997-1998
ECB222	Evaluation at Car Dyke Farm, Landbeach	CCC AFU	September 1996
ECB336	Investigations at Saint John's Church, Waterbeach	Northamptonshire Archaeology	July 2000
ECB339	Evaluation at Denny Industrial Centre, Waterbeach	CCC AFU	October 2000
ECB340	Watching brief at 64 Cambridge Road, Waterbeach	CCC AFU	March 1998
ECB349	Excavations at Waterbeach Abbey	Cra'ster	1963
ECB402	Evaluation at Denny End, Waterbeach	Cambridge Archaeological Unit	December 1995
ECB404	Recording brief at Denny Abbey, Farmland Museum	CCC AFU	September 1996
ECB447	Excavations at Bannold Lodge, Chittering, Waterbeach	Cambridge Archaeological Unit	April-May 1997
ECB448	Evaluation at Denny, Waterbeach	Tempus Reparatum	1990
ECB477	Excavations at Denny Abbey	Ministry of Public Building and Works	1968-1975
ECB525	Evaluation along the Anglian Water Cottenham to Landbeach Sewage Main	Cambridge Archaeological Unit	1999
ECB527	Watching brief, Great Ouse, Ely Ouse, Cam and 10 Mile River	Cambridge Archaeological Unit	September-October 1996
ECB533	Evaluation of the Cambridge Rowing Lake site	CCC AFU	October-November 1995
ECB537	Evaluation at the Cambridge Centre for Recycling	Cambridge Archaeological Unit	September-October 2000
ECB547	MAFF County Farms Estate Agricultural Impact Study	CCC AFU	September-October 2001
ECB825	Excavations at Waterbeach Lodge	Cambridge Antiquarian Society	1926-1927
ECB934	Evaluation at New Cross Farm, Landbeach	CCC AFU	October 2002
ECB1093	Training excavation at Landbeach	CCC AFU	August-September 1999
ECB1165	Assessment at Gravel Digger's Farm, The Lots, Cottenham	Cambridge Archaeological Unit	October 1992
ECB1166	Archaeological investigations at Gravel Digger's Farm, Cottenham	Cambridge Archaeological Unit	January 1992
ECB1184	Evaluation at Bank Farm, Waterbeach	CCC AFU	May 2003
ECB1418	Evaluation at New Farm, Landbeach	CCC AFU	September 2003
ECB1491	Section though Car Dyke, Waterbeach	CCC AFU	April 1993
ECB1644	AP assessment, Cambridge Rowing Lake	Air Photo Services (Cambridge)	March 1994

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Event number	Name	Organisation	Date of work
ECB1699	Excavations in The Nuns' Refectory, Denny Abbey	Ministry of Public Building and Works	1984-1985
ECB1730	Earthwork survey, Chittering Roman-British settlement	Cambridge University Board of Extra Mural Studies	c.1969-73
ECB1794	Evaluation at the Travellers Rest public house, Chittering	CCC AFU	November 2004
ECB1811	Monitoring at The Farmland Museum, Denny Abbey, Waterbeach	CCC AFU	October 2004
ECB1761	Earthwork survey, Manorial Earthworks, Landbeach	London University Extra-Mural Department	1978
ECB1906	Watching brief at Whitmore Way, Waterbeach	CCC AFU	February-March 2005
ECB2064	Watching brief along the Histon - Waterbeach electricity cable	Cambridge Archaeological Unit	March-May 2003
ECB2066	Watching brief at the Parker Steel Site, Denny Industrial Centre	CCC AFU	July 2001
ECB2122	Evaluation and watching brief at All Saints' Church, Landbeach	CCC AFU	January 2006
ECB2210	Evaluation to the rear of 30 High Street, Waterbeach	CCC AFU	0April 2006
ECB2231	Magnetometer survey at Cottenham	Ancient Monuments Laboratory	October 1980
ECB2267	Geophysical survey, Gravel Diggers Farm, Cottenham	Oxford Archaeotechnics	September 1992
ECB2325	Evaluation of land N of Bannold Lodge, Waterbeach	Albion Archaeology	May 2004
ECB2396	Excavation and evaluation at IWM Park, Waterbeach	Cambridge Archaeological Unit	January 2002
ECB2462	AP assessment, Limes Farm, Landbeach	Air Photo Services (Cambridge)	July 1999
ECB2640	Excavation at Ely Road, Waste Management, Waterbeach	Cambridge Archaeological Unit	August-September 2007
ECB2872	Monitoring of land NW of Lug Fen Droveway, Lode	The Heritage Network	December 2007
ECB2951	Evaluation at Goose Hall Farm, Waterbeach	Cambridge Archaeological Unit	Feb 1993
ECB3062	Further excavations at Ely Road, Waterbeach	Cambridge Archaeological Unit	December 2008
ECB3347	Evaluation and excavation at 12 Pieces Lane, Waterbeach	Archaeological Solutions	February-July 2010
ECB3438	Evaluation ans Excavation at the Waste Management Park off Ely Road, Waterbeach	Cambridge Archaeological Unit	October 2010
ECB3622	Test pit evaluation, Farmland Museum	Oxford Archaeology East	July 2011
ECB3688	Evaluation at Denny Lodge Business Park Wind Turbines, Chittering	Archaeological Project Services	November 2011
ECB3923	Evaluation at 17 Robson Court, Waterbeach	The Heritage Network	April 2013
ECB4299	Evaluation at land west of Cody Road, Waterbeach	Pre-Construct Archaeology	October 2014
ECB4306	Geophysical survey at land west of Cody Road, Waterbeach	Stratascan	October 2014
ECB4330	Archaeological Excavation at The Waste Management Park, Waterbeach, The Hammerhead	Cambridge Archaeological Unit	January-February 2009

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Event number	Name	Organisation	Date of work
ECB4343	Archaeological Evaluation on Land off Bannold Road, Waterbeach	Oxford Archaeology East	September 2015
ECB4356	Watching brief on geotechnical test pits at Soldier's Hill, Waterbeach	Thames Valley Archaeological Services	February 2013
ECB4497	Evaluation at Recreation Ground, Cambridge Road , Waterbeach	Archaeological Solutions	July 2015
ECB4531	Land South of Pembroke Avenue, Waterbeach	Oxford Archaeology East	February 2014

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APPENDIX B. AERIAL PHOTOGRAPH INDEX

Historic England Archive, enquiry reference AP95279

Customer enquiry reference: 95279

Oblique aerial photographs

Photo reference (NGR & Intext number)	Film & frame number	Original number	Date	Film type		Map reference (6 figure grid reference)
TL 4866 / 16	NMR 27420 / 38		19 MAR 2012	Digital colour	35 mm	TL 488669
TL 4867 / 9	NMR 27420 / 34		19 MAR 2012	Digital colour	35 mm	TL 486677
TL 4867 / 10	NMR 27420 / 35		19 MAR 2012	Digital colour	35 mm	TL 488676
TL 4867 / 11	NMR 27420 / 36		19 MAR 2012	Digital colour	35 mm	TL 488672
TL 4867 / 12	NMR 27420 / 37		19 MAR 2012	Digital colour	35 mm	TL 487673
TL 4867 / 13	NMR 27420 / 39		19 MAR 2012	Digital colour	35 mm	TL 487671
TL 4867 / 14	NMR 27420 / 40		19 MAR 2012	Digital colour	35 mm	TL 488673
TL 4867 / 15	NMR 27420 / 41		19 MAR 2012	Digital colour	35 mm	TL 489671
TL 4868 / 27	NMR 1310 / 297-298		10 AUG 1978	Black& white	70mm,120,220	TL 489682
TL 4868 / 28	NMR 15136 / 37		14 JUL 1994	Black& white	70mm,120,220	TL 487682
TL 4868 / 31	NMR 15313 / 05		07 JUL 1995	Black& white	70mm,120,220	TL 489682
TL 4868 / 32	NMR 15313 / 06		07 JUL 1995	Black& white	70mm,120,220	TL 488682
TL 4966 / 1	NMR 27420 / 01		19 MAR 2012	Digital colour	35 mm	TL 491667
TL 4966 / 2	NMR 27420 / 03		19 MAR 2012	Digital colour	35 mm	TL 496662
TL 4966 / 3	NMR 27420 / 04		19 MAR 2012	Digital colour	35 mm	TL 490666
TL 4966 / 4	NMR 27420 / 05		19 MAR 2012	Digital colour	35 mm	TL 490665
TL 4966 / 5	NMR 27420 / 06		19 MAR 2012	Digital colour	35 mm	TL 491663
TL 4966 / 6	NMR 27420 / 07		19 MAR 2012	Digital colour	35 mm	TL 492667
TL 4966 / 7	NMR 27420 / 08		19 MAR 2012	Digital colour	35 mm	TL 493665
TL 4966 / 8	NMR 27420 / 09		19 MAR 2012	Digital colour	35 mm	TL 491664

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Photo reference (NGR & Intext number)	Photo reference (NGR & Intext number) Film & frame number		Original number	Date	Film type		Map reference (6 figure grid reference)
TL 4966 / 9	NMR 27420	/ 10		19 MAR 2012	Digital colour	35 mm	TL 493663
TL 4966 / 10	NMR 27420	/ 11		19 MAR 2012	Digital colour	35 mm	TL 495665
TL 4966 / 11	NMR 27420	/ 12		19 MAR 2012	Digital colour	35 mm	TL 492666
TL 4966 / 12	NMR 27420	/ 13		19 MAR 2012	Digital colour	35 mm	TL 493666
TL 4966 / 13	NMR 27420	/ 14		19 MAR 2012	Digital colour	35 mm	TL 491666
TL 4966 / 14	NMR 27420	/ 15		19 MAR 2012	Digital colour	35 mm	TL 492666
TL 4966 / 15	NMR 27420	/ 16		19 MAR 2012	Digital colour	35 mm	TL 493664
TL 4966 / 16	NMR 27420	/ 17		19 MAR 2012	Digital colour	35 mm	TL 492665
TL 4966 / 17	NMR 27420	/ 18		19 MAR 2012	Digital colour	35 mm	TL 491663
TL 4966 / 18	NMR 27420	/ 19		19 MAR 2012	Digital colour	35 mm	TL 494667
TL 4966 / 19	NMR 27420	/ 20		19 MAR 2012	Digital colour	35 mm	TL 497669
TL 4966 / 20	NMR 27420	/ 21		19 MAR 2012	Digital colour	35 mm	TL 496668
TL 4966 / 21	NMR 27420	/ 22		19 MAR 2012	Digital colour	35 mm	TL 490662
TL 4966 / 22	NMR 27420	/ 24		19 MAR 2012	Digital colour	35 mm	TL 492664
TL 4966 / 23	NMR 27420	/ 23		19 MAR 2012	Digital colour	35 mm	TL 491663
TL 4966 / 24	NMR 27420	/ 25		19 MAR 2012	Digital colour	35 mm	TL 494667
TL 4966 / 25	NMR 27420	/ 26		19 MAR 2012	Digital colour	35 mm	TL 494668
TL 4966 / 26	NMR 27420	/ 27		19 MAR 2012	Digital colour	35 mm	TL 491667
TL 4966 / 27	NMR 27420	/ 28		19 MAR 2012	Digital colour	35 mm	TL 493665
TL 4966 / 28	NMR 27420	/ 29		19 MAR 2012	Digital colour	35 mm	TL 493666
TL 4966 / 29	NMR 27420	/ 30		19 MAR 2012	Digital colour	35 mm	TL 490666
TL 4966 / 30	NMR 27420	/ 43		19 MAR 2012	Digital colour	35 mm	TL 493667
TL 4966 / 31	NMR 27420	/ 44		19 MAR 2012	Digital colour	35 mm	TL 493667
TL 4966 / 32	NMR 27420	/ 45		19 MAR 2012	Digital colour	35 mm	TL 496662
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TL 4966 / 34	NMR 27420	/ 47		19 MAR 2012	Digital colour	35 mm	TL 495663
TL 4966 / 36	NMR 27420	/ 49		19 MAR 2012	Digital colour	35 mm	TL 495663

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Photo reference (NGR & Intext number)	Film & frame number		Original number	Date	Film type		Map reference (6 figure grid reference)
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TL 4967 / 1	NMR 27420	/ 31		19 MAR 2012	Digital colour	35 mm	TL 497672
TL 4967 / 2	NMR 27420	/ 32		19 MAR 2012	Digital colour	35 mm	TL 494673
TL 4967 / 3	NMR 27420	/ 33		19 MAR 2012	Digital colour	35 mm	TL 491674
TL 4967 / 4	NMR 27420	/ 42		19 MAR 2012	Digital colour	35 mm	TL 493670
TL 4968 / 1	CAP 8003	/ 3	ES	13 MAY 1950	Black& white	Unknown	TL 494684
TL 4968 / 2	CAP 8003	/ 4	ES	13 MAY 1950	Black& white	Unknown	TL 493684
TL 4968 / 3	CAP 8003	/ 5	ES	13 MAY 1950	Black& white	Unknown	TL 492684
TL 4968 / 4	CAP 8003	/ 6	ES	13 MAY 1950	Black& white	Unknown	TL 493685
TL 4968 / 5	CAP 8003	/7	ES	13 MAY 1950	Black& white	Unknown	TL 493684
TL 4968 / 6	CAP 8004	/ 1	SEE PRINTS	28 MAY 1950	Black& white	Unknown	TL 495685
TL 4968 / 7	CAP 8004	/ 2	SEE PRINTS	28 MAY 1950	Black& white	Unknown	TL 492689
TL 4968 / 8	CAP 8004	/ 3	SEE PRINTS	28 MAY 1950	Black& white	Unknown	TL 494684
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TL 4968 / 11	CAP 8004	/ 6	SEE PRINTS	28 MAY 1950	Black& white	Unknown	TL 493685
TL 4968 / 12	CAP 8004	/7	SEE PRINTS	28 MAY 1950	Black& white	Unknown	TL 493685
TL 4968 / 13	CAP 8004	/ 8	SEE PRINTS	28 MAY 1950	Black& white	Unknown	TL 493685
TL 4968 / 14	CAP 8027	/ 16	FT	16 JUN 1951	Black& white	Unknown	TL 493685
TL 4968 / 15	CAP 8027	/ 17	FT	16 JUN 1951	Black& white	Unknown	TL 493685
TL 4968 / 16	NMR 2108	/ 1082	APR1726	24 MAR 1982	Black& white	70mm,120,220	TL 495685
TL 4968 / 17	NMR 2108	/ 1084	APR1726	24 MAR 1982	Black& white	70mm,120,220	TL 492685
TL 4968 / 18	NMR 2108	/ 1086	APR1726	24 MAR 1982	Black& white	70mm,120,220	TL 492685
TL 4968 / 19	NMR 4306	/ 11		28 APR 1989	Colour slide	35 mm	TL 493683
TL 4968 / 20	NMR 4306	/ 12		28 APR 1989	Colour slide	35 mm	TL 492684
TL 4968 / 21	NMR 4306	/ 13		28 APR 1989	Colour slide	35 mm	TL 492684

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Photo reference (NGR & Intext number)	Film & frame number		Original number	Date	Film type		Map reference (6 figure grid reference)
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TL 4968 / 33	NMR 2108	/ 1087	APR1726	24 MAR 1982	Black& white	70mm,120,220	TL 492685
TL 4968 / 34	NMR 2108	/ 1088	APR1726	24 MAR 1982	Black& white	70mm,120,220	TL 492685
TL 4968 / 35	NMR 15764	/ 27		14 AUG 1997	Colour slide	35 mm	TL 493683
TL 4968 / 36	NMR 15754	/ 04		29 JUL 1997	Black& white	70mm,120,220	TL 493683
TL 4968 / 37	NMR 15754	/ 05		29 JUL 1997	Black& white	70mm,120,220	TL 493683
TL 4968 / 38	NMR 15742	/ 03		29 JUL 1997	Colour neg	35 mm	TL 492684
TL 4968 / 39	NMR 15742	/ 04		29 JUL 1997	Colour neg	35 mm	TL 492683
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TL 4968 / 41	NMR 15750	/ 08		14 AUG 1997	Colour neg	35 mm	TL 493683
TL 4968 / 42	NMR 21720	/ 01		26 JUL 2002	Colour neg	70mm,120,220	TL 493684
TL 4968 / 43	NMR 21720	/ 02		26 JUL 2002	Colour neg	70mm,120,220	TL 493684
TL 4968 / 44	NMR 21720	/ 03		26 JUL 2002	Colour neg	70mm,120,220	TL 492684
TL 4968 / 45	NMR 21720	/ 04		26 JUL 2002	Colour neg	70mm,120,220	TL 492684
TL 4968 / 46	NMR 21720	/ 05		26 JUL 2002	Colour neg	70mm,120,220	TL 492684
TL 4968 / 47	NMR 21720	/ 06		26 JUL 2002	Colour neg	70mm,120,220	TL 492683
TL 4968 / 48	NMR 21720	/ 07		26 JUL 2002	Colour neg	70mm,120,220	TL 492684

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Photo reference (NGR & Intext number)	Film & frame	e number	Original number	Date	Film type		Map reference (6 figure grid reference)
TL 4968 / 49	NMR 21720	/ 08		26 JUL 2002	Colour neg	70mm,120,220	TL 492684
TL 4968 / 50	NMR 21720	/ 09		26 JUL 2002	Colour neg	70mm,120,220	TL 492684
TL 4968 / 51	NMR 21720	/ 10		26 JUL 2002	Colour neg	70mm,120,220	TL 491684
TL 4968 / 52	NMR 21720	/ 11		26 JUL 2002	Colour neg	70mm,120,220	TL 492684
TL 4968 / 53	NMR 21720	/ 12		26 JUL 2002	Colour neg	70mm,120,220	TL 492684
TL 4968 / 54	NMR 21683	/ 19		26 JUL 2002	Colour neg	35 mm	TL 492684
TL 4968 / 55	NMR 21683	/ 20		26 JUL 2002	Colour neg	35 mm	TL 492684
TL 4968 / 56	NMR 21721	/ 19		26 JUL 2002	Black& white	70mm,120,220	TL 492684
TL 4968 / 57	NMR 21721	/ 20		26 JUL 2002	Black& white	70mm,120,220	TL 491683
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TL 4968 / 74	NMR 26118	/ 28		09 OCT 2008	Digital colour	35 mm	TL 493684
TL 4968 / 75	NMR 26118	/ 29		09 OCT 2008	Digital colour	35 mm	TL 492684
TL 4968 / 76	NMR 26118	/ 30		09 OCT 2008	Digital colour	35 mm	TL 492686
TL 4968 / 77	NMR 26118	/ 31		09 OCT 2008	Digital colour	35 mm	TL 492684
TL 4968 / 78	NMR 26118	/ 32		09 OCT 2008	Digital colour	35 mm	TL 492685
TL 4968 / 79	NMR 26118	/ 33		09 OCT 2008	Digital colour	35 mm	TL 492684
TL 4968 / 80	NMR 26118	/ 34		09 OCT 2008	Digital colour	35 mm	TL 492684
TL 4968 / 81	NMR 26118	/ 35		09 OCT 2008	Digital colour	35 mm	TL 492684
TL 4968 / 82	NMR 26118	/ 36		09 OCT 2008	Digital colour	35 mm	TL 493684
TL 4968 / 83	NMR 26118	/ 37		09 OCT 2008	Digital colour	35 mm	TL 493684
TL 4968 / 84	NMR 26118	/ 38		09 OCT 2008	Digital colour	35 mm	TL 493684
TL 4968 / 85	NMR 26118	/ 39		09 OCT 2008	Digital colour	35 mm	TL 492684
TL 4968 / 86	NMR 26118	/ 40		09 OCT 2008	Digital colour	35 mm	TL 492685
TL 5066 / 1	NMR 27420	/ 02		19 MAR 2012	Digital colour	35 mm	TL 501661
TL 5066 / 2	NMR 27420	/ 54		19 MAR 2012	Digital colour	35 mm	TL 502664

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Vertical aerial photographs

Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
RAF/106G/UK/1490	326	4463	Р	TL 504 673	12	09 MAY 1946	AB	10000
RAF/106G/UK/1490	326	4464	Р	TL 497 672	12	09 MAY 1946	AB	10000
RAF/106G/UK/1490	326	4465	Р	TL 489 672	12	09 MAY 1946	AB	10000
RAF/106G/UK/1557	386	1337	Р	TL 508 667	7	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	1338	Р	TL 501 667	7	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	1339	Р	TL 495 666	7	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	1340	Р	TL 488 666	7	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	3340	Р	TL 494 682	21	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	3341	Р	TL 488 680	21	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	4149	Р	TL 489 671	23	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	4150	Р	TL 496 668	23	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	4151	Р	TL 503 664	23	07 JUN 1946	AC	9800
RAF/CPE/UK/1952	554	1099	Р	TL 491 668	5	25 MAR 1947	А	10000
RAF/CPE/UK/1952	554	1100	Р	TL 493 673	5	25 MAR 1947	А	10000
RAF/CPE/UK/1952	554	1101	Р	TL 495 677	5	25 MAR 1947	A	10000
RAF/CPE/UK/1952	554	1102	Р	TL 497 681	5	25 MAR 1947	А	10000
RAF/CPE/UK/1952	554	3099	Р	TL 507 664	29	25 MAR 1947	А	10000
RAF/CPE/UK/1952	554	3100	Р	TL 509 668	29	25 MAR 1947	А	10000
RAF/CPE/UK/1952	554	3101	Р	TL 511 673	29	25 MAR 1947	А	10000
RAF/CPE/UK/1952	554	3102	Р	TL 513 677	29	25 MAR 1947	Α	10000
RAF/CPE/UK/2021	605	3009	Р	TL 504 686	1	21 APR 1947	AB	9800
RAF/CPE/UK/2021	605	3010	Р	TL 501 685	1	21 APR 1947	AB	9800
RAF/CPE/UK/2021	605	3011	Р	TL 497 685	1	21 APR 1947	AB	9800
RAF/CPE/UK/2021	605	3012	Р	TL 493 685	1	21 APR 1947	AB	9800
RAF/540/1143	1462	37	Р	TL 485 663	2	09 JUN 1953	А	10000
RAF/540/1143	1462	38	Р	TL 485 669	2	09 JUN 1953	Α	10000

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Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
RAF/540/1143	1462	39	Р	TL 484 675	2	09 JUN 1953	Α	10000
RAF/540/1143	1462	40	Р	TL 484 680	2	09 JUN 1953	Α	10000
RAF/540/1143	1462	41	Р	TL 484 686	2	09 JUN 1953	Α	10000
RAF/540/1143	1462	124	Р	TL 516 663	4	09 JUN 1953	А	10000
RAF/540/1143	1462	125	Р	TL 516 669	4	09 JUN 1953	Α	10000
RAF/540/1143	1462	37	Р	TL 501 664	10	09 JUN 1953	Α	10000
RAF/540/1143	1462	38	Р	TL 501 670	10	09 JUN 1953	Α	10000
RAF/540/1143	1462	39	Р	TL 501 675	10	09 JUN 1953	Α	10000
RAF/540/1143	1462	40	Р	TL 500 681	10	09 JUN 1953	А	10000
RAF/540/1143	1462	41	Р	TL 500 687	10	09 JUN 1953	Α	10000
RAF/58/2702	1890	151	N	TL 502 657	5	03 FEB 1959	Α	10000
RAF/58/2702	1890	152	N	TL 496 657	5	03 FEB 1959	А	10000
RAF/58/2702	1890	99	N	TL 497 656	9	03 FEB 1959	Α	10000
RAF/58/2702	1890	100	N	TL 491 657	9	03 FEB 1959	Α	10000
RAF/58/2702	1890	151	N	TL 503 675	11	03 FEB 1959	Α	10000
RAF/58/2702	1890	152	N	TL 497 675	11	03 FEB 1959	Α	10000
RAF/58/2702	1890	153	N	TL 491 675	11	03 FEB 1959	Α	10000
RAF/543/715	2102	11	Р	TL 484 672	4	28 SEP 1959	Α	10000
RAF/543/715	2102	12	Р	TL 491 672	4	28 SEP 1959	Α	10000
RAF/543/715	2102	12	Р	TL 492 653	10	28 SEP 1959	Α	10000
RAF/543/T/899	2660	107	Р	TL 513 675	14	05 MAY 1960	AC	10002
RAF/543/T/899	2660	108	Р	TL 511 669	14	05 MAY 1960	AC	10002
RAF/543/T/899	2660	109	Р	TL 509 663	14	05 MAY 1960	AC	10002
RAF/543/T/899	2660	107	Р	TL 495 682	28	05 MAY 1960	AC	10002
RAF/543/T/899	2660	108	Р	TL 493 676	28	05 MAY 1960	AC	10002
RAF/543/T/899	2660	109	Р	TL 490 670	28	05 MAY 1960	AC	10002
RAF/540/822	3084	5001	Р	TL 498 669	1	25 JUL 1952	AB	14000

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Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
RAF/540/822	3084	5002	Р	TL 493 668	1	25 JUL 1952	AB	14000
RAF/540/822	3084	5003	Р	TL 487 668	1	25 JUL 1952	AB	14000
RAF/540/822	3084	5014	Р	TL 487 683	4	25 JUL 1952	AB	5000
RAF/540/822	3084	5015	Р	TL 488 679	4	25 JUL 1952	AB	5000
RAF/540/822	3084	5016	Р	TL 488 675	4	25 JUL 1952	AB	5000
RAF/540/822	3084	5017	Р	TL 488 671	4	25 JUL 1952	AB	5000
RAF/540/822	3084	5018	Р	TL 489 667	4	25 JUL 1952	AB	5000
RAF/540/822	3084	5024	Р	TL 491 665	14	25 JUL 1952	AB	5000
RAF/540/822	3084	5025	Р	TL 490 668	14	25 JUL 1952	AB	5000
RAF/540/822	3084	5028	Р	TL 492 683	5	25 JUL 1952	AB	5000
RAF/540/822	3084	5029	Р	TL 492 679	5	25 JUL 1952	AB	5000
RAF/540/822	3084	5030	Р	TL 491 676	5	25 JUL 1952	AB	5000
RAF/540/822	3084	5031	Р	TL 492 670	5	25 JUL 1952	AB	5000
RAF/540/822	3084	5032	Р	TL 492 665	5	25 JUL 1952	AB	5000
RAF/540/822	3084	5037	Р	TL 498 665	6	25 JUL 1952	AB	5000
RAF/540/822	3084	5038	Р	TL 498 668	6	25 JUL 1952	AB	5000
RAF/540/822	3084	5039	Р	TL 497 672	6	25 JUL 1952	AB	5000
RAF/540/822	3084	5040	Р	TL 497 676	6	25 JUL 1952	AB	5000
RAF/540/822	3084	5041	Р	TL 496 680	6	25 JUL 1952	AB	5000
RAF/540/629	3163	3004	N	TL 503 663	1	20 NOV 1951	AC	10000
RAF/540/629	3163	3005	N	TL 506 667	1	20 NOV 1951	AC	10000
RAF/540/629	3163	3006	Р	TL 509 672	1	20 NOV 1951	AC	10000
RAF/540/629	3163	3007	Р	TL 511 676	1	20 NOV 1951	AC	10000
RAF/540/629	3163	4004	Р	TL 486 672	5	20 NOV 1951	AC	10000
RAF/540/629	3163	4005	Р	TL 489 676	5	20 NOV 1951	AC	10000
RAF/540/629	3163	4006	Р	TL 492 680	5	20 NOV 1951	AC	10000
RAF/540/629	3163	4007	Р	TL 495 685	5	20 NOV 1951	AC	10000

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Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
MAL/68061	5155	19	Р	TL 489 664	1	12 AUG 1968	Α	10000
MAL/68061	5155	20	Р	TL 498 664	1	12 AUG 1968	Α	10000
MAL/68061	5155	21	Р	TL 508 664	1	12 AUG 1968	Α	10000
MAL/68061	5155	35	Р	TL 507 680	2	12 AUG 1968	Α	10000
MAL/68061	5155	36	Р	TL 498 680	2	12 AUG 1968	Α	10000
MAL/68061	5155	37	Р	TL 489 680	2	12 AUG 1968	Α	10000
MAL/69068	5422	92	Р	TL 506 682	5	18 JUL 1969	Α	10500
MAL/69068	5422	93	Р	TL 496 681	5	18 JUL 1969	Α	10500
MAL/69068	5422	94	Р	TL 487 681	5	18 JUL 1969	Α	10500
MAL/69068	5422	95	Р	TL 478 681	5	18 JUL 1969	Α	10500
MAL/69071	5424	19	Р	TL 484 666	1	22 JUL 1969	Α	10500
MAL/69071	5424	20	Р	TL 493 666	1	22 JUL 1969	Α	10500
MAL/69071	5424	21	Р	TL 503 666	1	22 JUL 1969	Α	10500
MAL/69071	5424	70	Р	TL 502 682	2	22 JUL 1969	Α	10500
MAL/69071	5424	71	Р	TL 492 682	2	22 JUL 1969	Α	10500
US/7PH/GP/LOC126	6835	5004	Р	TL 489 666	5	29 DEC 1943	AC	5000
US/7PH/GP/LOC126	6835	5005	Р	TL 498 677	6	29 DEC 1943	AC	5000
US/7PH/GP/LOC126	6835	5009	Р	TL 500 689	7	29 DEC 1943	AC	5000
US/7PH/GP/LOC267	6914	5054	Р	TL 507 661	21	10 APR 1944	AC	13300
US/7PH/GP/LOC267	6914	5055	Р	TL 498 666	21	10 APR 1944	AC	13300
US/7PH/GP/LOC285	6926	5018	Р	TL 512 662	5	19 APR 1944	Α	12500
US/7PH/GP/LOC285	6926	5019	Р	TL 499 653	5	19 APR 1944	А	12500
RAF/HLA/482	8281	1064	Р	TL 483 676	14	13 APR 1942	А	15000
RAF/HLA/482	8281	1065	Р	TL 486 686	14	13 APR 1942	А	15000
RAF/HLA/482	8281	2064	Р	TL 497 667	29	13 APR 1942	Α	15000
RAF/HLA/482	8281	2065	Р	TL 500 677	29	13 APR 1942	Α	15000
OS/72146	10311	228	Р	TL 488 661	3	23 MAY 1972	Α	7000

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Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
OS/72146	10311	229	Р	TL 488 668	3	23 MAY 1972	А	7000
OS/72146	10311	230	Р	TL 489 674	3	23 MAY 1972	А	7000
OS/72146	10311	231	Р	TL 489 680	3	23 MAY 1972	Α	7000
OS/72146	10311	269	Р	TL 499 666	5	23 MAY 1972	А	7000
OS/72146	10311	277	N	TL 511 663	6	23 MAY 1972	A	7000
OS/72146	10311	278	N	TL 511 669	6	23 MAY 1972	А	7000
OS/72146	10311	279	N	TL 512 675	6	23 MAY 1972	A	7000
OS/72146	10311	280	N	TL 512 681	6	23 MAY 1972	A	7000
OS/72231	10313	356	Р	TL 500 665	1	15 JUL 1972	A	7000
OS/72231	10313	357	Р	TL 500 671	1	15 JUL 1972	A	7000
OS/72231	10313	358	Р	TL 500 677	1	15 JUL 1972	А	7000
OS/72231	10313	359	Р	TL 500 683	1	15 JUL 1972	А	7000
OS/72231	10313	394	Р	TL 511 681	2	15 JUL 1972	A	7000
OS/72231	10313	395	Р	TL 511 675	2	15 JUL 1972	А	7000
OS/72231	10313	396	Р	TL 511 669	2	15 JUL 1972	А	7000
OS/68134	11678	547	Р	TL 501 668	14	31 MAY 1968	A	7500
OS/68134	11678	548	Р	TL 501 661	14	31 MAY 1968	A	7500
OS/68134	11678	549	Р	TL 501 654	14	31 MAY 1968	A	7500
OS/67145	11702	213	Р	TL 480 661	8	05 JUN 1967	A	7500
OS/67145	11702	214	Р	TL 491 666	9	05 JUN 1967	A	7500
OS/67145	11702	215	Р	TL 491 659	9	05 JUN 1967	A	7500
OS/67145	11702	266	Р	TL 503 659	10	05 JUN 1967	А	7500
OS/81004	12473	3	N	TL 481 673	1	13 APR 1981	А	7600
OS/81004	12473	4	N	TL 484 680	1	13 APR 1981	А	7600
OS/81004	12473	5	N	TL 487 687	1	13 APR 1981	А	7600
OS/91030	13804	18	N	TL 489 684	1	12 APR 1991	А	8000
OS/91030	13804	19	N	TL 496 684	1	12 APR 1991	Α	8000

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Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
OS/91030	13804	20	N	TL 503 684	1	12 APR 1991	А	8000
OS/91030	13804	24	N	TL 509 671	2	12 APR 1991	А	8000
OS/91030	13804	25	N	TL 503 671	2	12 APR 1991	А	8000
OS/91030	13804	26	N	TL 497 672	2	12 APR 1991	А	8000
OS/91030	13804	27	N	TL 489 669	2	12 APR 1991	Α	8000
OS/91030	13804	54	N	TL 492 654	3	12 APR 1991	А	8000
OS/91030	13804	55	N	TL 499 655	3	12 APR 1991	Α	8000
OS/94279	14719	41	N	TL 511 684	2	15 AUG 1994	А	8000
OS/94279	14719	42	N	TL 504 684	2	15 AUG 1994	А	8000
OS/94279	14719	43	N	TL 497 684	2	15 AUG 1994	А	8000
OS/94279	14719	44	N	TL 491 684	2	15 AUG 1994	А	8000
OS/94279	14719	109	N	TL 490 669	3	15 AUG 1994	А	8000
OS/94279	14719	110	N	TL 496 669	3	15 AUG 1994	Α	8000
OS/94279	14719	111	N	TL 503 669	3	15 AUG 1994	А	8000
OS/94279	14719	112	N	TL 509 669	3	15 AUG 1994	А	8000
OS/96168	15091	3	Р	TL 505 684	1	16 JUN 1996	Α	7700
OS/96168	15091	4	Р	TL 505 679	1	16 JUN 1996	Α	7700
OS/96168	15091	5	Р	TL 505 674	1	16 JUN 1996	А	7700
OS/96168	15091	6	Р	TL 505 669	1	16 JUN 1996	Α	7700
OS/96168	15091	7	N	TL 505 664	1	16 JUN 1996	Α	7700
OS/99212	15309	83	N	TL 485 674	2	17 JUL 1999	Α	6600
OS/99212	15309	84	N	TL 490 674	2	17 JUL 1999	Α	6600
OS/99212	15309	85	N	TL 495 674	2	17 JUL 1999	А	6600
OS/99212	15309	86	N	TL 500 674	2	17 JUL 1999	Α	6600
OS/99212	15309	165	N	TL 485 685	4	17 JUL 1999	Α	6600
OS/99212	15309	166	N	TL 490 685	4	17 JUL 1999	Α	6600
OS/99212	15309	167	N	TL 495 685	4	17 JUL 1999	Α	6600

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Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
OS/99212	15309	168	N	TL 500 685	4	17 JUL 1999	А	6600
OS/99596	15326	164	N	TL 485 665	4	26 JUN 1999	A	6600
OS/99596	15326	165	N	TL 490 665	4	26 JUN 1999	А	6600
OS/99596	15326	166	N	TL 495 665	4	26 JUN 1999	A	6600
OS/99596	15326	167	N	TL 500 665	4	26 JUN 1999	A	6600
RAF/58/2678	15373	54	Р	TL 506 681	1	21 JAN 1959	AB	10600
RAF/58/2678	15373	55	Р	TL 500 680	1	21 JAN 1959	AB	10600
RAF/58/2678	15373	56	Р	TL 495 679	1	21 JAN 1959	AB	10600
OS/98633	22756	18	N	TL 490 676	1	20 JUL 1968	A	7500
OS/98633	22756	19	N	TL 497 673	1	20 JUL 1968	A	7500
OS/98633	22756	20	N	TL 503 671	1	20 JUL 1968	А	7500
OS/98633	22756	45	N	TL 485 664	3	20 JUL 1968	А	7500
OS/98633	22756	46	N	TL 492 661	3	20 JUL 1968	A	7500
OS/98633	22756	47	N	TL 498 659	3	20 JUL 1968	А	7500
OS/98633	22756	51	N	TL 508 683	4	20 JUL 1968	А	7500
OS/98633	22756	52	N	TL 501 685	4	20 JUL 1968	A	7500
OS/98633	22756	53	N	TL 495 688	4	20 JUL 1968	A	7500
OS/01085	23537	97	N	TL 489 662	6	12 MAY 2001	A	7500
OS/01085	23537	98	N	TL 496 662	6	12 MAY 2001	А	7500
OS/01085	23537	99	N	TL 503 662	6	12 MAY 2001	A	7500
OS/01085	23537	132	N	TL 503 674	7	12 MAY 2001	А	7500
OS/01085	23537	133	N	TL 496 674	7	12 MAY 2001	А	7500
OS/01085	23537	134	N	TL 489 674	7	12 MAY 2001	А	7500
OS/01085	23537	135	N	TL 489 687	8	12 MAY 2001	A	7500
OS/01085	23537	136	N	TL 496 687	8	12 MAY 2001	А	7500
OS/01085	23537	137	N	TL 503 687	8	12 MAY 2001	А	7500
ADA/047	26061	62	N	TL 499 686	1	22 JUN 1981	А	9000

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Sortie number	Library number	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:
ADA/047	26061	63	N	TL 499 676	1	22 JUN 1981	Α	9000
ADA/047	26061	64	N	TL 499 666	1	22 JUN 1981	Α	9000
ADA/047	26061	65	N	TL 500 656	1	22 JUN 1981	Α	9000
ADA/058	26079	538	N	TL 499 661	1	11 AUG 1981	Α	10500
ADA/058	26079	539	N	TL 499 670	1	11 AUG 1981	Α	10500
ADA/058	26079	540	N	TL 499 678	1	11 AUG 1981	Α	10500
ADA/058	26079	541	N	TL 499 686	1	11 AUG 1981	Α	10500
ADA/098(Z)	26154	226	N	TL 499 658	5	03 AUG 1982	Α	5000
ADA/098(Z)	26154	227	N	TL 502 661	5	03 AUG 1982	Α	5000
ADA/098(Z)	26154	228	N	TL 505 664	5	03 AUG 1982	Α	5000
ADA/098(Z)	26154	229	N	TL 507 668	5	03 AUG 1982	Α	5000
ADA/098(Z)	26154	230	N	TL 510 671	5	03 AUG 1982	Α	5000
ADA/130	26196	225	N	TL 501 654	10	06 JUN 1983	Α	10000
ADA/130	26196	226	N	TL 501 671	10	06 JUN 1983	Α	10000
ADA/130	26196	227	N	TL 501 689	10	06 JUN 1983	Α	10000
ADA/212	26326	117	N	TL 500 654	1	24 JUL 1984	Α	10000
ADA/212	26326	118	N	TL 499 663	1	24 JUL 1984	Α	10000
ADA/212	26326	119	N	TL 500 672	1	24 JUL 1984	Α	10000
ADA/212	26326	120	N	TL 499 682	1	24 JUL 1984	Α	10000
ADA/583(X)	27252	59	N	TL 505 661	1	06 JUL 1993	Α	10000
ADA/583(X)	27252	60	N	TL 499 654	1	06 JUL 1993	Α	10000

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Cambridge University oblique collection

Searched August 2015

Photo number	Subject	NGRE	NGRN	Date
AY86-87	Denny Abbey	549200	268400	03/07/1948
BK30	Denny Abbey	549200	268400	17/07/1948
ES3-7	Denny Abbey	549200	268400	13/05/1950
ET1-8	Denny Abbey	549200	268400	28/05/1950
FT16-17	Denny Abbey	549200	268400	16/06/1951
AEG23-27	Earthworks, Denney Abbey, Waterbeach	549200	268400	15/05/1962
AFQ50-52	Earthworks, Denny Abbey	549300	268500	22/06/1962
ALB65-66	Denny Abbey, Waterbeach	549200	268400	04/06/1965
AWD88	Earthworks, 2.50 miles N of Waterbeach	550300	269500	30/07/1968
AWD90	Earthworks, 2.50 miles N of Waterbeach	550300	269500	30/07/1968
AWD91	Earthworks, Denny Abbey, N of Waterbeach	549200	268400	30/07/1968
AZX82-85	Denny Abbey	549300	268400	10/11/1969
BCH30-32	Denny Abbey	549200	268400	22/06/1970
BLO9-12	Denny Abbey	549200	268400	31/01/1973
BOY27-29	Denny Abbey	549200	268400	12/10/1973
BRY24-27	Earthworks, Denny Abbey, Waterbeach	549200	268400	15/01/1975
BVQ82-87	Denny Abbey	549200	268100	11/08/1975
BWM1-5	Denny Abbey	549200	268400	26/01/1976
BXZ 29, 32	Crop marks, NW of Waterbeach	548400	265900	27/06/1976
BZD65-66	Denny Abbey	549200	268400	05/07/1976
CBC17-18	Crop marks, 2 miles N of Waterbeach	548900	268200	27/08/1976
Photo number	Subject	NGRE	NGRN	Date
CBC19-22	Crop Patterns, 2 miles N of Waterbeach	549600	268700	27/08/1976

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CBC23-24	Denny Abbey	549200	268500	27/08/1976
CFH3-7	Denny Abbey	549200	268400	10/02/1978
CIC56-60	Earthworks, Denny Abbey, Waterbeach	549200	268400	13/01/1979
CQV15	Crop marks, 3 miles NW of Waterbeach	548800	267800	09/07/1986
CQV16	Denny Abbey, Waterbeach	549200	268400	09/07/1986

Cambridge University vertical collection

Photo	Date	Subject	Trace	Scale
K17D029-34	25-May-65	Denny Abbey, Cambs	65_023	2350
RC8C132-133	29-Nov-67	Denny Abbey, Camb	67_136	4225
RC8EB048-50	23-Mar-82	Fenland Survey	82_008	10000
RC8EH202-206	14-Apr-82	Fenland Survey	82_008	10000
RC8JL074-77	30-Jun-87	South Cambridgeshire District Survey	87_031	10000
RC8JL084-87	30-Jun-87	South Cambridgeshire District Survey	87_031	10000
RC8JL136-138	30-Jun-87	South Cambridgeshire District Survey	87_031	10000
RC8knBN132-135	16-Jul-88	Cambridgeshire	88_c025	10000
RC8knBO028-34	26-Aug-88	Cambridgeshire	88_c025	10000
RC8knBH050, 52, 54	13-Jun-88	Cambridgeshire	88_c025	10000
ZknKT18-22	10-Nov-00	Wicken Fen		0

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Air Photo Services Cambridge

Oblique photographs

94.141/5-6 14 July 1994 TL489681 95.113/26 7 July 1995 TL489681

Google Earth Pro

www.google.earth.com (Google Earth)

Time lines from:

1945: Provided by The Geoinformation Group

1999: Provided by Infoterra and Bluesky Ltd.

2002: Provided by Infoterra and Bluesky Ltd.

2003: Provided by Digital Globe satellite

2003: Provided by The Geoinformation Group

2007: Provided by Infoterra and Bluesky Ltd.

2008: Provided by Infoterra, Bluesky Ltd. and Getmapping plc

Also aerial and Birdseye aerial imagery at www.Bing.com

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Saxton's map of Cambridgeshire 1597

Extract of Jonas Moore's "Map of ye Great Levell", showing Swaffham, Waterbeach and Cottenham c.1706-1767

Mapp of ye Great Levell of ye Fenns extending into ye counties of Northampton, Norfolk, Suffolke, Lyncolne, Cambridge and Huntingdon and the Isle of Ely as it is now drained. Jonas Moore c.1707-1767

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OS 1st Edition. Sheet XXXIV.12: Waterbeach and Landbeach areas 1882-1887

OS 1st Edition. Sheet XXXIV.8: Chittering, Waterbeach and Landbeach areas 1882-1187

OS 1st Edition. Sheet XXXV.5: Chittering and Waterbeach areas 1882-1887

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APPENDIX D. OASIS REPORT FORM

All fields are required unless they are not applicable.

Project De	etails									
0.4.010.11		oxfordar3-219399	ordar3-219399							
Project Name Denny St Francis New			New Settlemer	ew Settlement, Waterbeach						
Project Date	es (field	lwork) Start				Finish				_
Previous Wo	ork (by	OA East)	No		Future Work Unknown					
Project Refe	erence	Codes								
Site Code	WATBAR15			Planning App. No.						
HER No.	ECB 4525			Related HER/OASIS No.						
Type of Proi	ioct/To	chniques Hee	d							
Type of Project/Techniques Used Prompt Direction from Local Planning A				uthority - F	PPG16					
Developmen	t Type	Rural Residential								
Please sele	ect all	techniques	used:							
DBA										
★ Aerial Photo	ography	- interpretation			X Docu	mentary Searc	:h			
Aerial Photo	graphy -	- new			× Visua	I Inspection (S	ite Visit)			
	types ι	& Period using the NMR bund, please st		Type T	hesau	rus togethe	r with th	heir respective	periods. If	f
Monument			Period							
Military barracks and airfield				Modern (1901 to Present)						
Abbey				Medieval (1066 to 1540)					7	
Road			Roman (43 to 410)					_		
Earthworks				Uncertain						_
Project Lo	ocatio	on								
County	Cambridgeshire				Site Ad	dress (inclu	ding po	ostcode if poss	ible)	
District	South Cambs			Waterbeach Barracks Denny End Road						
Parish	Water	beach			Waterbeach CB25 9PA					
HER	Cambridge									
Study Area	573 hectares				Nationa	al Grid Refe	rence	549865, 267263		_



Proj			

r roject origin									
Organisation	OA EAST								
Project Brief Orig	-								
Project Design Originator		-							
Project Manager	Stephen Macaulay								
Supervisor									
·		Louise Bi	Louise Bush						
Project Archiv	/es								
Physical Archive			Digital Archive			Paper Archive			
-			OA East	:		CCC Store			
-			WATBAR15			ECB 4525			
Archive Content	te/Media								
Archive Content	Physical	Digital Contents	Paper Contents		Digital Me	dia	Paper Media		
Animal Bones Ceramics Environmental Glass Human Bones Industrial Leather Metal Stratigraphic Survey Textiles Wood Worked Bone Worked Stone/Lithic None Other					□ Database □ GIS □ Geophysic □ Images □ Illustration □ Moving Im □ Spreadsho □ Survey □ Text □ Virtual Re	ns nage eets	Aerial Photos Context Sheet Correspondence Diary Drawing Manuscript Map Matrices Microfilm Misc. Research/Notes Photos Plans Report Sections Survey		

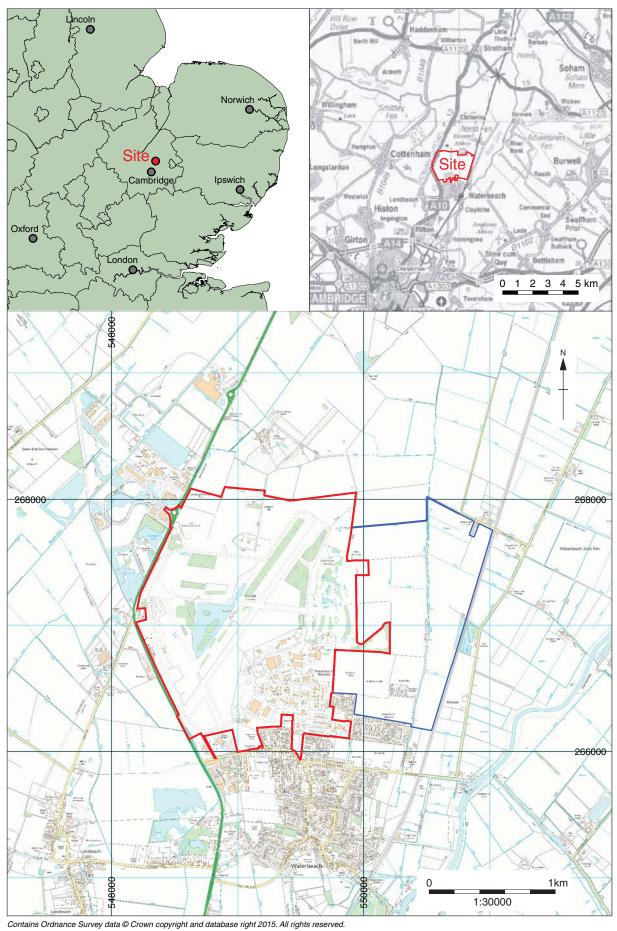
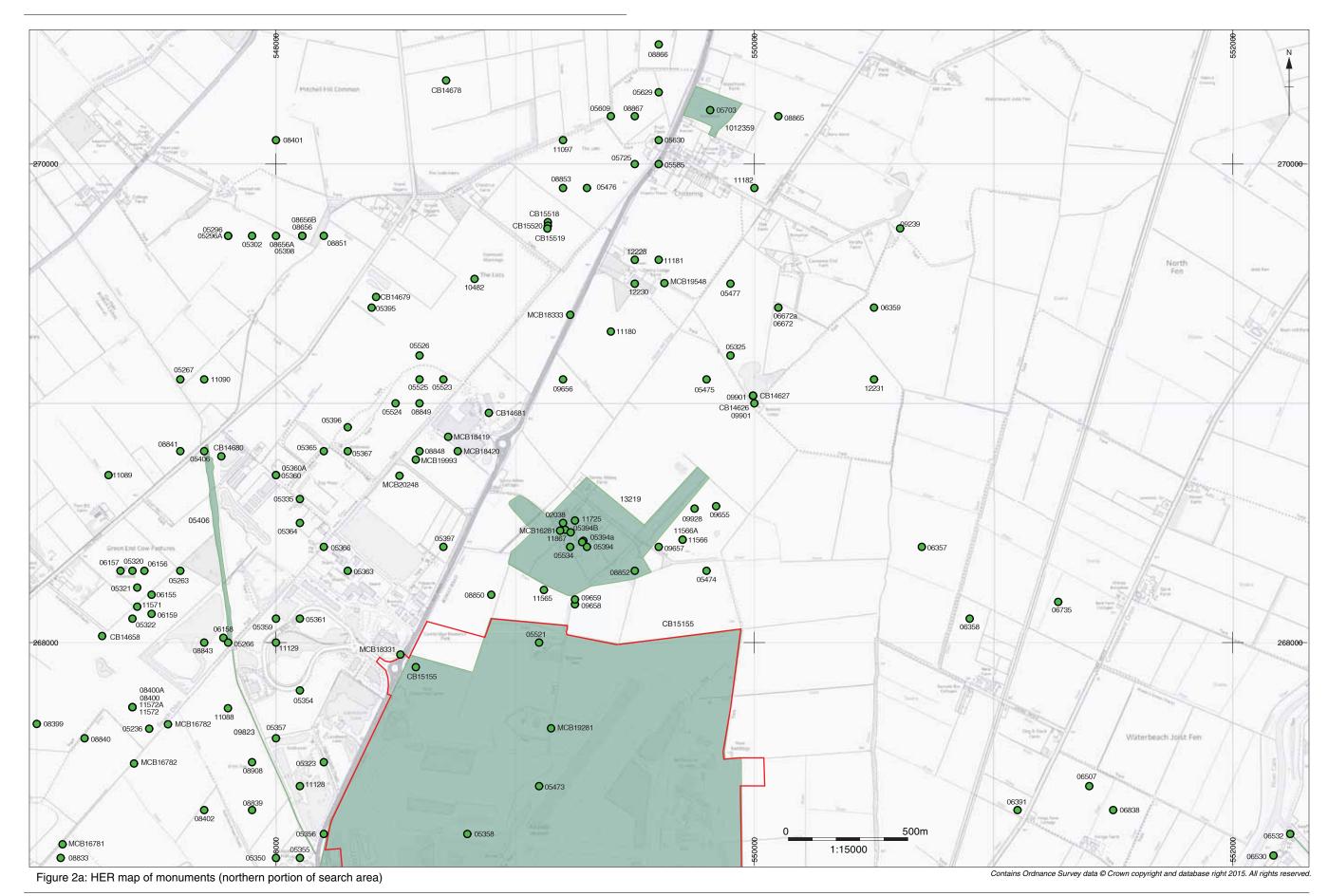


Figure 1: Site location showing proposed redeveopment site (red) and neighbouring land within the study area (blue)





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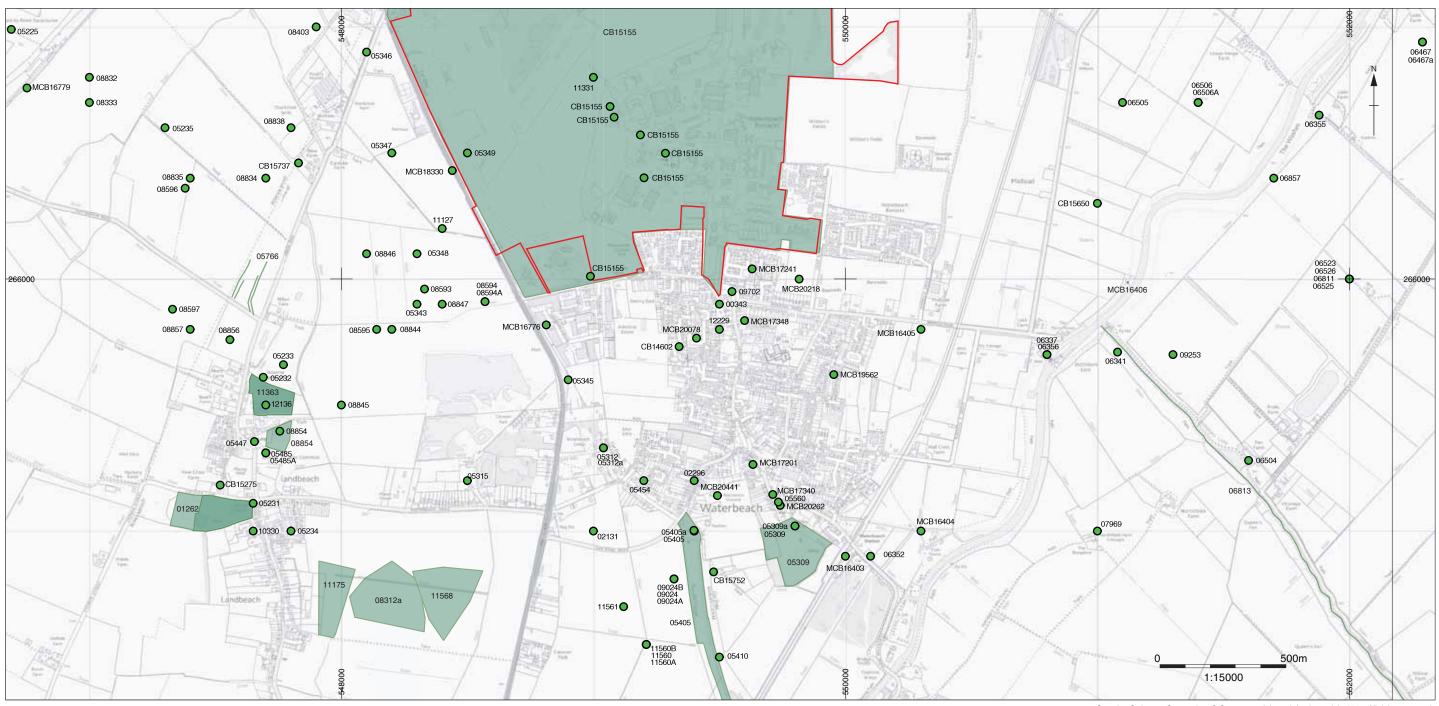


Figure 2b: HER map of monuments (southern portion of search area)

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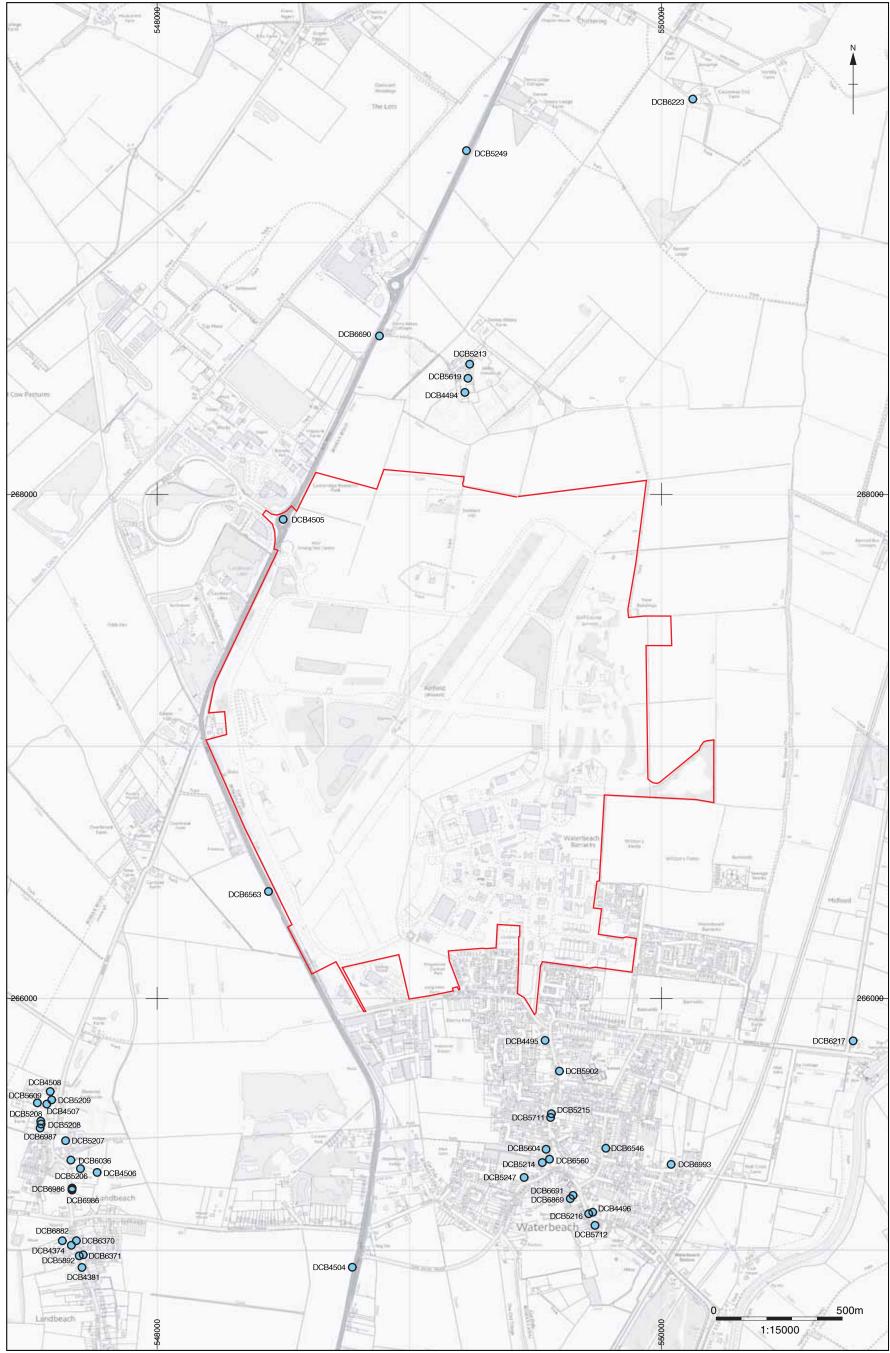


Figure 3: HER map of listed buildings

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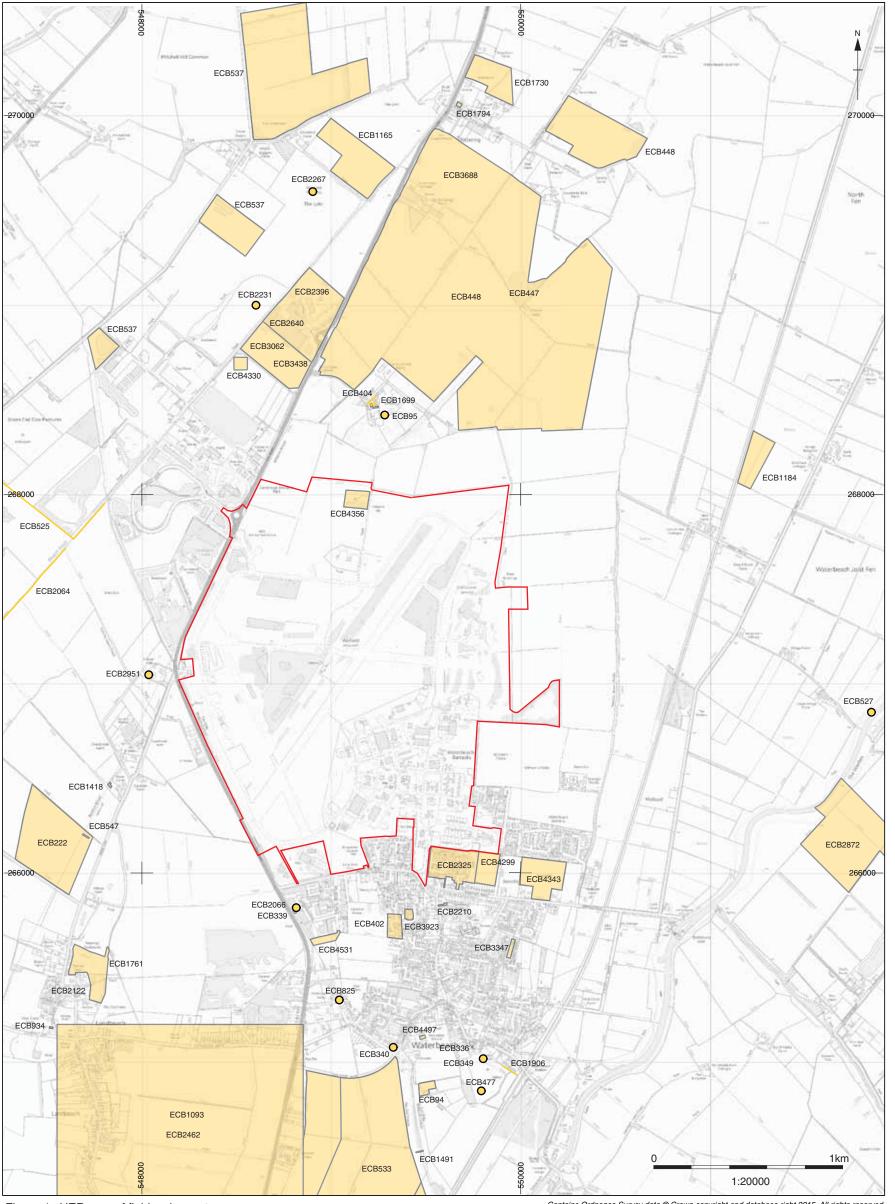
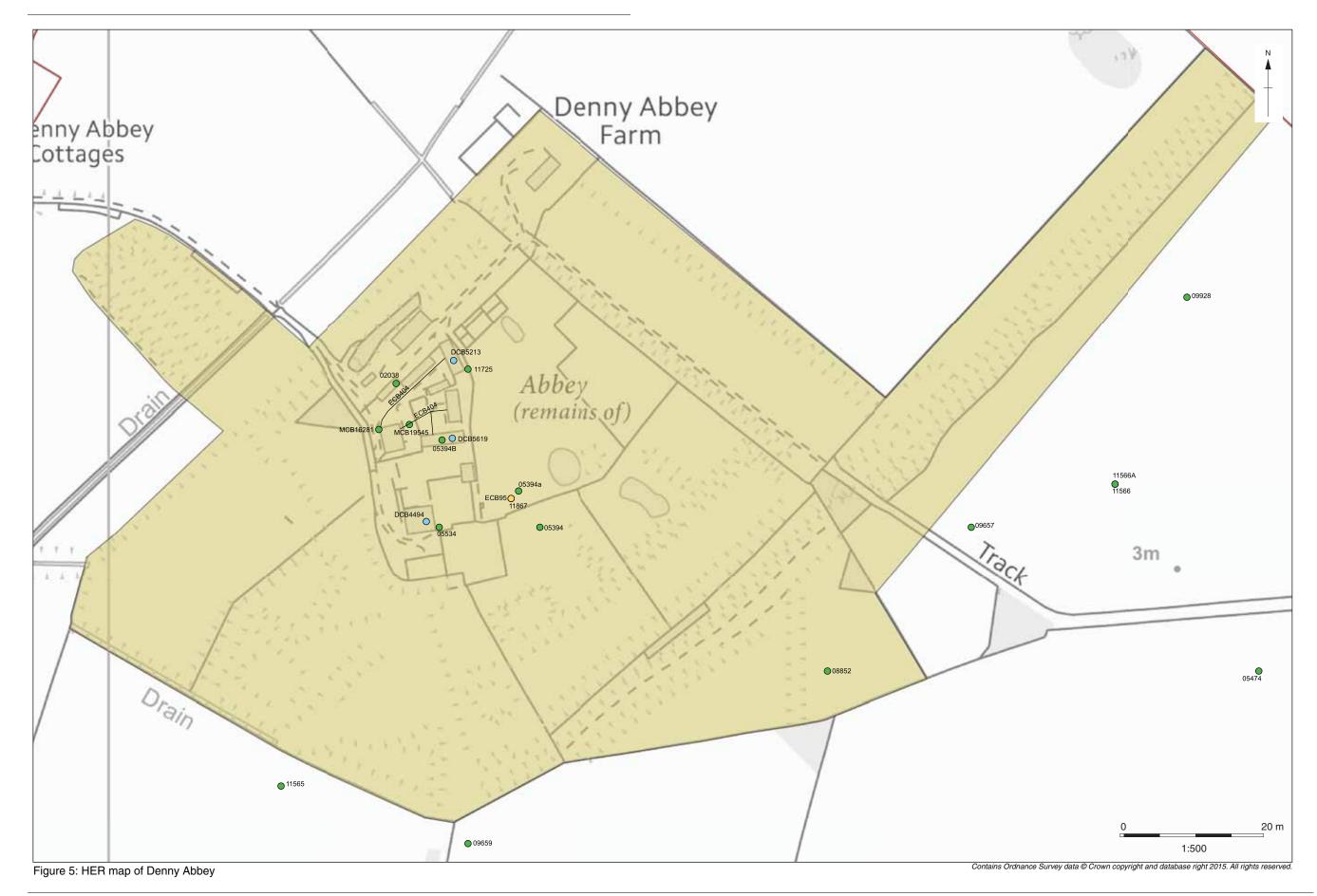


Figure 4: HER map of fieldwork events

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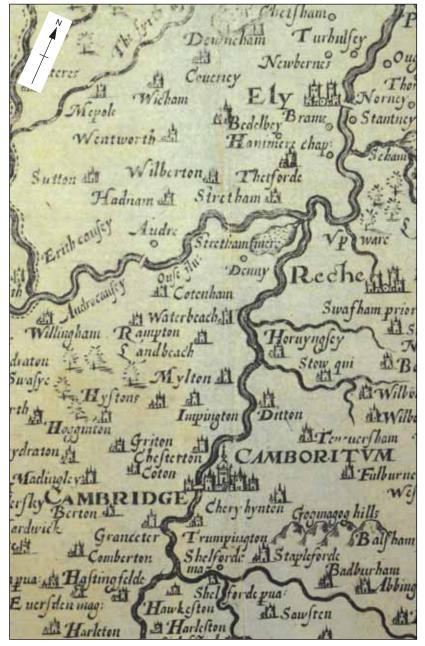


Figure 6: Christopher Saxton's Map of Cambridgeshire 1579

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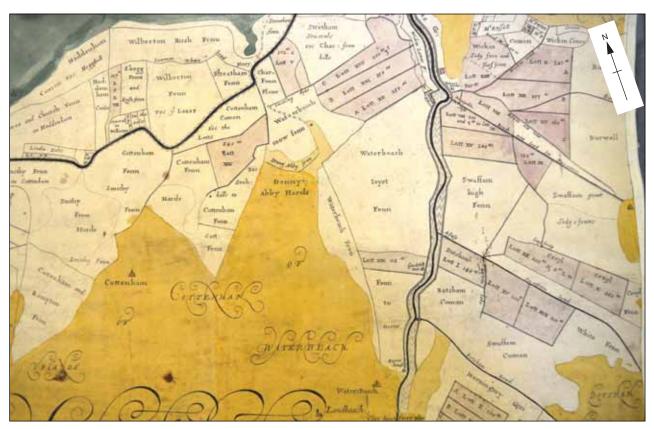


Figure 7: Jonas Moore's Map of ye Great Levell of ye Fenns 1684

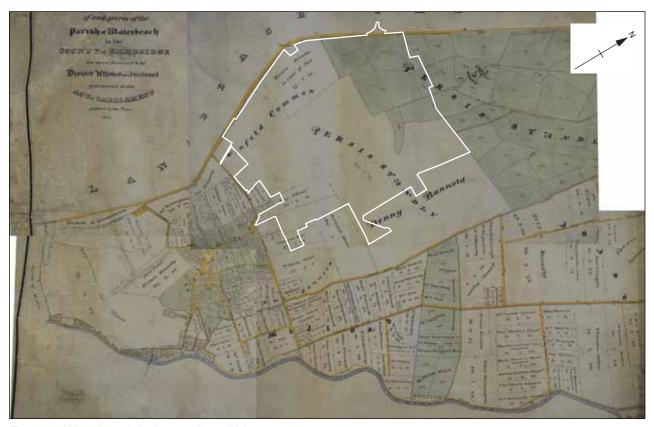


Figure 8: Waterbeach Inclosure Award Map 1813

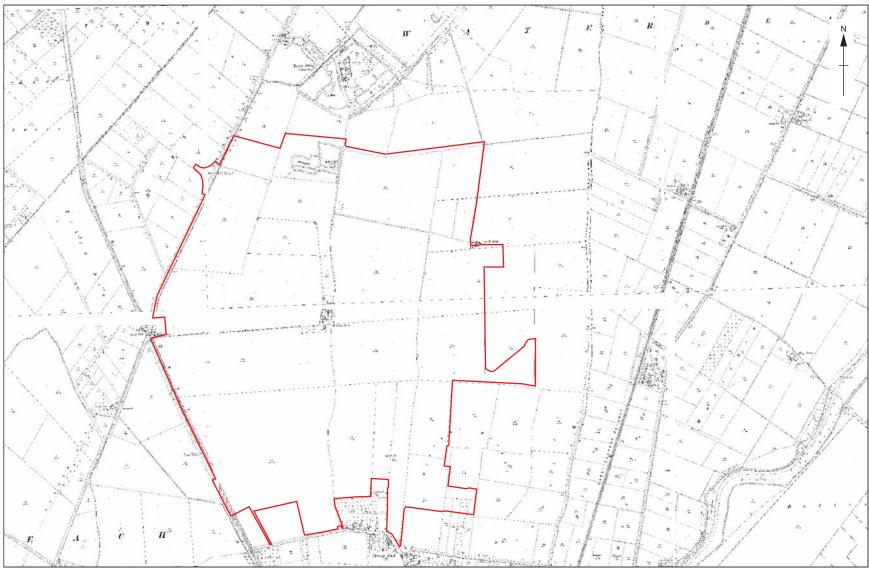


Figure 9: 1st edition Ordnance Survey Map 1887

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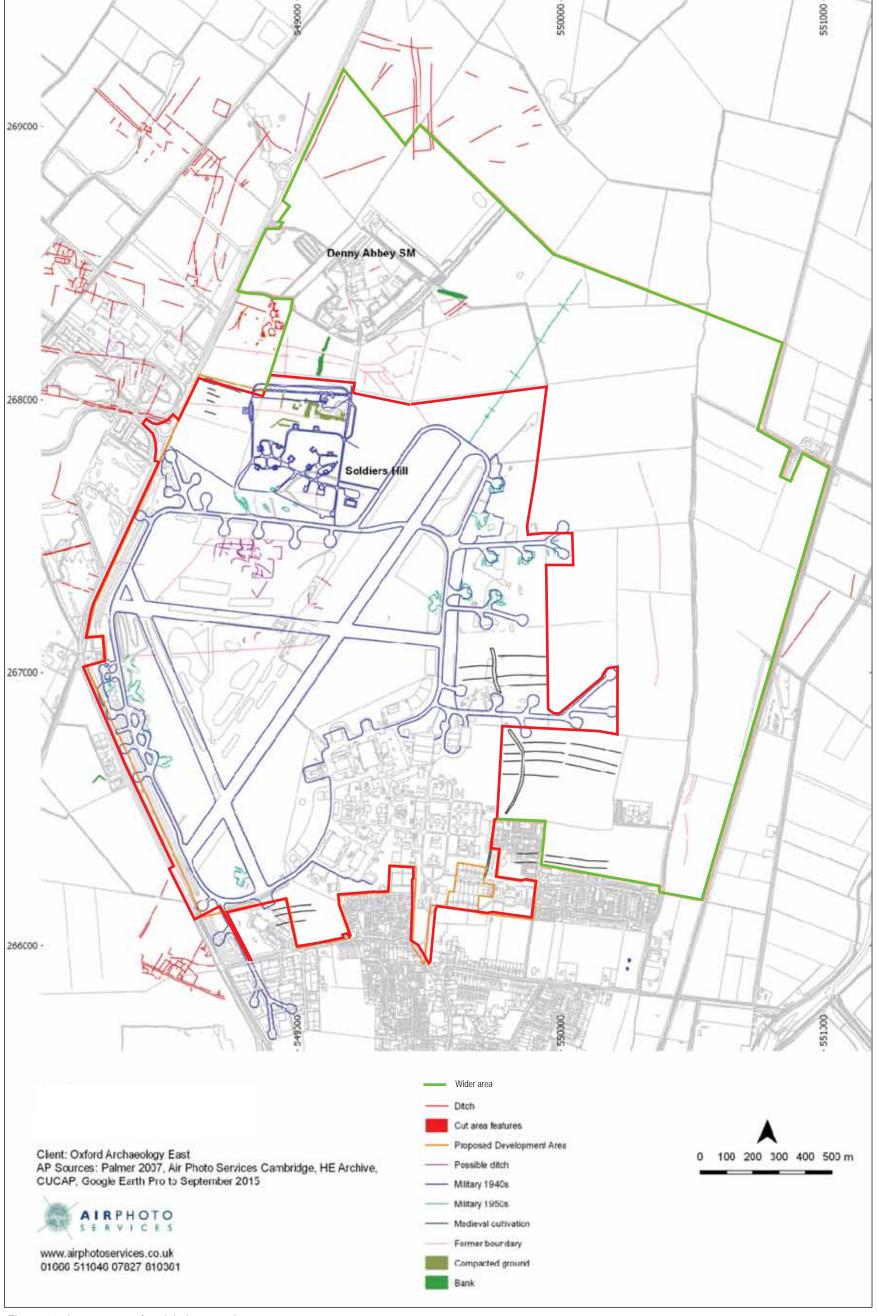


Figure 10: Assessment of aerial photographs



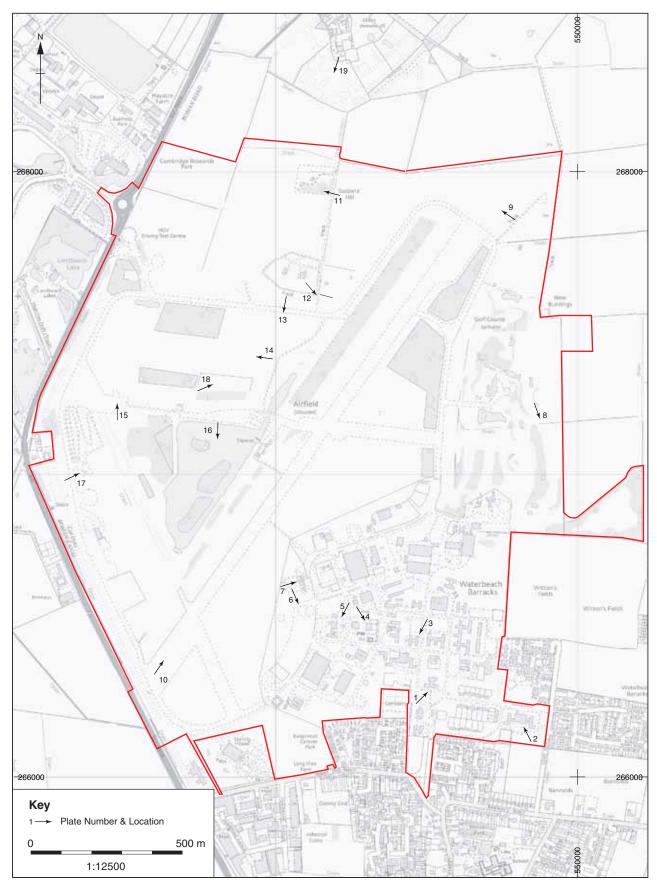
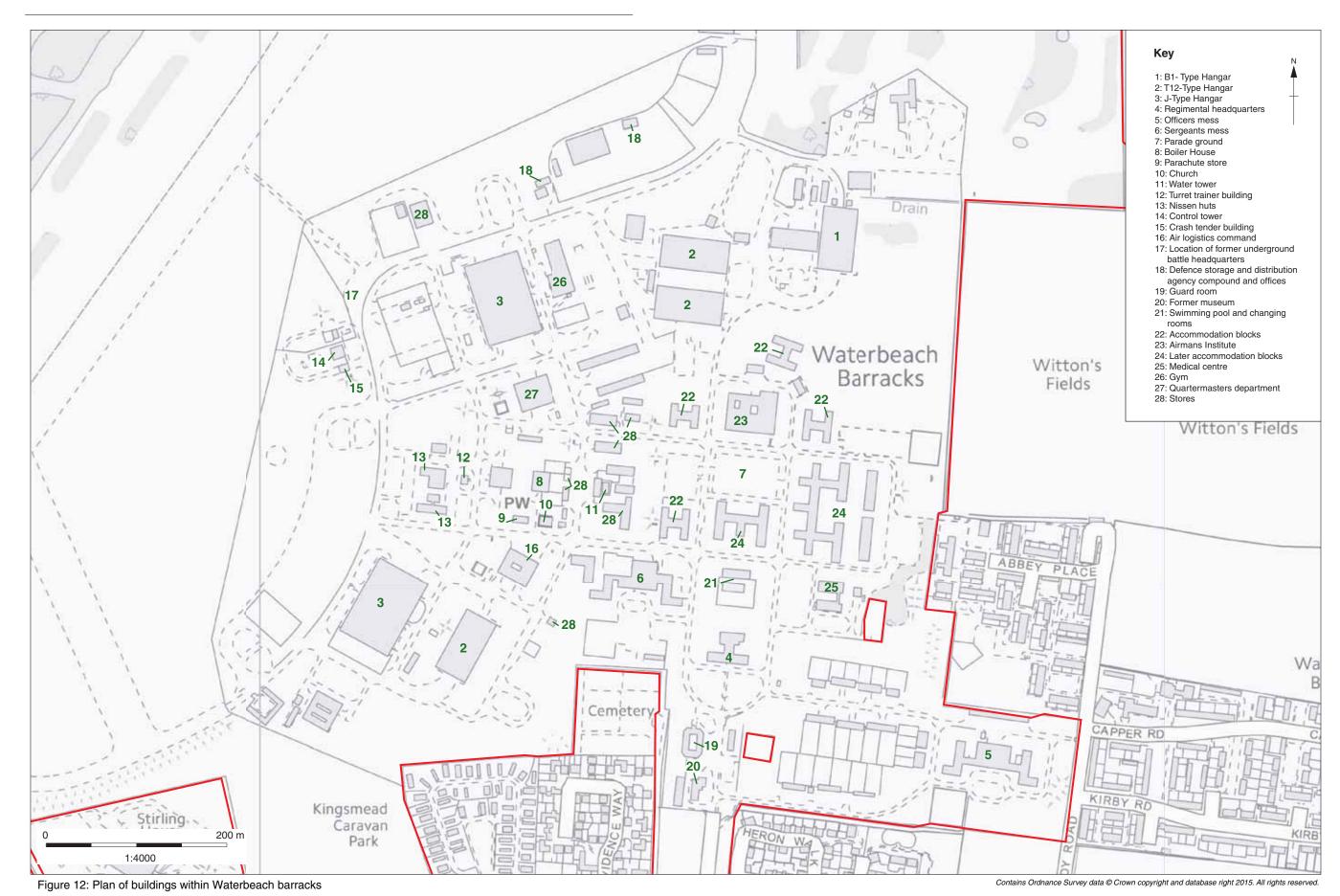


Figure 11: Map of plate locations

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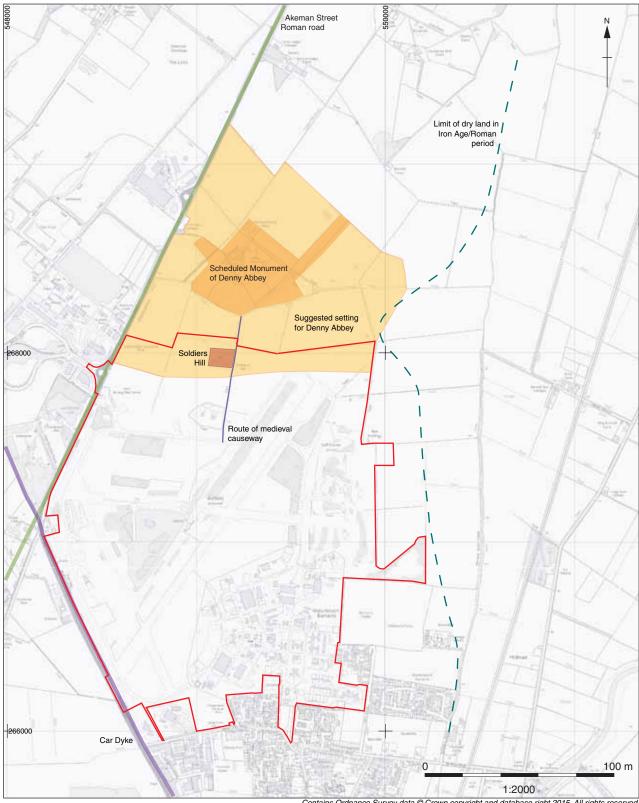


Figure 13: Potential heritage constraints

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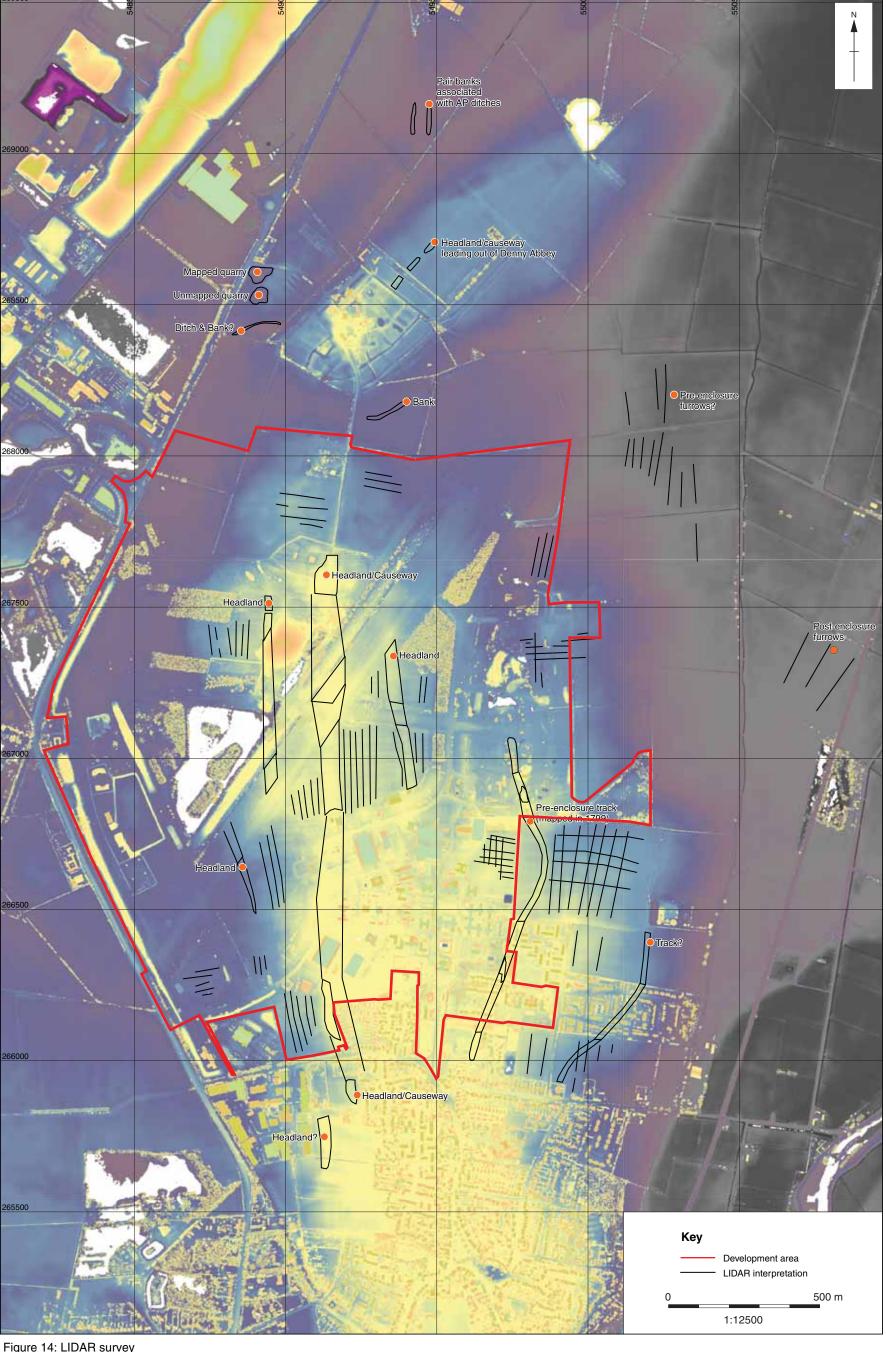


Figure 14: LIDAR survey

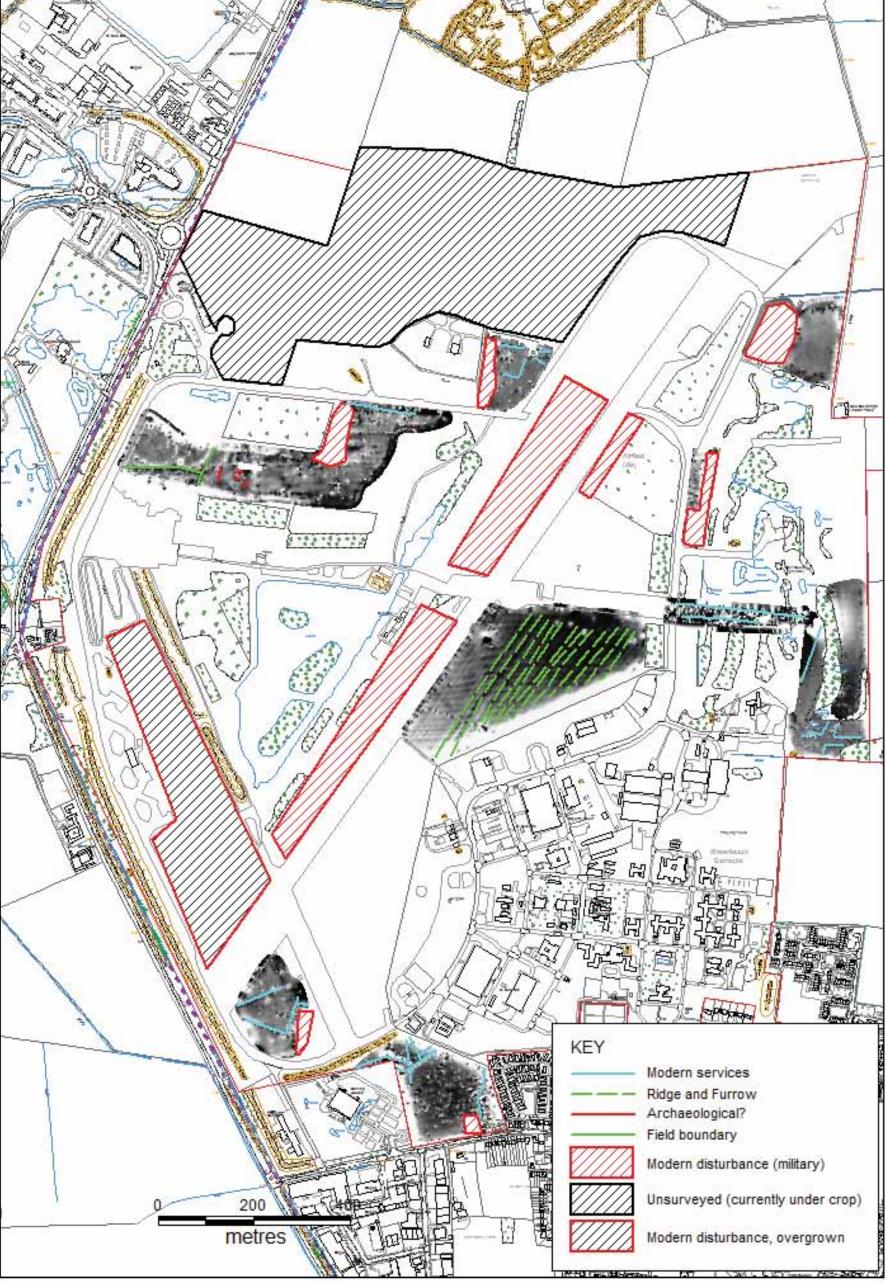


Figure 15: Preliminary geophysical survey results



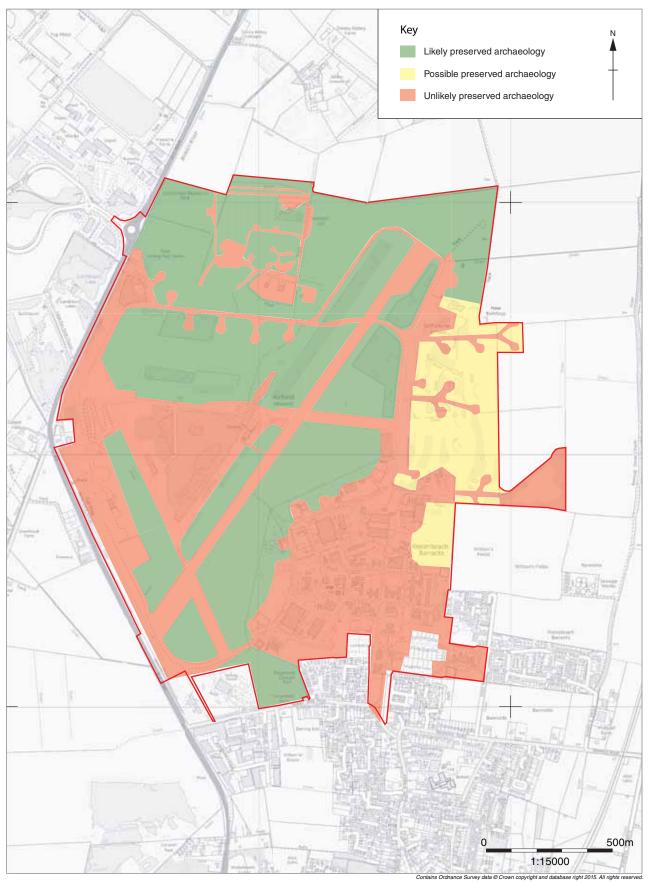


Figure 16: Deposit model



Plate 1: Regimental headquarters



Plate 3: Accommodation block A



Plate 2: Officers mess



Plate 4: Boiler house





Plate 5: Nissen huts



Plate 7: Air traffic control tower



Plate 6: Type J and T2 hangars



Plate 8: View south across golf course





Plate 9: View north-west toward Denny Abbey



Plate 11: Soldiers Hill



Plate 10: View north-east up runway



Plate 12: The well



Plate 13: View south toward the earth mound



Plate 15: Removed hay store



Plate 14: Potential quarrying on earth mound



Plate 16: View south across the lake



Plate 17: Concrete revetment



Plate 18: Stripped area



Plate 19: Panoramic view from Denny Abbey



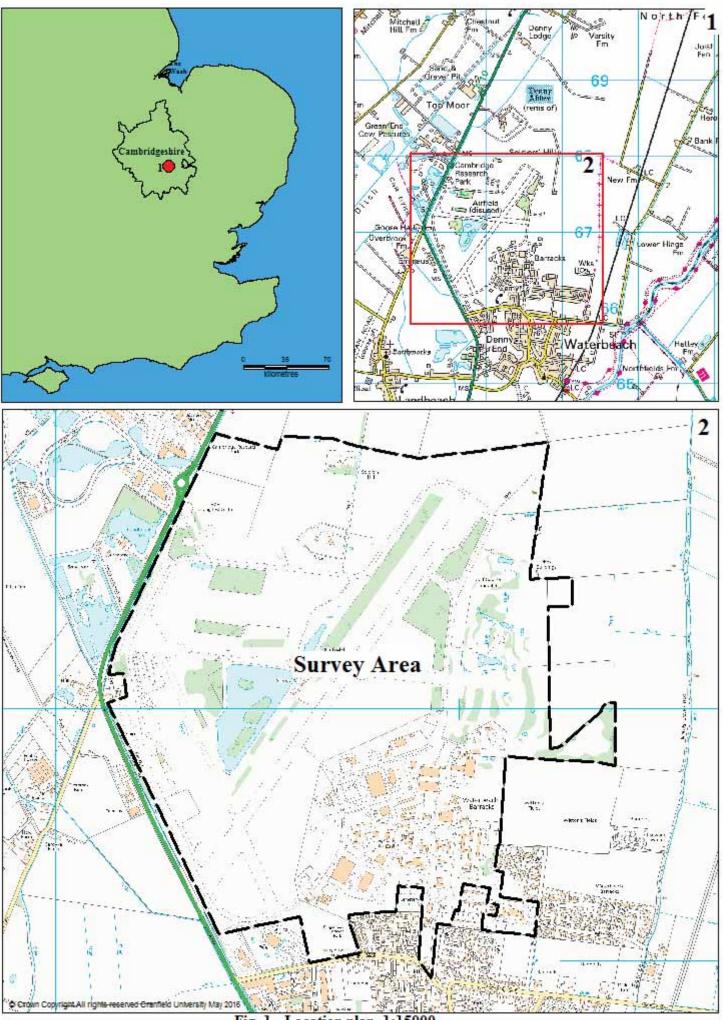


Fig. 1 - Location plan, 1:15000

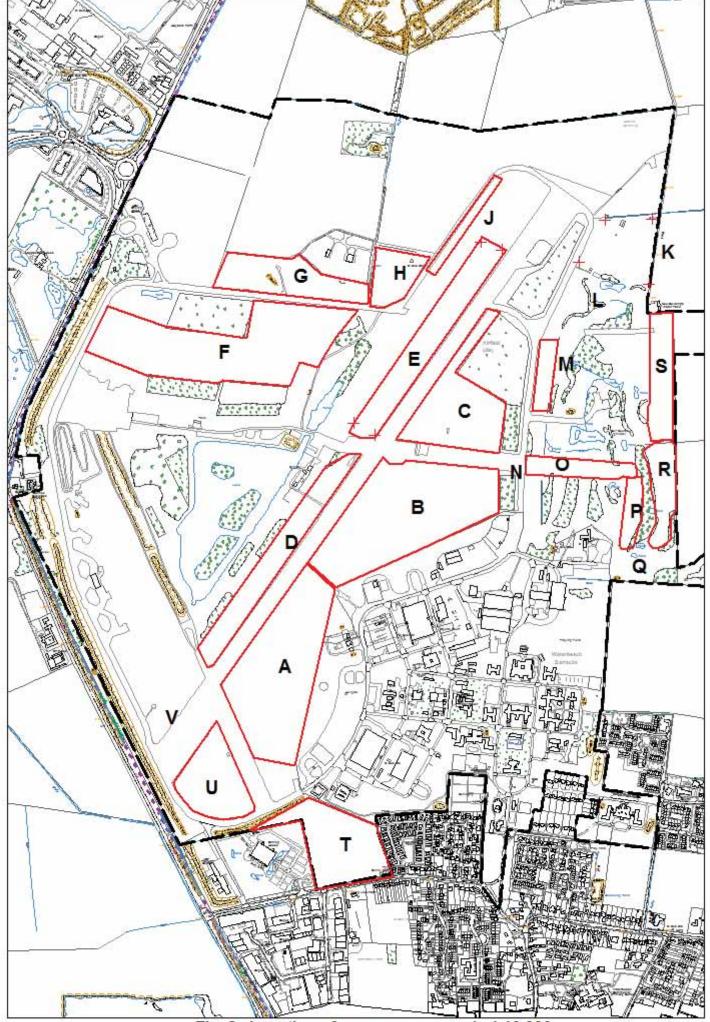


Fig. 2 - Location of survey areas, scale 1,10,000



Fig. 3 - Location plan showing geophysical survey plots (North), scale: -1:5000

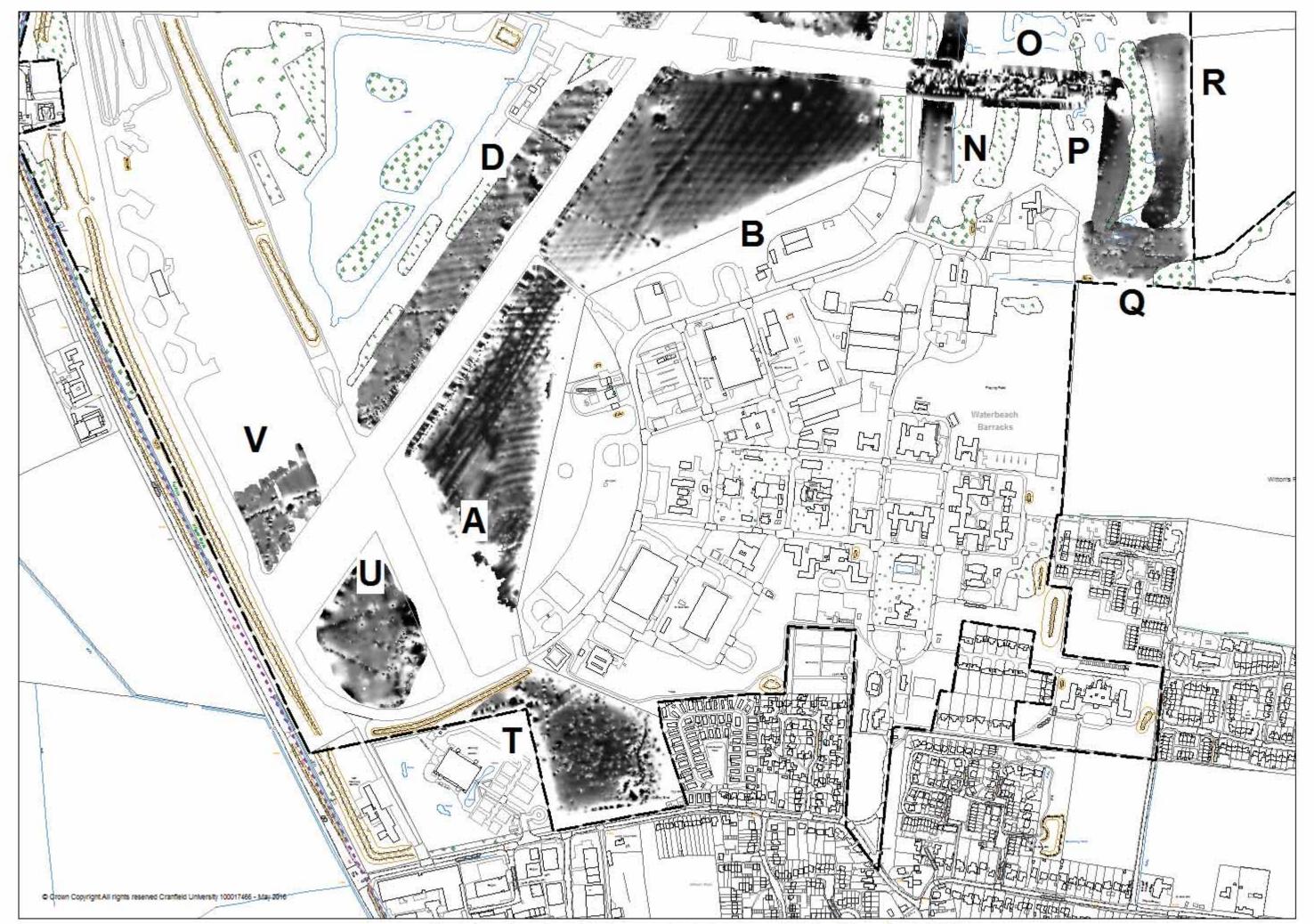


Fig. 4 - Location plan showing geophysical survey plots (South), scale: -1:5000

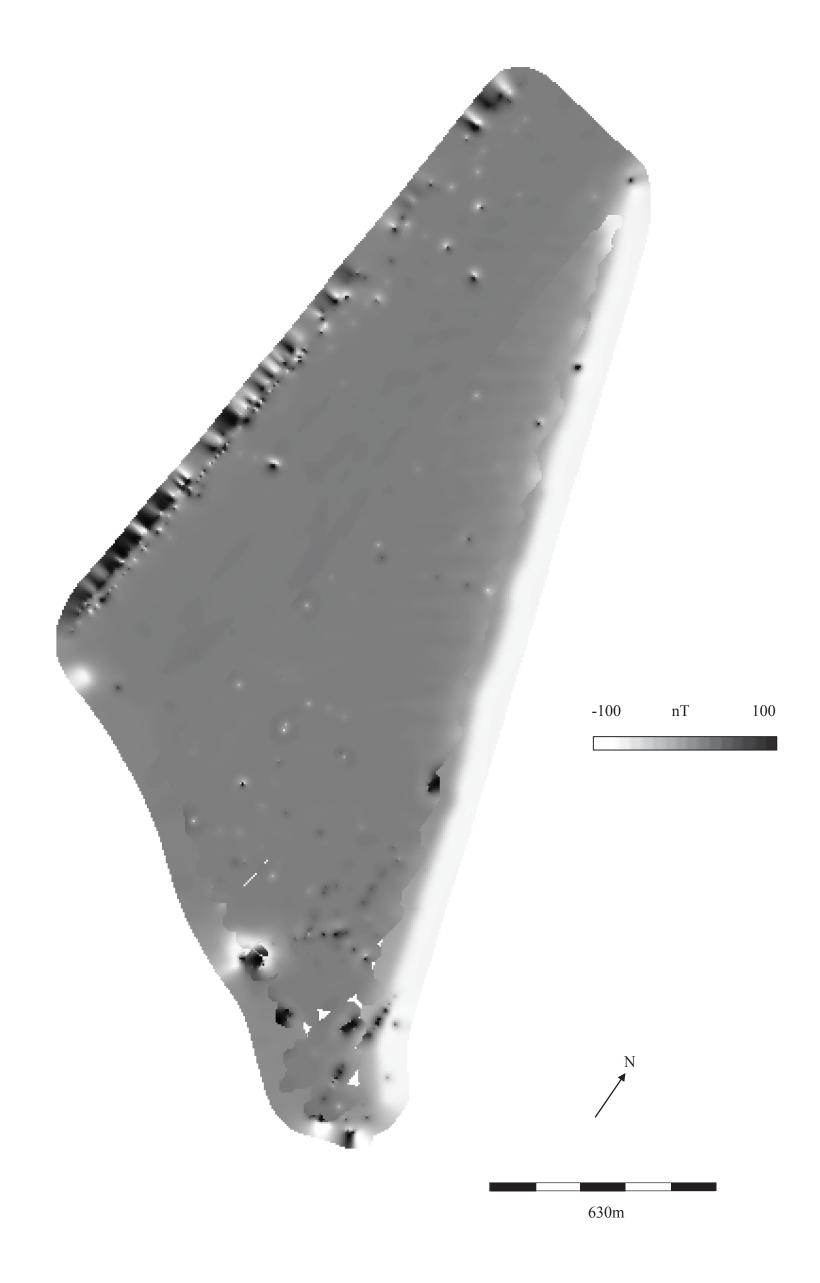


Fig.5— Field A: Greyscale image of raw data, scale – 1:2000

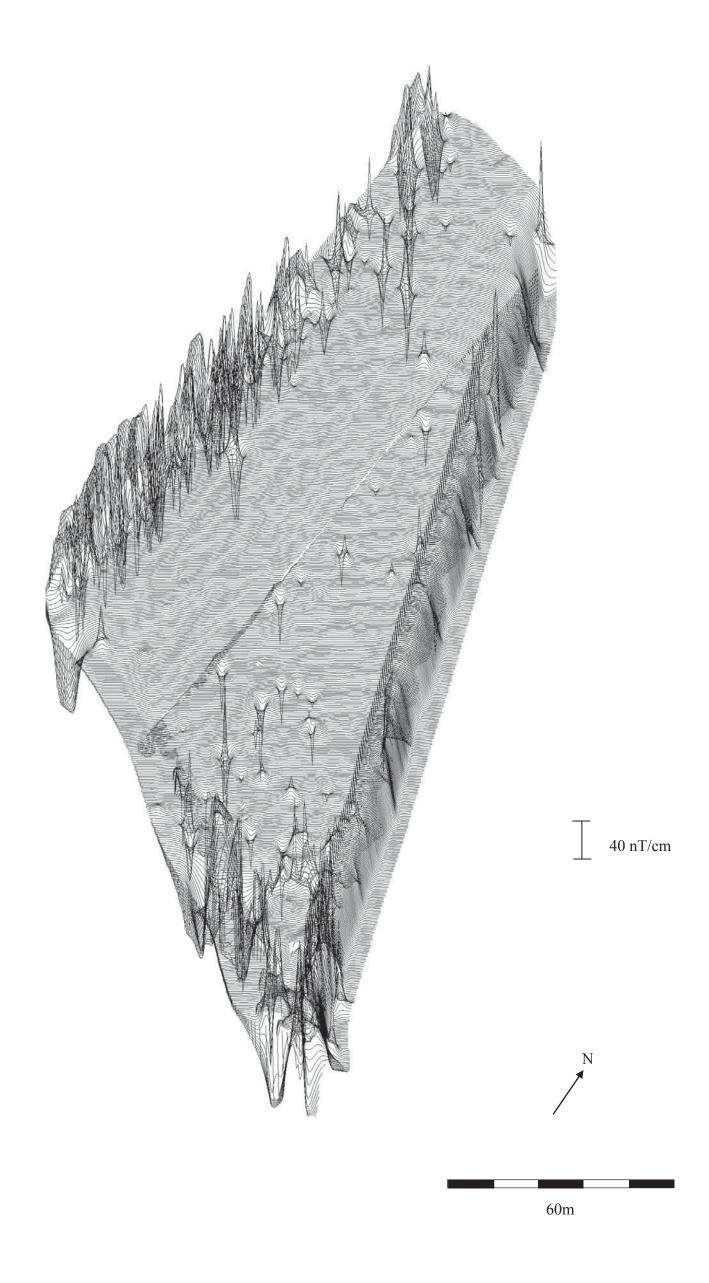


Fig.6– Field A: Trace image of raw data, scale – 1:2000

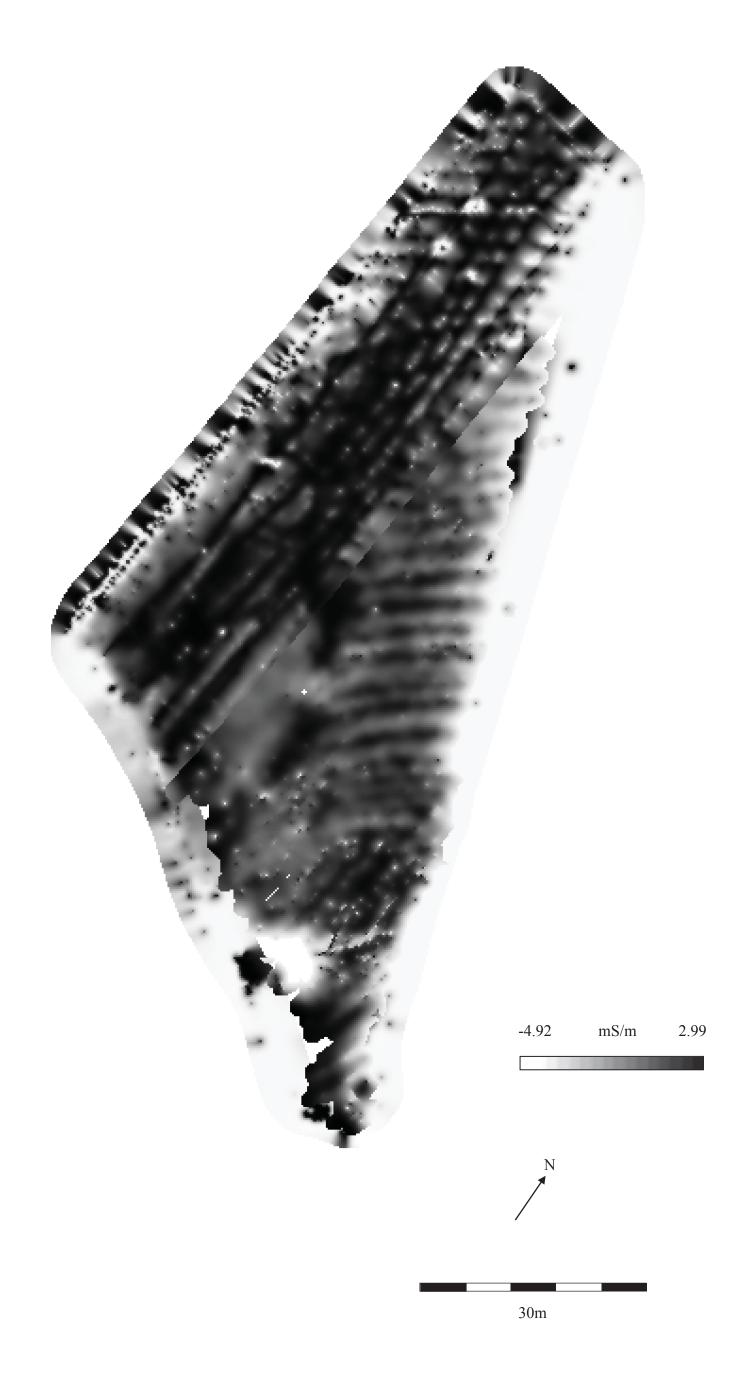


Fig.7– Field A: Greyscale image of enhanced data, scale – 1:2000

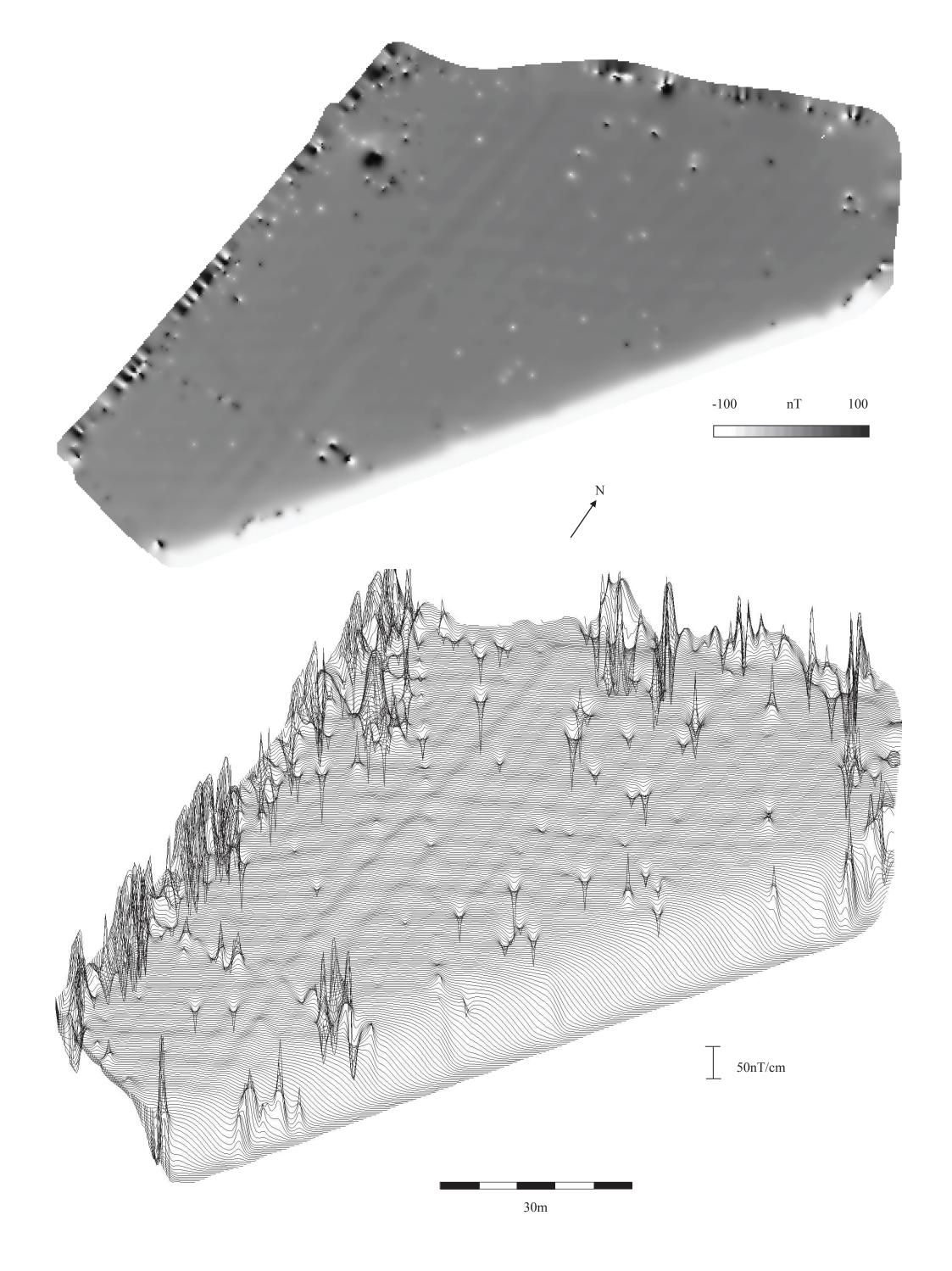
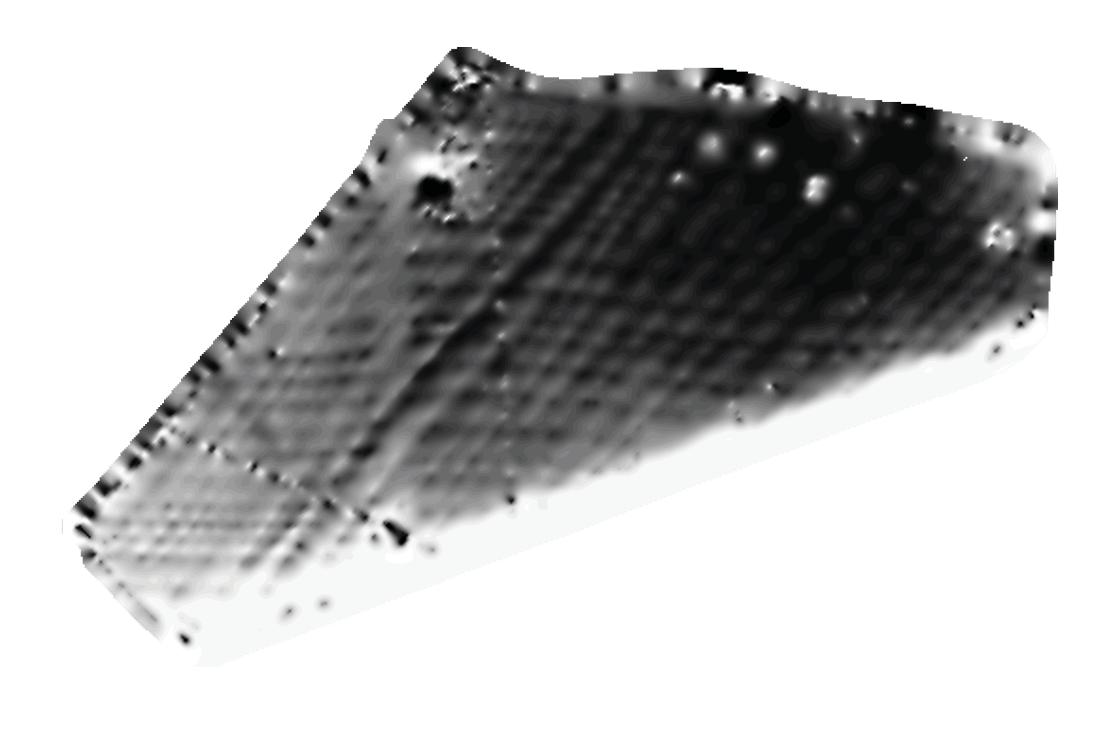


Fig.8– Field B: Greyscale and trace plots of data, scale – 1:2000



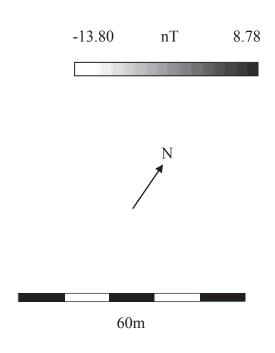
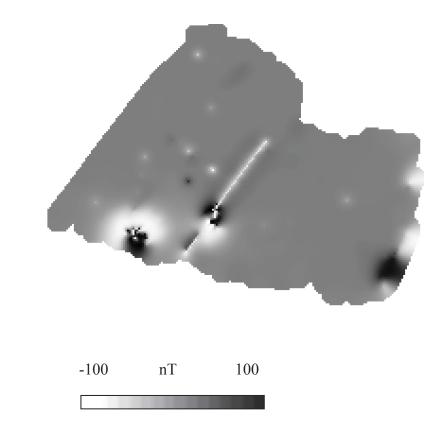
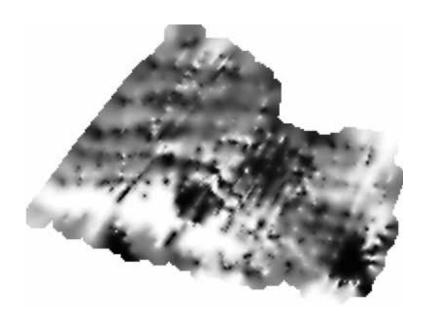
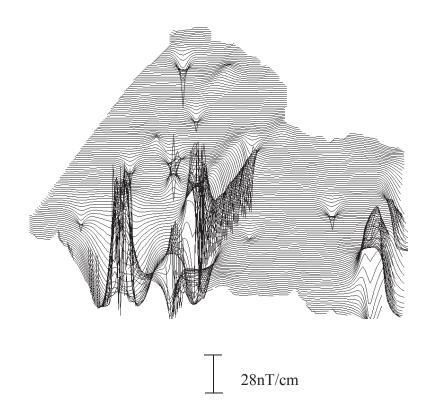


Fig.9– Field B: Greyscale image of enhanced data, scale – 1:2000









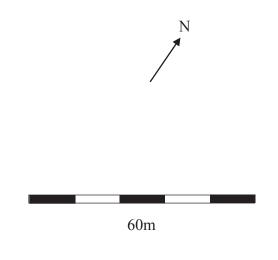


Fig.10- Field C: Greyscale and trace plots raw and enhanced data, scale – 1:2000

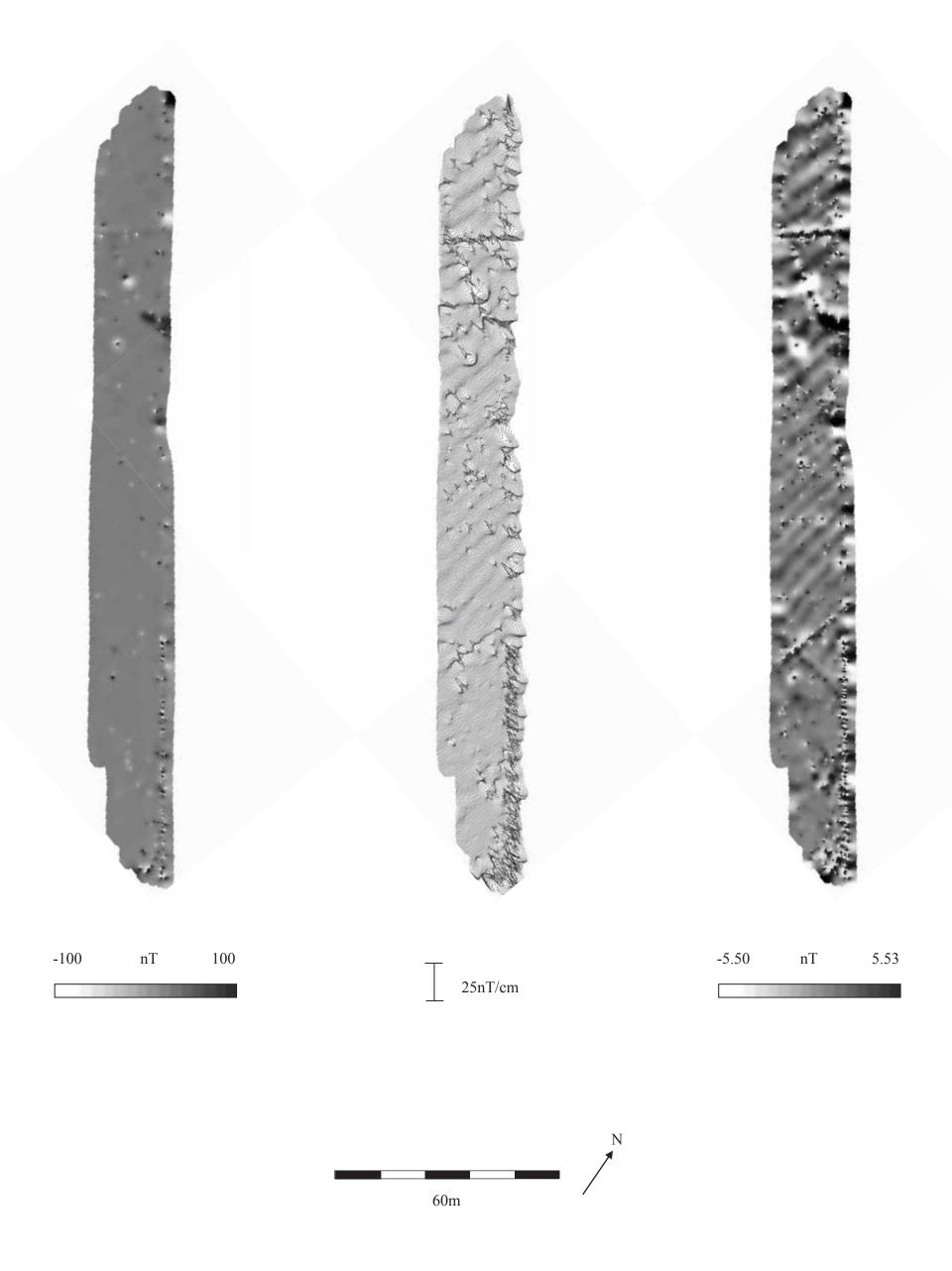


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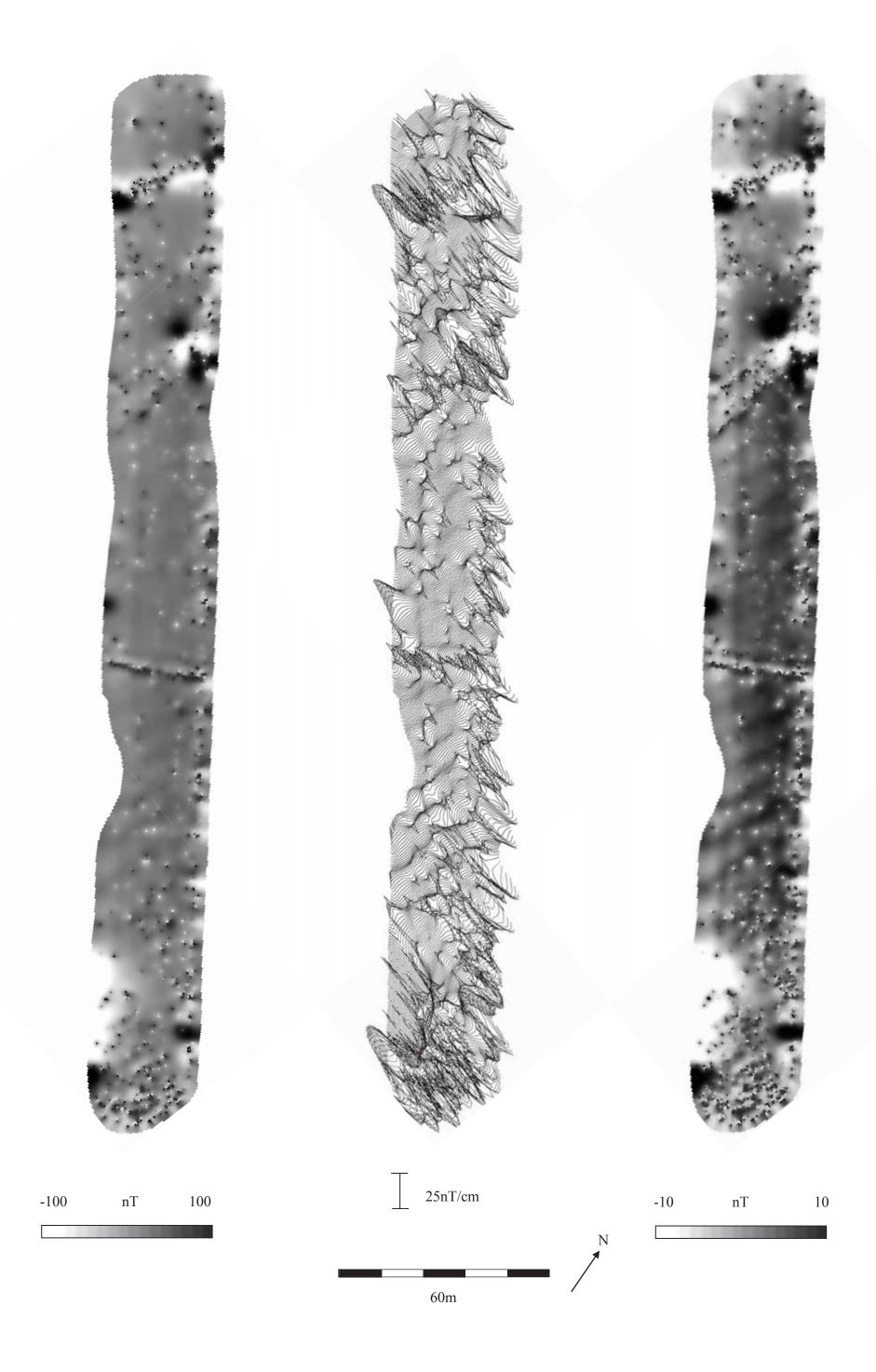


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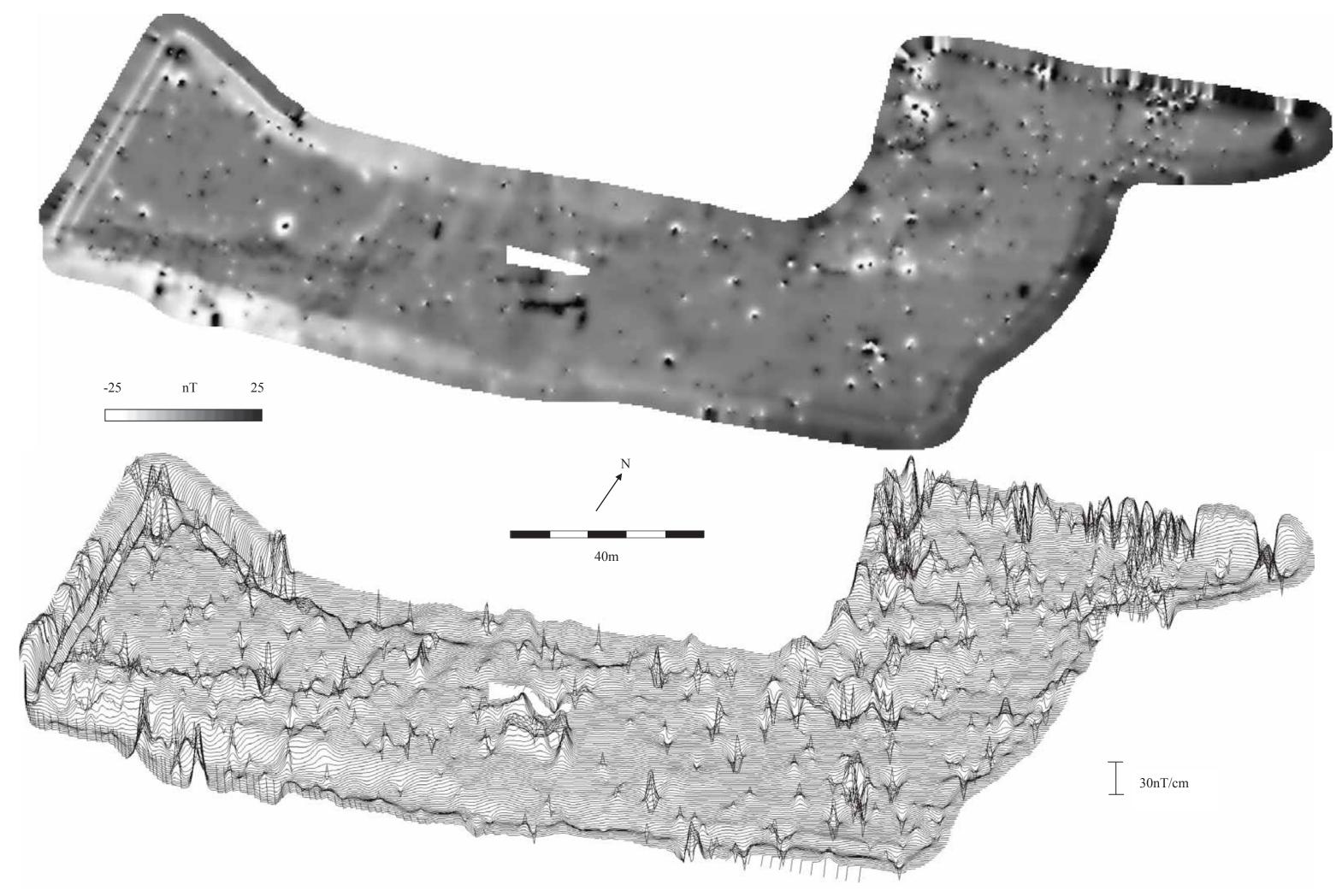


Fig.13– Field F: Greyscale and trace plots raw data, scale – 1:2000

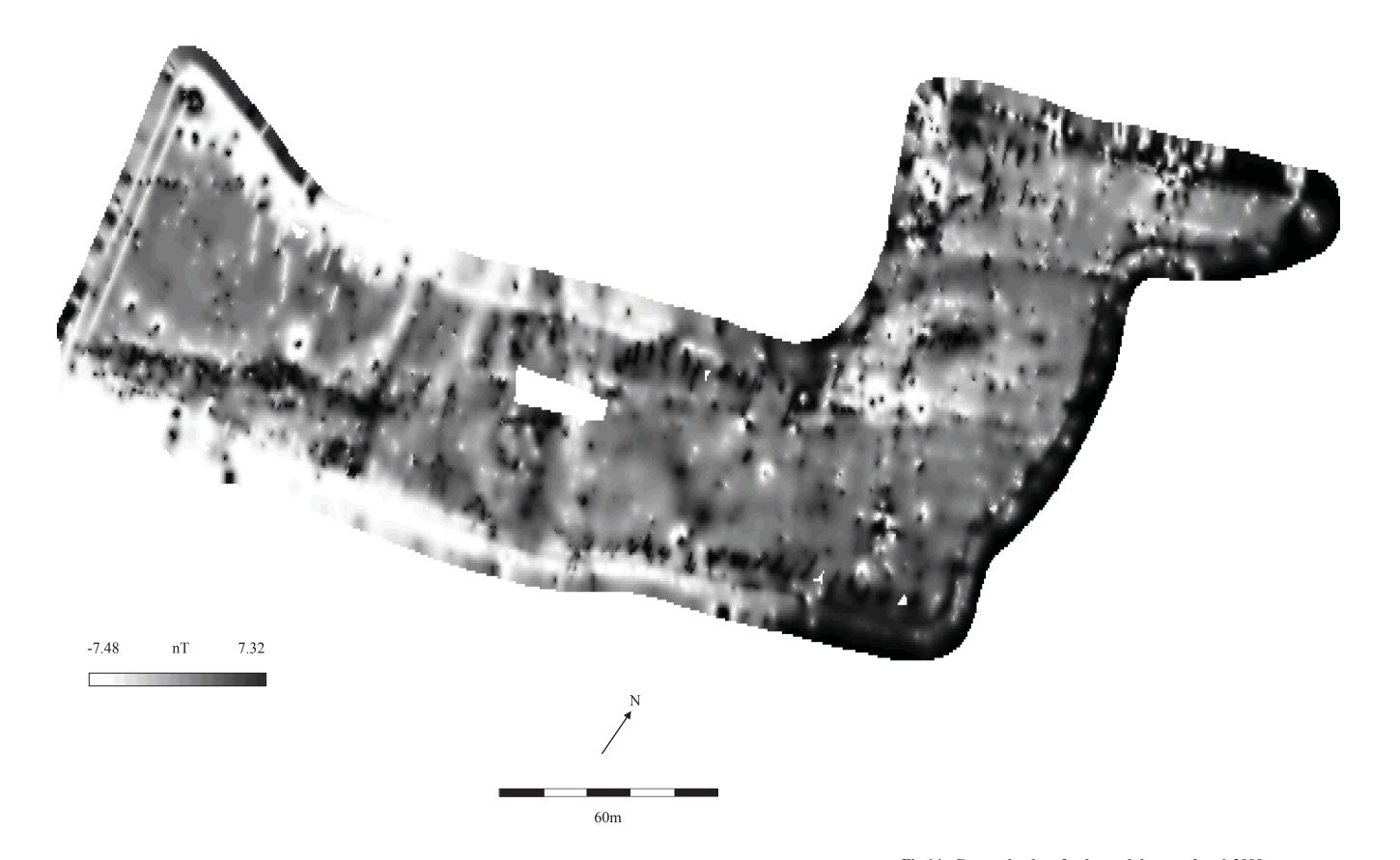
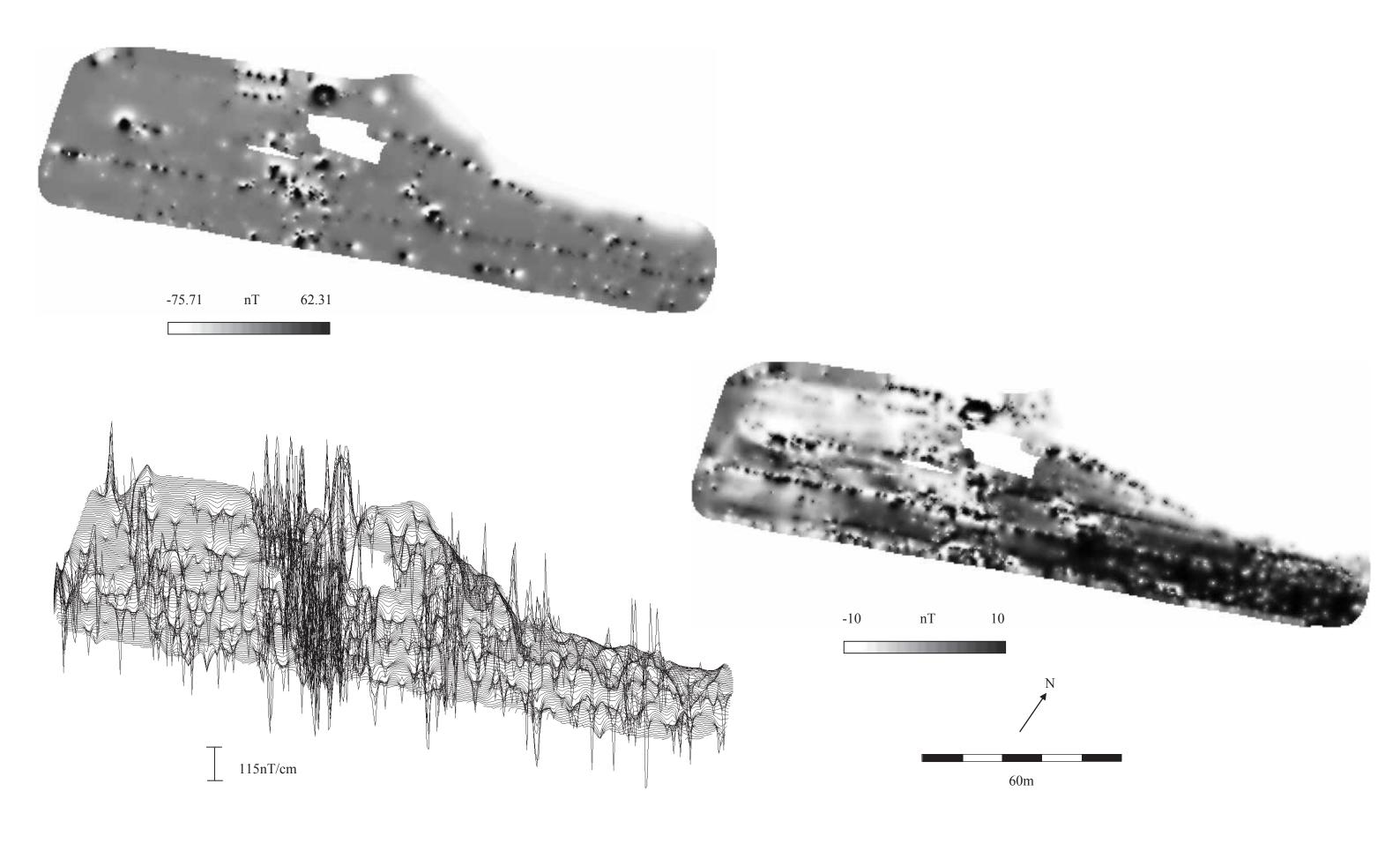
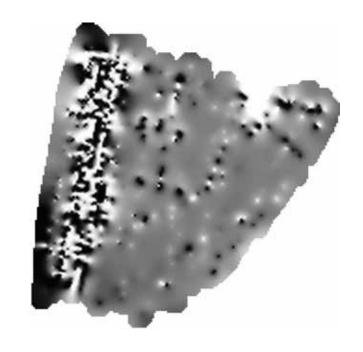
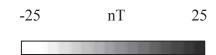


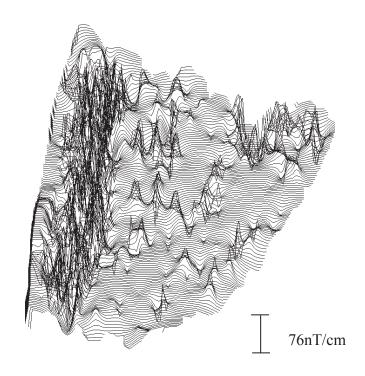
Fig.14– Greyscale plot of enhanced data, scale – 1:2000

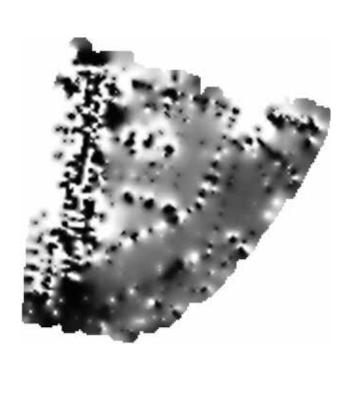


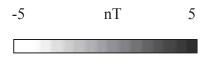
 $Fig. 15 - Field\ G\ -\ Greyscale\ and\ trace\ plots\ raw\ and\ enhanced\ EM38\ data,\ scale\ -1:2000$











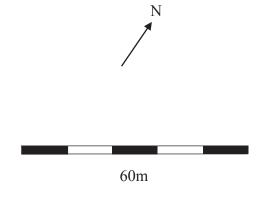
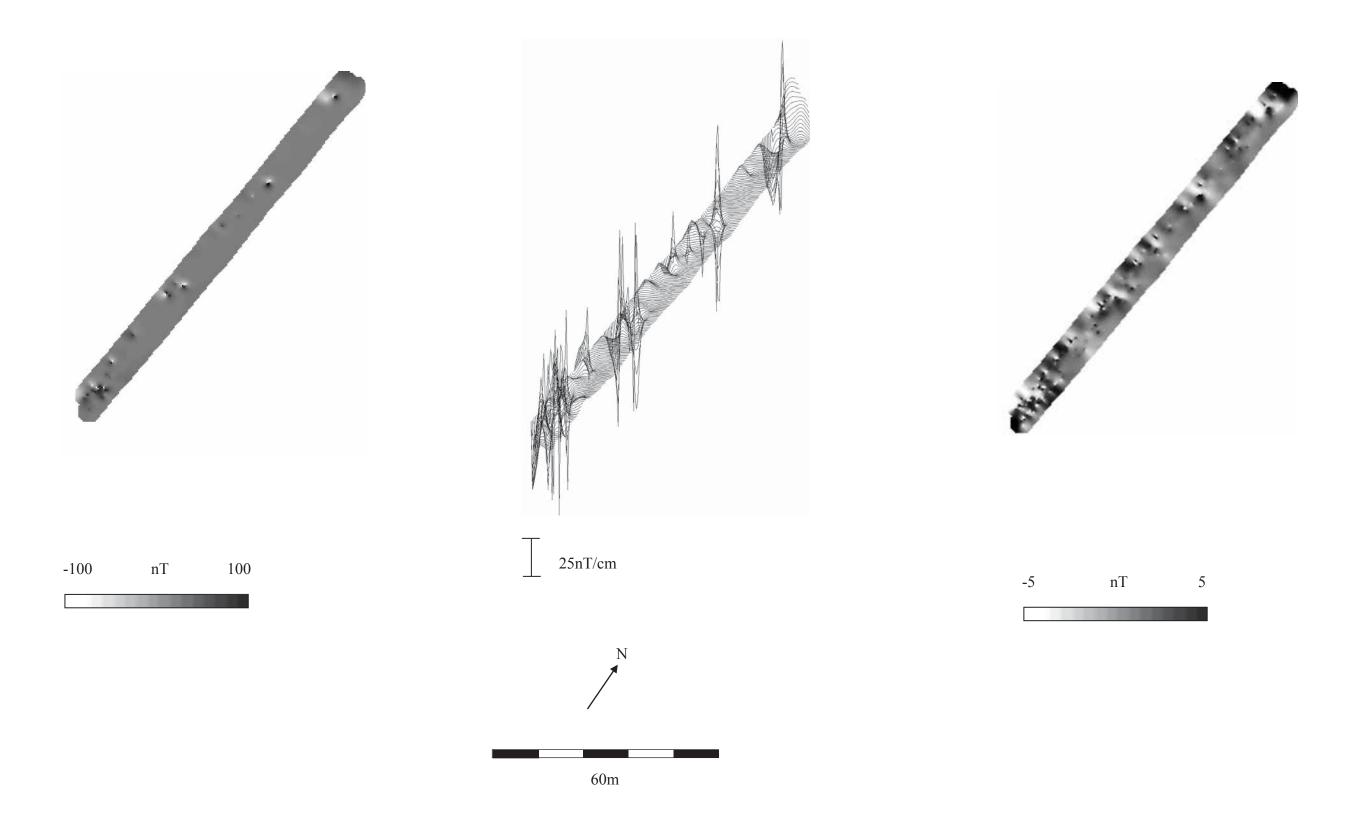
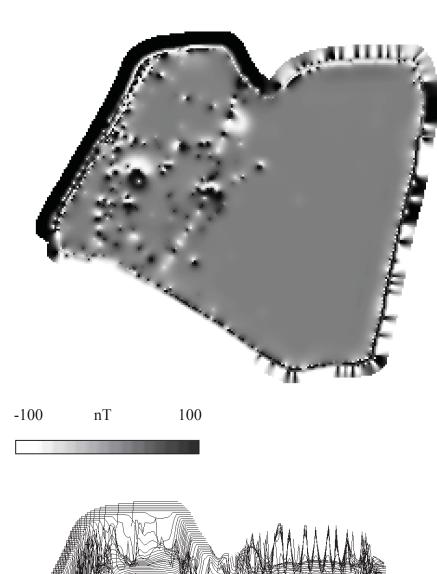
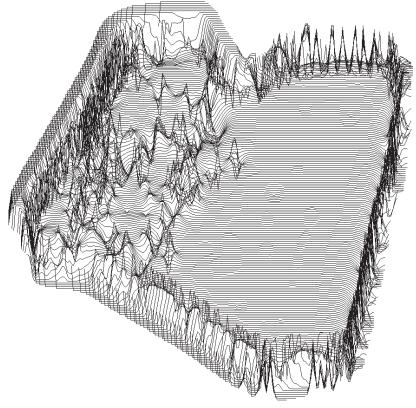


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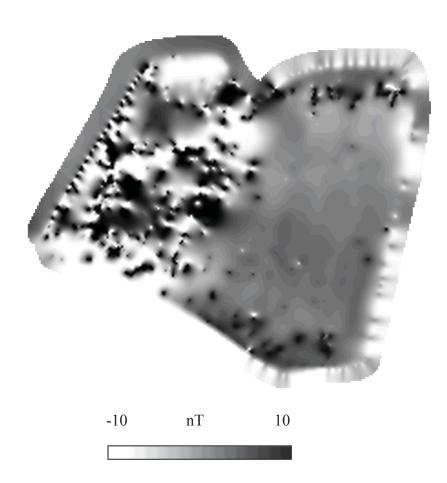


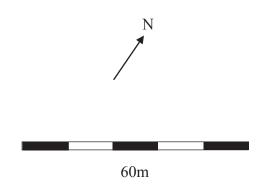
 $Fig. 17 - Field\ J\ -\ Greyscale\ and\ trace\ plots\ raw\ and\ enhanced\ EM38\ data,\ scale\ -\ 1:2000$





76nT/cm





 $Fig. 18-Field\ K\ -\ Greyscale\ and\ trace\ plots\ raw\ and\ enhanced\ EM38\ data,\ scale-1:2000$

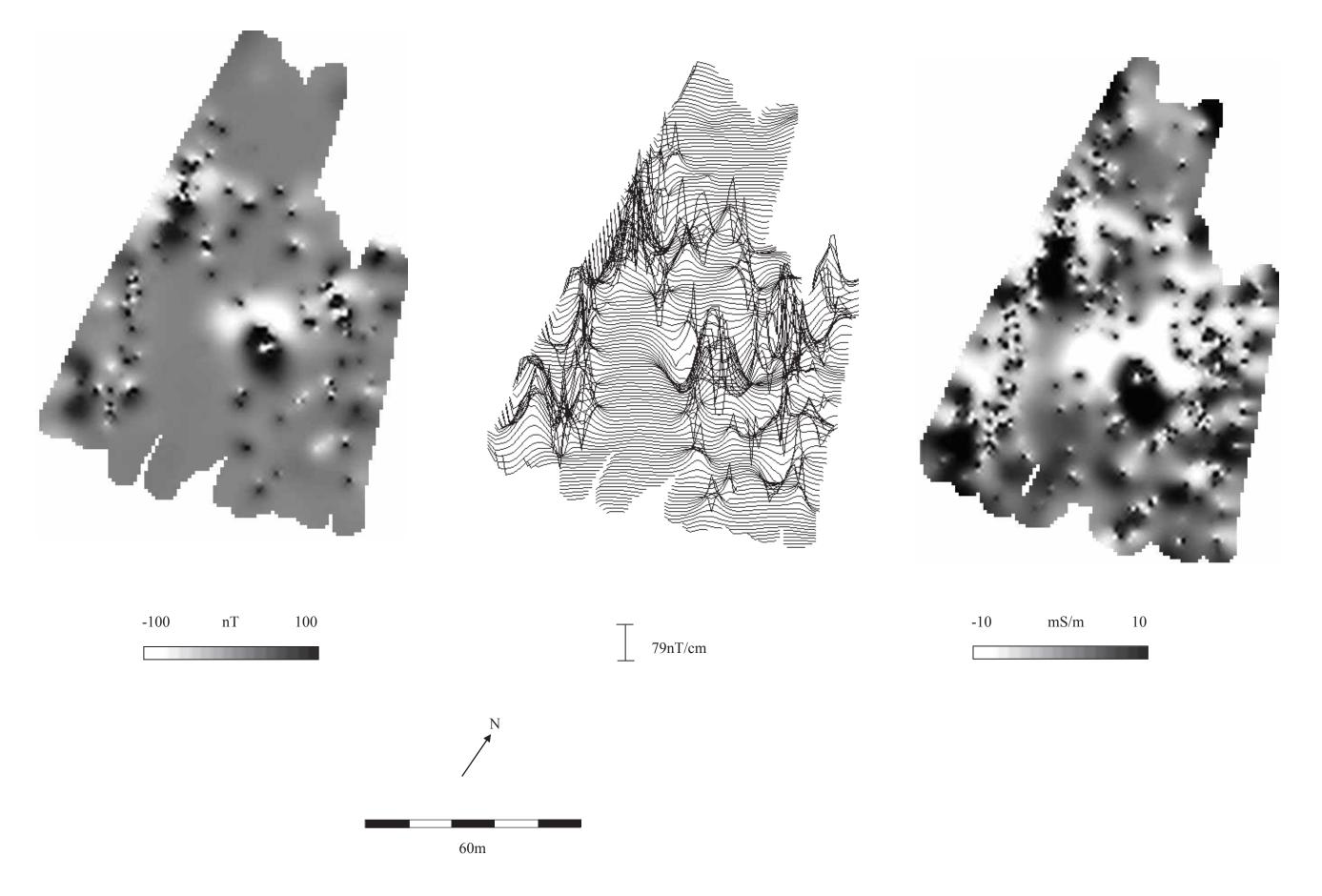
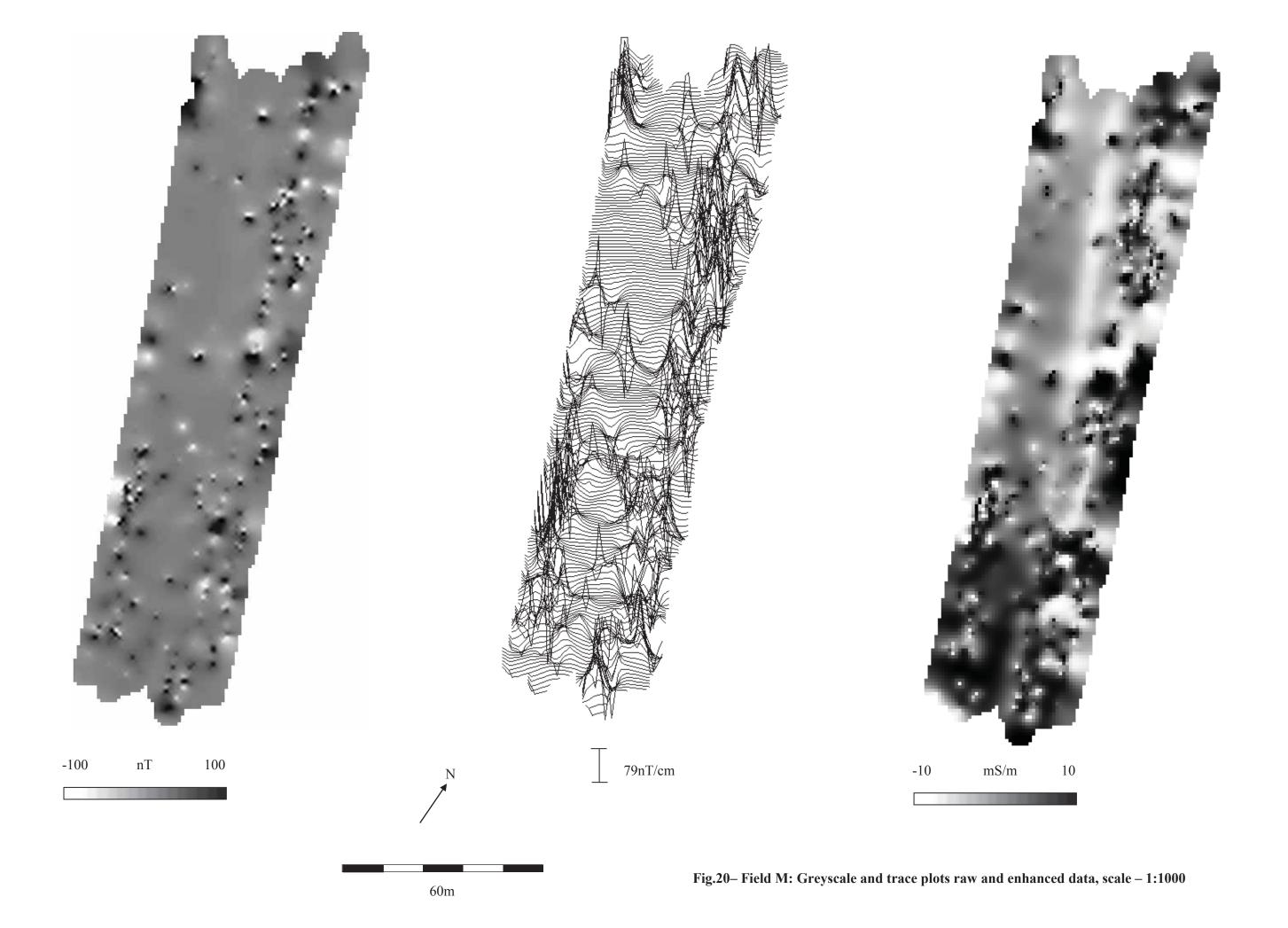
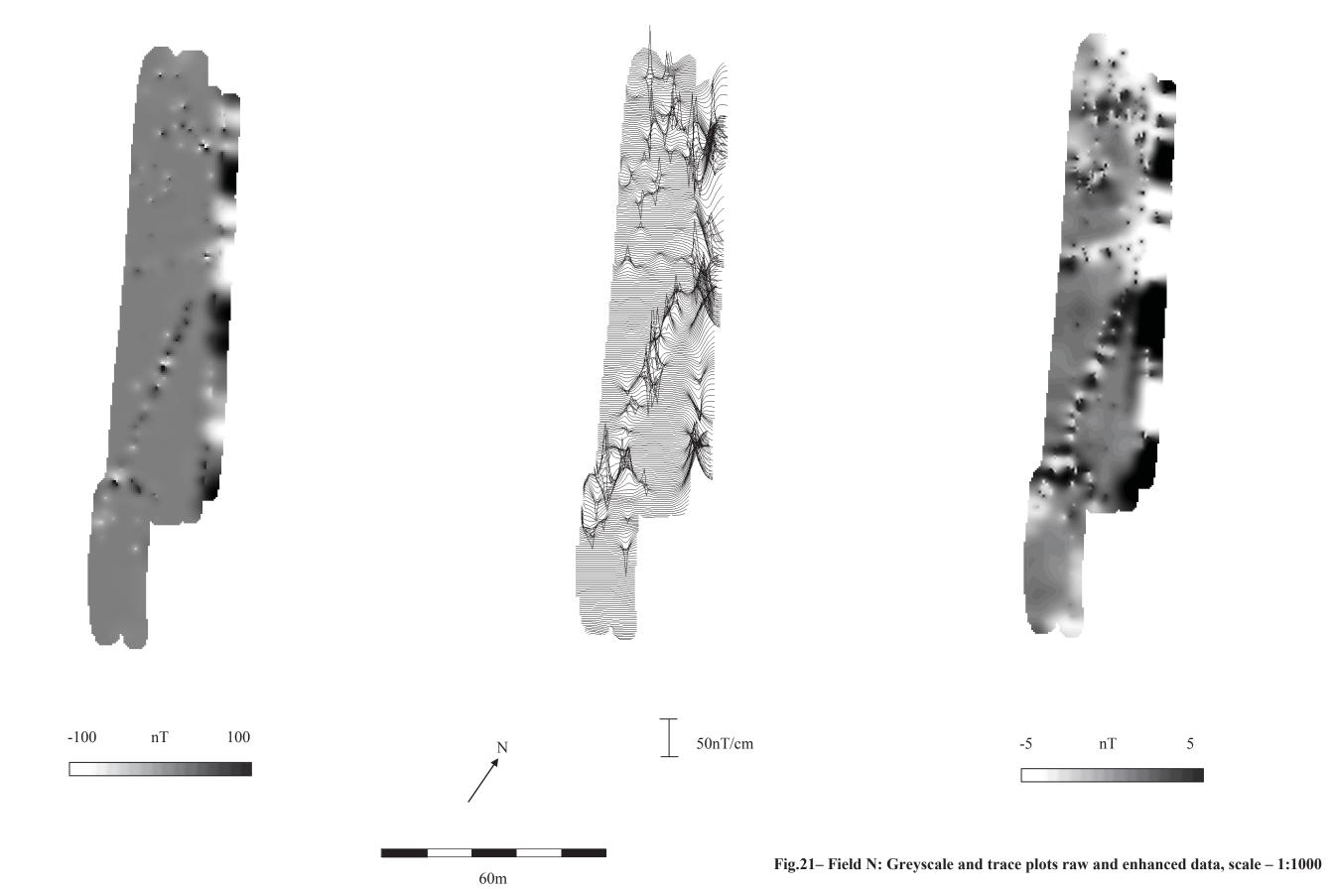
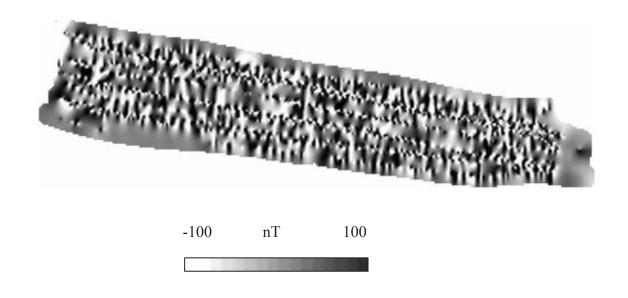
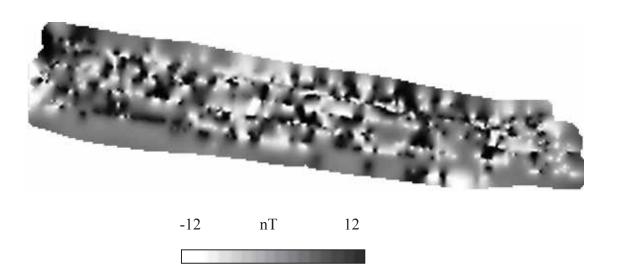


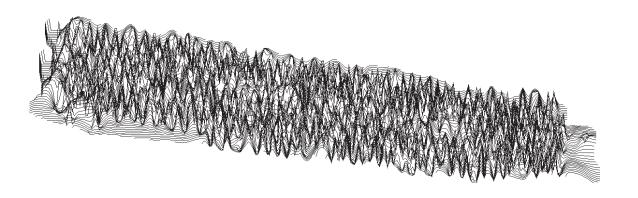
Fig.19– Field L: Greyscale and trace plots raw and enhanced data, scale – 1:1000

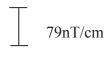












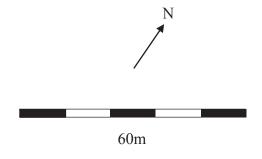


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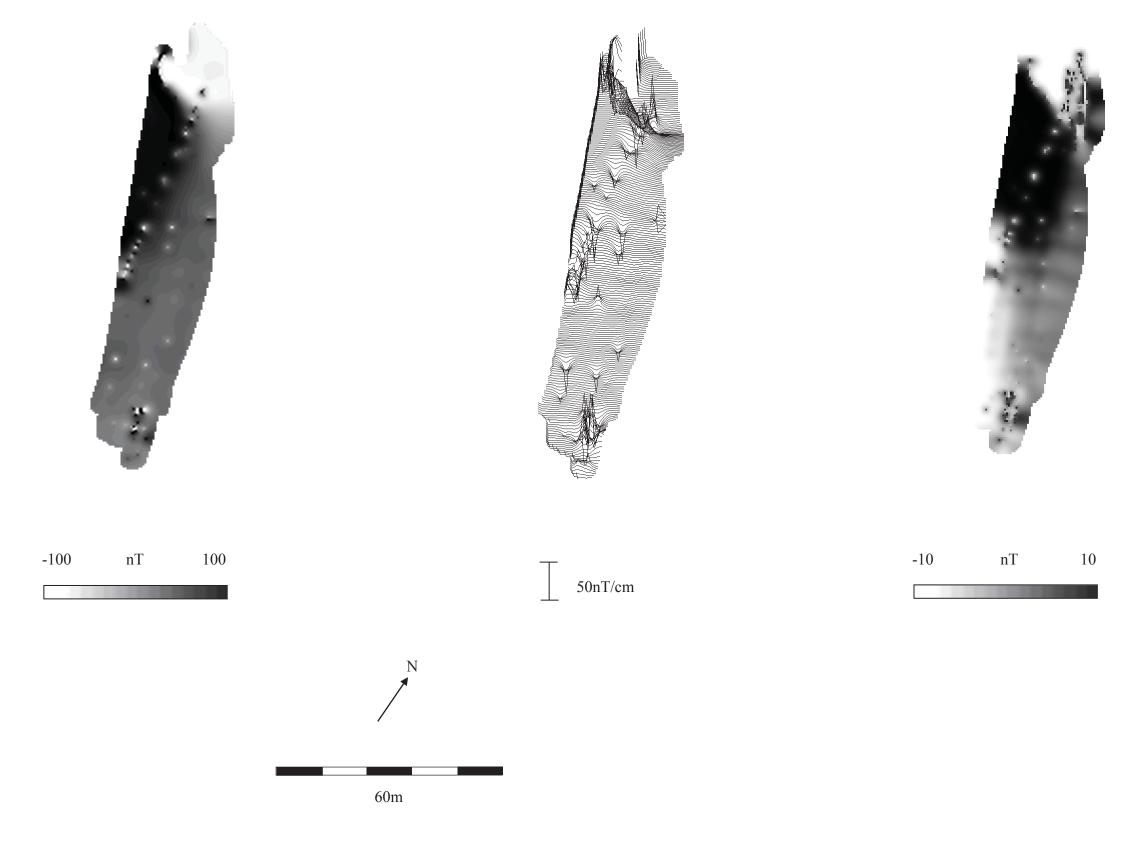


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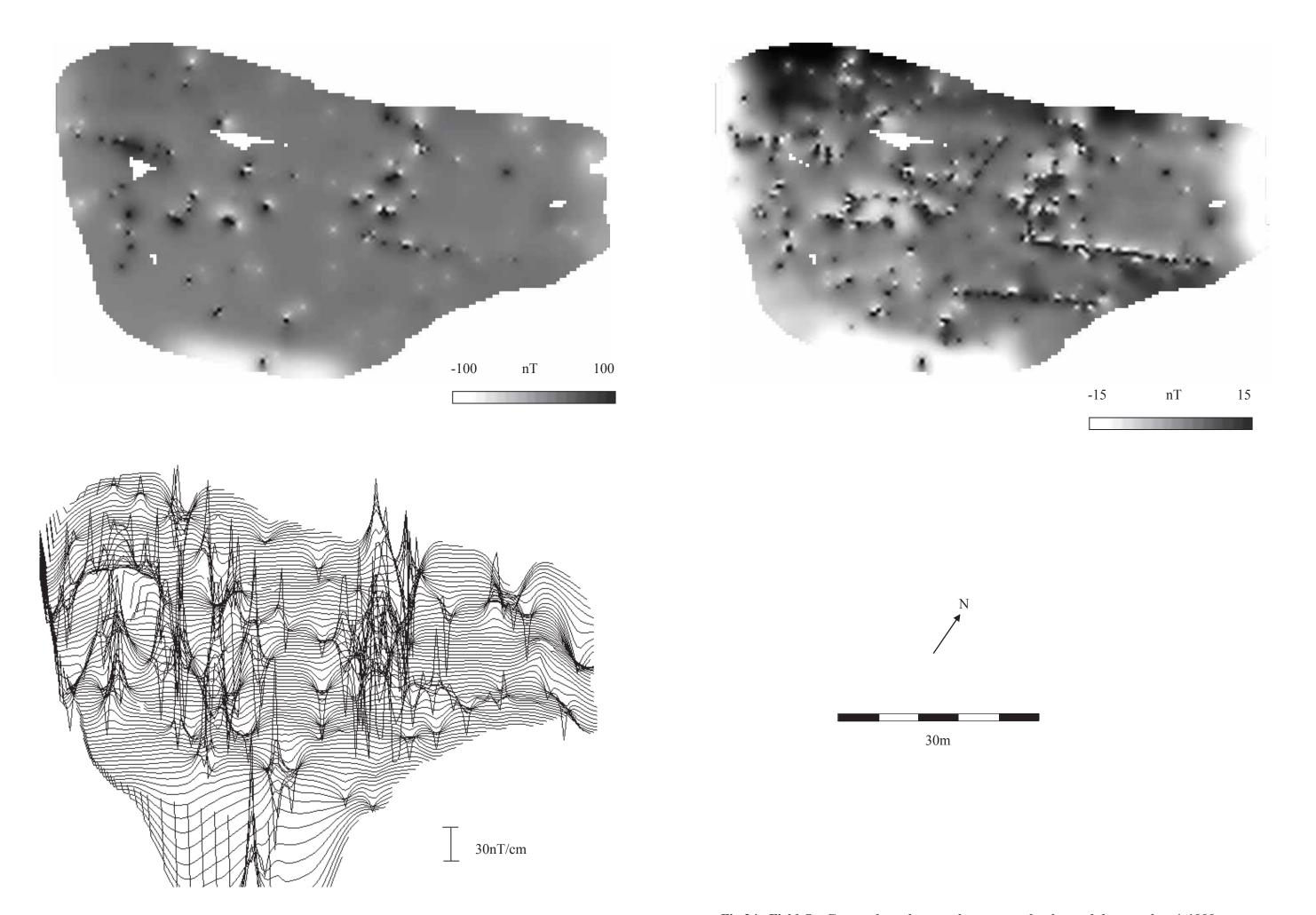


Fig 24– Field Q - Greyscale and trace plots raw and enhanced data, scale – 1:1000

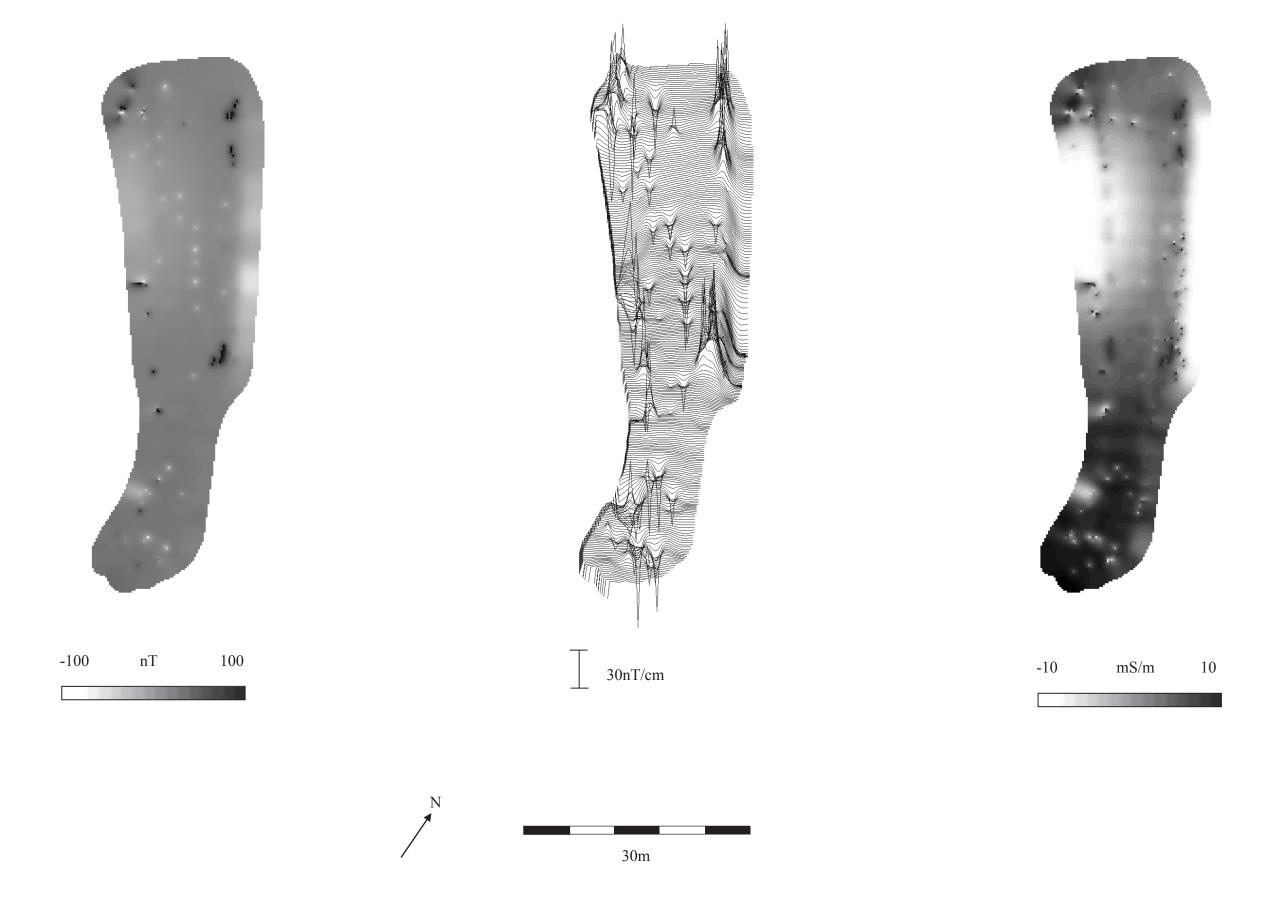
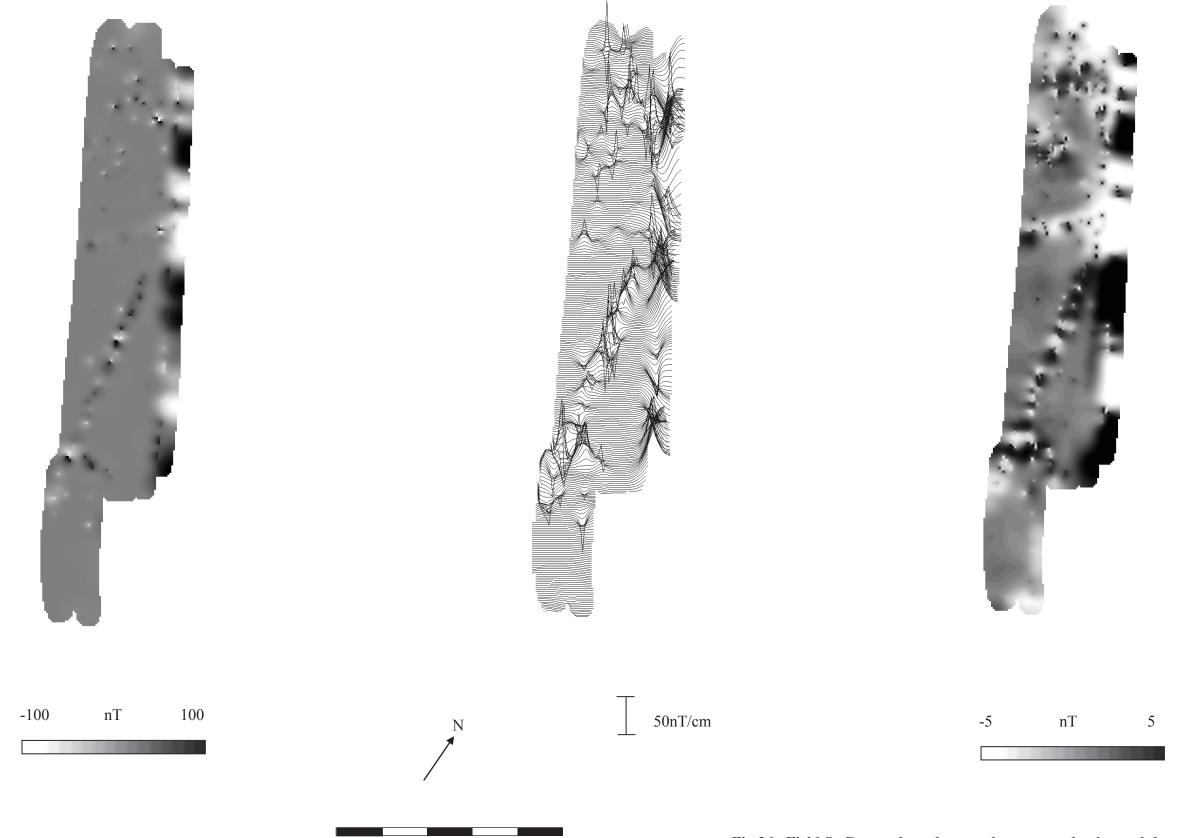


Fig.25– Field R - Greyscale and trace plots raw and enhanced data, scale – 1:2000



60m

Fig.26– Field S: Greyscale and trace plots raw and enhanced data, scale – 1:2000

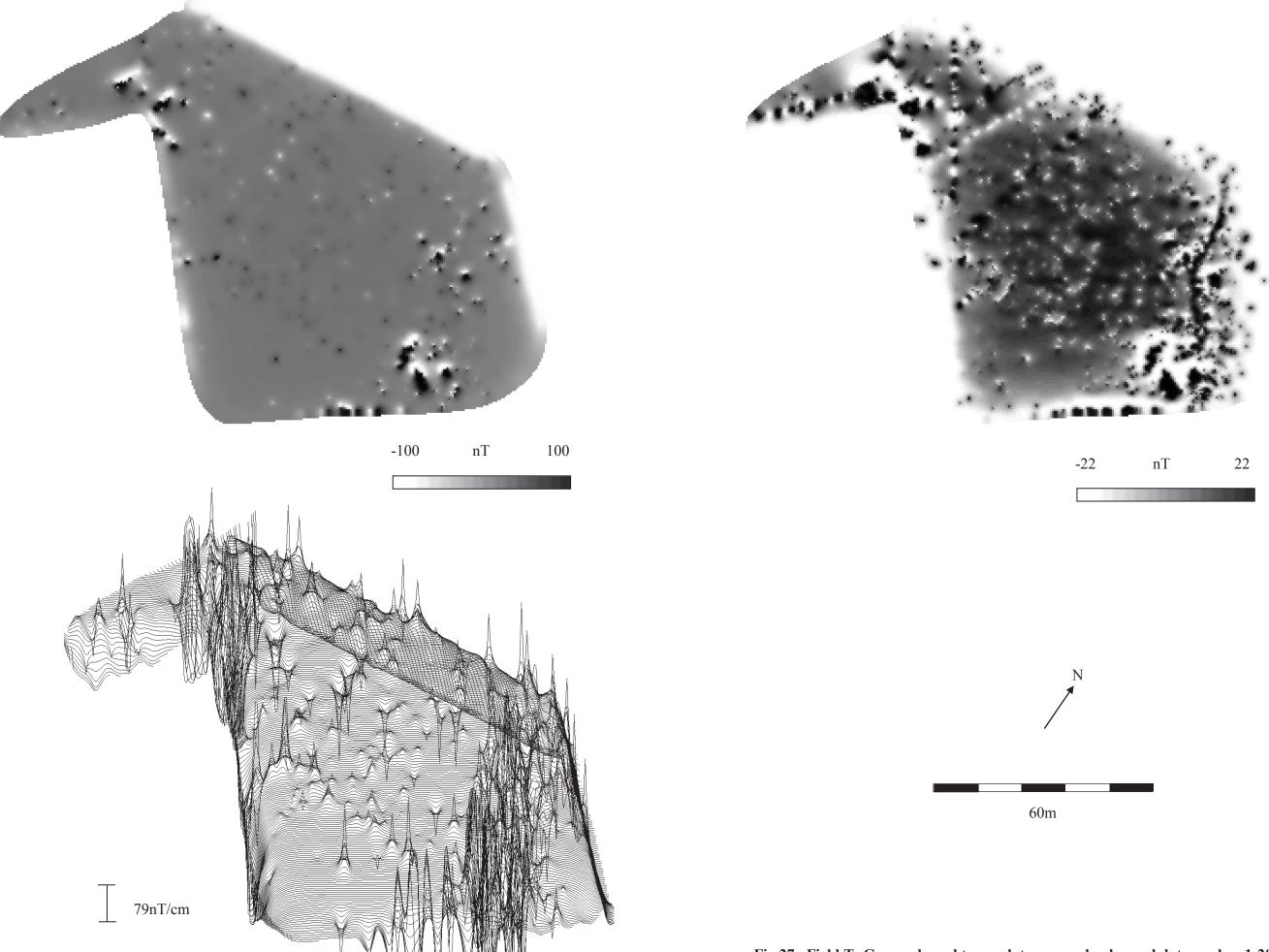


Fig.27– Field T: Greyscale and trace plots raw and enhanced data, scale – 1:2000

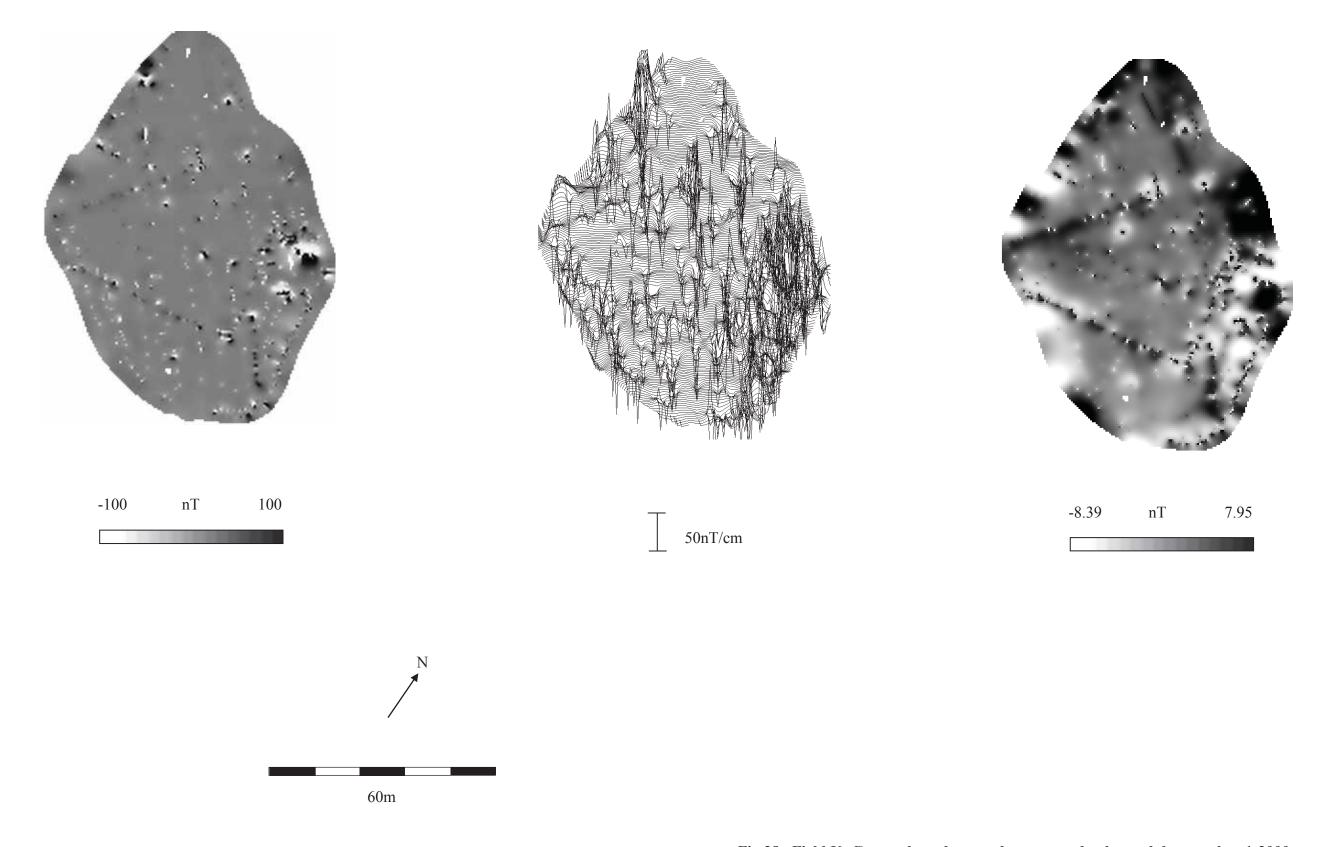


Fig.28– Field U: Greyscale and trace plots raw and enhanced data, scale – 1:2000

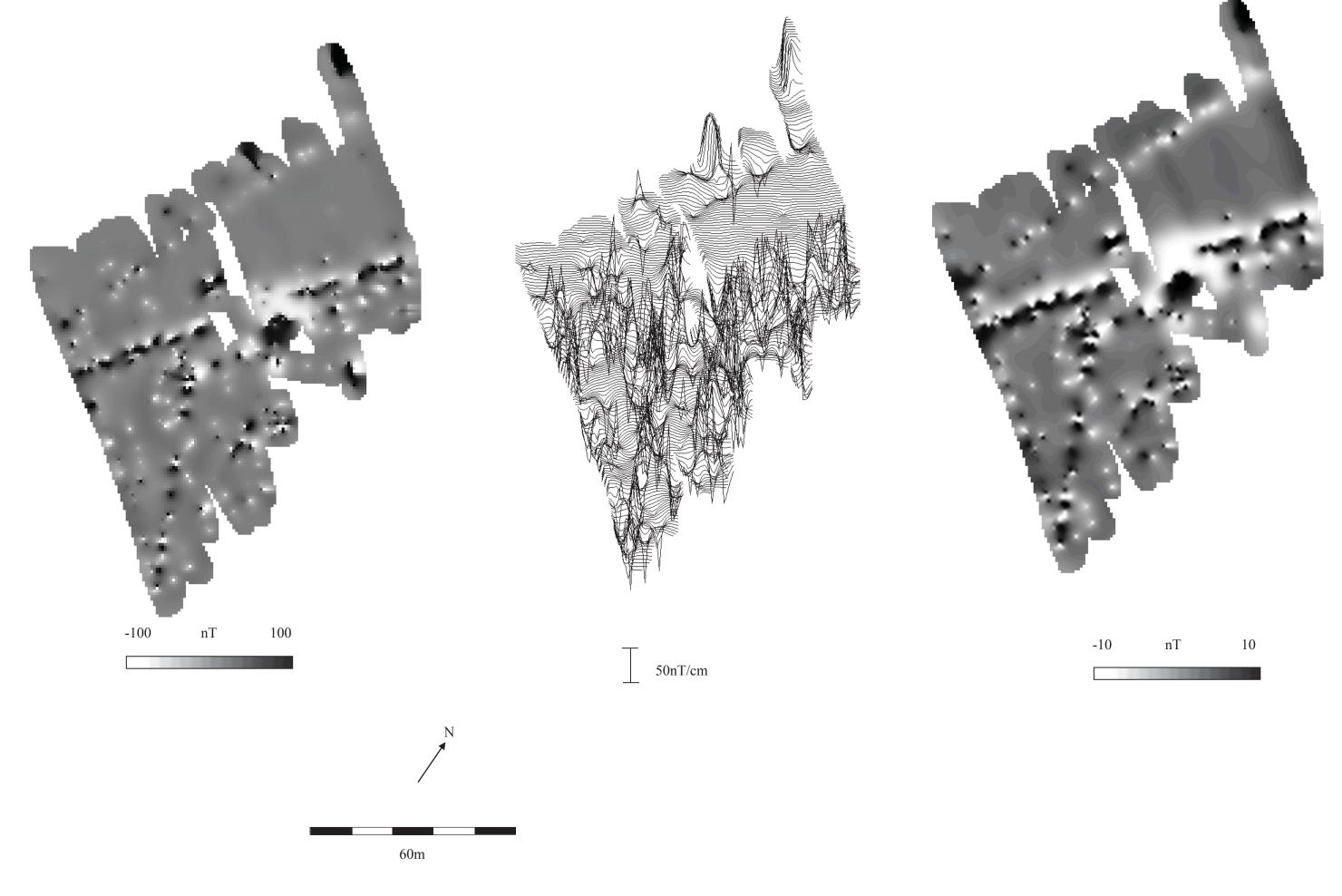


Fig.29– Field V: Greyscale and trace plots raw and enhanced data, scale – 1:1250

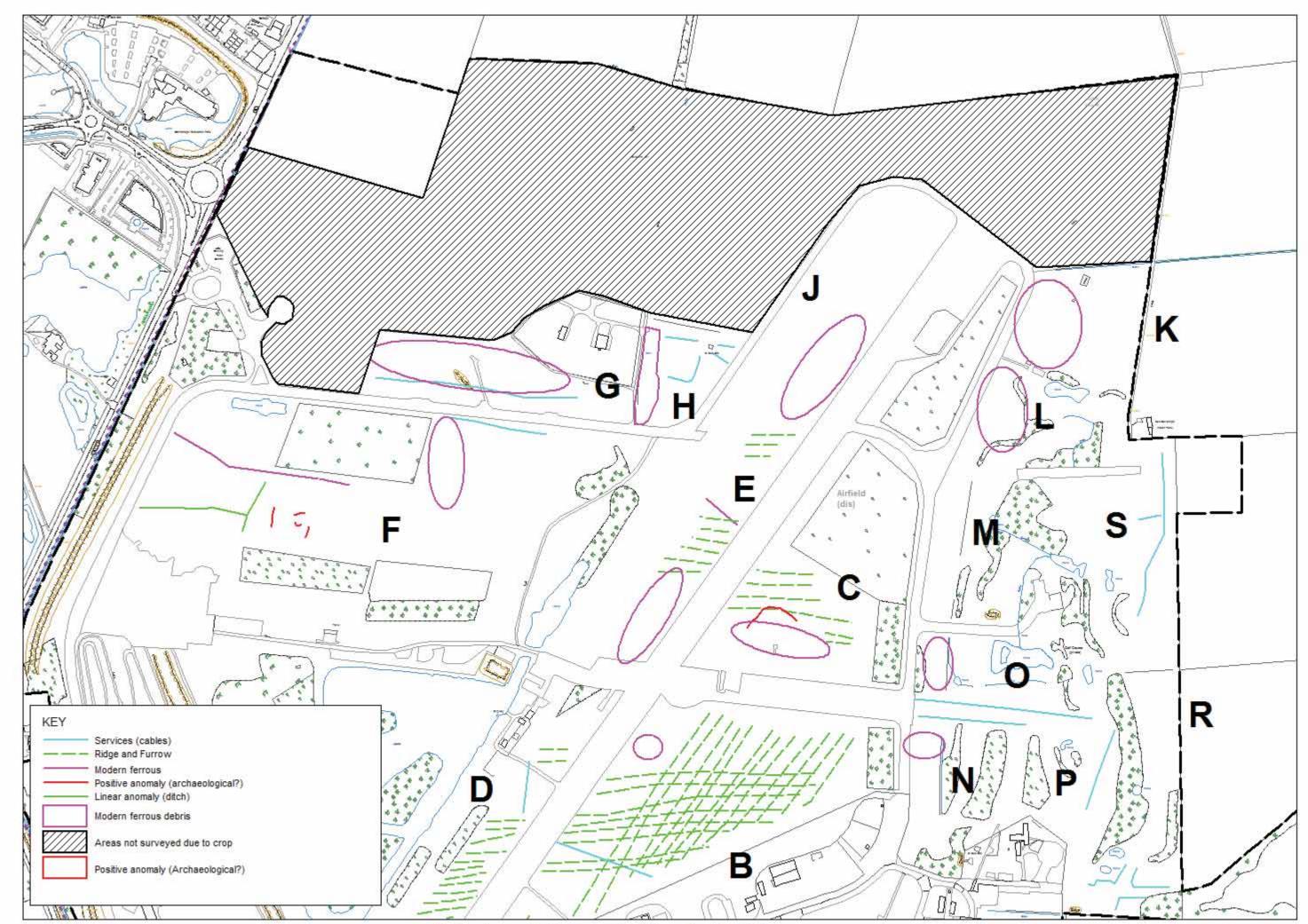


Fig. 30 - Interpretation plan (North), scale: - 1:5000

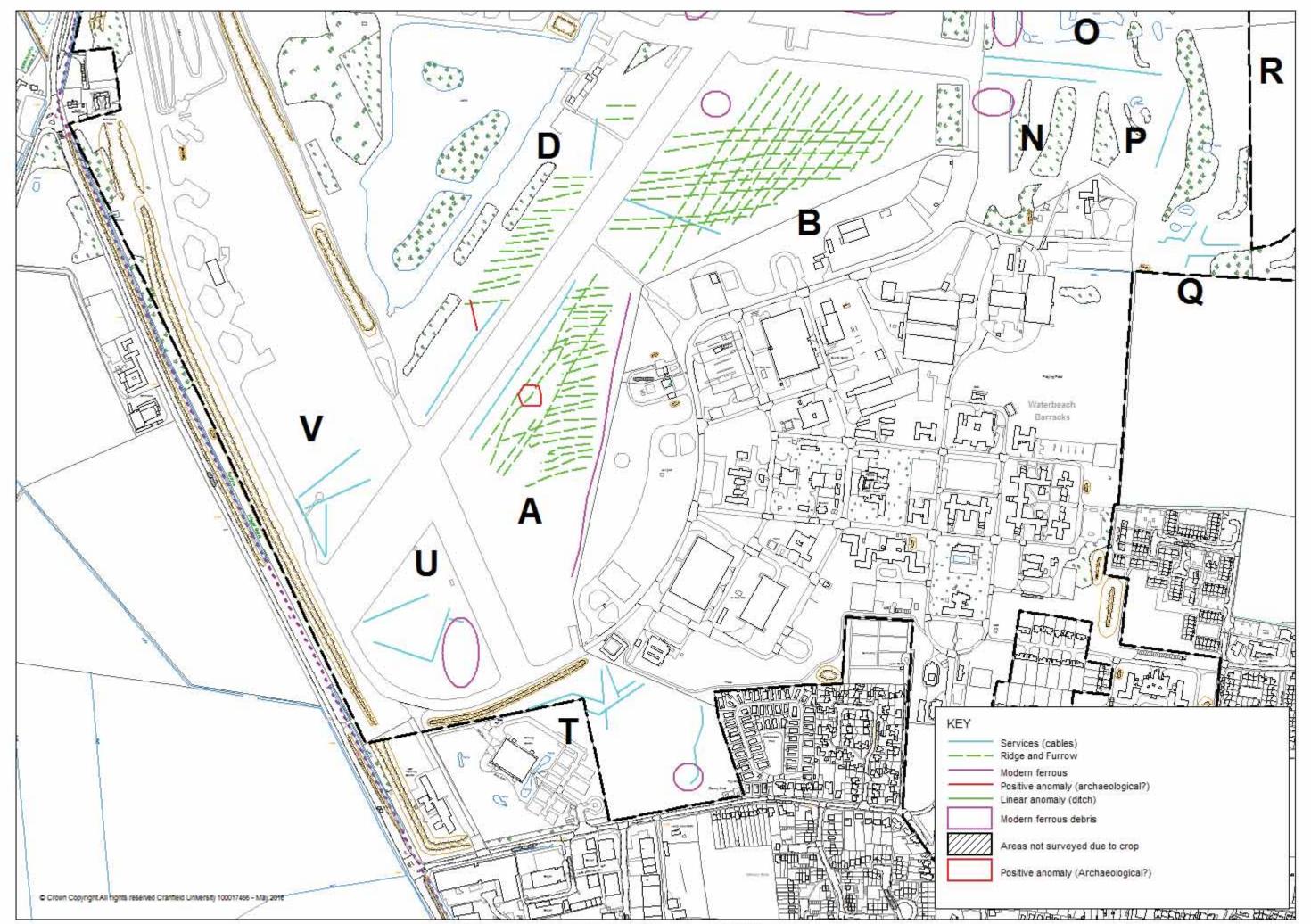


Fig. 31 - Interpretation plan (South), scale: - 1:5000



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