

## Boscombe Down Airfield (Batching Plant) Amesbury, Wiltshire

Archaeological Watching Brief Report





**BOSCOMBE DOWN AIRFIELD (BATCHING PLANT)  
AMESBURY, WILTSHIRE**

**Archaeological Watching Brief Report**

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**BOSCOMBE DOWN AIRFIELD (BATCHING PLANT)  
AMESBURY, WILTSHIRE CITY COUNTY**

**Archaeological Watching Brief Report**

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Figure 1: Site location and extent of fieldwork

Figure 2: Geophysical survey results

Figure 3: Concrete structure **102**

**BOSCOMBE DOWN AIRFIELD (BATCHING PLANT)  
AMESBURY, WILTSHIRE CITY COUNTY****Archaeological Watching Brief Report****Summary**

Wessex Archaeology was commissioned by QinetiQ to undertake an archaeological watching brief during the construction of a new batching plant and access area. The batching plant lay within the western section of the Boscombe Down airfield, southeast of Amesbury and was centred on National Grid Reference (NGR) 417006 139930. The watching brief was undertaken from January to March 2009

A previous geophysical survey of the site had identified possible linear anomalies, perhaps representing potential archaeological features as well as the remains of a possible circular structure.

The watching brief was carried out during the initial stripping to the top of the required foundation level and revealed that the proposed location of the batching plant lay within an area of previously heavily disturbed ground, with evidence of truncation and landscaping which is common elsewhere within the airfield.

Within the main batching plant area, the previously identified roughly circular structure was partly uncovered, the remainder of the structure being found to lie within made ground deposits, below the foundation level. The structure (**102**) measured approximately 20m in radius and comprised a central base, approximately 5m by 4m with a central recess, from which was projected a radial pattern of smaller concrete support bases.

Despite enquires, an accurate identification of this structure has proved impossible, although the most likely interpretation is an early post-war radar/signal installation. No other archaeological features or deposits were observed at the formation level, although a number of modern services and natural geological features were noted within the southern and northern areas of the site.

It should be noted that the shallow formation level used within the majority of the stripped areas was still largely within made or disturbed ground deposits and the survival of potential archaeological features below the present made ground in this area cannot be discounted.

**BOSCOMBE DOWN AIRFIELD (BATCHING PLANT)  
AMESBURY, WILTSHIRE CITY COUNTY****Archaeological Watching Brief Report****Acknowledgements**

The watching brief was commissioned by QinetiQ and Wessex Archaeology wish to thank Jonathan Wade (QinetiQ), and Graeme Clarke (Lagan Construction) for their help and assistance during the project work. In addition, Wessex Archaeology are also grateful for the help and advice of Norman Parker (Archivist at Boscombe Down airfield), Dr. John Schofield: Head of Military Programmes (English Heritage), Richard Osgood, Environmental Advisor (Archaeology) for Defence Estates and Helena Cave Penney and Melanie Pomeroy-Kellinger of Wiltshire Council Archaeology Service.

The project was managed by Andy Manning on behalf of Wessex Archaeology. The fieldwork was undertaken by John Powell and the report compiled by John Powell and Andy Manning. The illustrations were prepared by Linda Coleman.

**BOSCOMBE DOWN AIRFIELD (BATCHING PLANT)  
AMESBURY, WILTS****Archaeological Watching Brief Report****1 INTRODUCTION****1.1 Project Background**

1.1.1 Wessex Archaeology was commissioned by QinetiQ to undertake an archaeological watching brief during the initial groundworks associated with the construction of a new batching plant and access areas at Boscombe Down airfield. The batching plant area was located to the northwest of the main western runway and immediately adjacent to taxiways and Buildings 952 and 946, centred on National Grid Reference 417006 139930 (**Figure 1**) and hereafter referred to as 'the Site'.

1.1.2 The batching plant covered an area approximately 130m by 45m (c. 0.6ha in area), while an existing area of hardstanding to the northeast was slightly expanded to accommodate the aggregate mixing plant (a final area which measured approximately 45m by 50m (c. 0.2ha in area). In addition, a short length of access road was stripped to the south of the batching plant area, measuring 24m by 8m in size (c. 0.02ha).

1.1.3 Previous archaeological fieldwork (*see below*) had previously demonstrated that the general airfield area contains buried archaeological features and extant monuments, with a high potential for additional archaeological discoveries.

1.1.4 The works, which were required as part of the refurbishment of the western runway, were undertaken outside the normal planning process and did not require planning permission. However, due to the archaeological sensitivity of the Site, QinetiQ commissioned a programme of archaeological work to be undertaken during the work, to ensure that an appropriate archaeological assessment and subsequent mitigation of the potential archaeological remains was undertaken.

1.1.5 The Site was the subject of a geophysical survey (Wessex Archaeology 2009), which demonstrated the potential for the survival of archaeological remains. A copy of this report has been included within this report (**Appendix 1**).

1.1.6 The watching brief during the initial groundworks was undertaken between January and March 2009. There was a significant delay, while the need for possible additional areas was discussed, although, although subsequently no additional areas were required to be stripped. This report contains the results of the watching brief undertaken in early 2009.

**1.2 Site Location, Topology and Geology**

1.2.1 Boscombe Down airfield lies on Salisbury Plain approximately two kilometres to the southeast of Amesbury, Wiltshire. The airfield is V-shaped in plan and covers an area of several square kilometres (**Figure 1**).

- 1.2.2 The airfield occupies a relatively flat ridge between the Rivers Avon and Bourne. Dry valleys drain from the airfield west to the Avon and south to the Bourne.
- 1.2.3 The Site lies to the northern side of the airfield, towards the western perimeter fence and to the north of the main runway. The development area comprises a grassed area, within a gentle south facing slope at a height of 108-112m above Ordnance Datum (aOD). The underlying geology consists of Upper Chalk of the Cretaceous Period (Geological Survey of Great Britain 1: 50,000 Drift Series, Sheet 298).

## **2 ARCHAEOLOGICAL BACKGROUND**

### *Boscombe Down*

- 2.1.1 The Site lies in a well-documented and significant archaeological landscape, best known for the monument complex at Stonehenge (c. 5km to the northwest) and Durrington Walls (Palmer 1984; Richards 1990).
- 2.1.2 Archaeological evaluation previously undertaken by Wessex Archaeology on land immediately to the west of Boscombe Down airfield uncovered evidence of prehistoric activity. Of particular significance was the presence of an Early Bronze Age structure within Trench **311**, which was located 250m to the west of the batching plant area (Wessex Archaeology 2005a).
- 2.1.3 Excavations by Wessex Archaeology within areas of new housing to the west of Boscombe Down airfield have uncovered significant evidence of prehistoric and Romano-British settlement and ritual activity (Wessex Archaeology 2005b).
- 2.1.4 In particular, a significant concentration of Middle/Late Neolithic and Early Bronze Age features have been identified within a plateau, flanked by two dry valleys, which lies less than 200m to the west of the airfield. One significant element, which forms the focus for prehistoric activity, is a Late Neolithic/Early Bronze Age Pit Circle, defined by at least 32 pits and 63m in diameter. This monument is likely to be associated with an adjacent Mortuary Enclosure, containing an Early Bronze Age barrow and ring ditch.
- 2.1.5 Post-dating the final decline of the monuments, a small Middle/Late Bronze Age settlement was identified in the southeastern part of the plateau along with two Late Bronze Age/early Iron Age Wessex Linear Ditches, one of which extended into the northern part of the airfield.
- 2.1.6 Iron Age and Romano-British settlement is well attested. A complex of cropmarks on Southmill Hill, 500m to the west of the airfield, indicates the presence of a substantial enclosed Iron Age settlement. A Late Romano-British settlement at Butterfield Down, 500m to the north of the Site has been extensively excavated and may have originally covered at least six hectares (Rawlings and Fitzpatrick 1996). More recent excavations at New Covert, to the south of Butterfield Down, revealed more of this settlement and associated corn driers and field systems (Wessex Archaeology 2000).



- 2.1.7 During the Late Roman period, the plateau on Boscombe Down became the focus for funerary activity. Five major cemeteries have been identified (containing 250+ burials) together with a small number of isolated burials. All the burials appear to date to the latter half of the 4<sup>th</sup> century AD. One of these cemeteries demonstrates mixed funerary rites, with cremations and inhumations placed together.

#### *The Site*

- 2.1.8 The airfield itself has been the subject of large and small-scale archaeological investigations from the 1940s to the present day.
- 2.1.9 Just over 60 separate monuments, features or findspots are recorded on the Wiltshire Sites and Monuments Record (Wiltshire SMR) as lying within the boundaries of the airfield. These include several Bronze Age round barrows (one Scheduled example of which lies less than 460m to the east of the Site) and the above mentioned Late Bronze Age Wessex Linear Ditch.
- 2.1.10 A concentration of pits, inhumations and a double-ditched enclosure were found during levelling work on the eastern boundaries of the airfield in 1949. These appear to have been associated with Iron Age and Romano-British settlement within this area (Richardson 1951).
- 2.1.11 The results from more recent watching briefs and a programme of trenched evaluation identified further archaeological remains, including ancient field systems and land boundaries, pits and a grave (AC Archaeology 2001; Wessex Archaeology 2006, Wessex Archaeology 2007, Wessex Archaeology 2008). Evaluation identified that areas adjacent to the runway and taxiways have been significantly affected by modern 'cut and fill' groundworks, with a severe impact on the archaeological resource. However, the evaluation also identified pockets of well-preserved surviving archaeological deposits and features.
- 2.1.12 A geophysical survey of the proposed Site was undertaken in January 2009 (**Figure 2**) (Wessex Archaeology 2009). Approximately 1.8ha was surveyed, which identified a few anomalies of potential archaeological interest, including linear anomalies, perhaps representing former ditched boundaries, and a possible circular structure.

## **3 METHODOLOGY**

### **3.1 Aims and objectives**

- 3.1.1 The watching brief is intended;

- To investigate and establish the extent, date, character, relationship, condition and significance of archaeological features, artefacts and deposits
- To ensure the preservation by record of any recorded archaeological features
- To provide information which could be used to inform any subsequent archaeological mitigation, if required.

## 3.2 Methodology

- 3.2.1 The batching plant areas and access road were stripped to formation level (generally between 0.20m and 0.36m below the present ground surfacing) by the main contractor, using a mechanical excavator, under archaeological observation.
- 3.2.2 All areas, features and deposits were recorded using Wessex Archaeology's standard methods and *pro forma* recording system. A full graphic record was maintained, with plans and sections produced at a scale of 1:20 and 1:10, where appropriate. The OD height of all principal features and levels was recorded, with plans and sections annotated with OD heights. The positions of the areas were located by a GPS (Global Positioning System) and tied in to the Ordnance Survey national grid. A digital photographic record was maintained during the course of the works.

## 4 RESULTS

### 4.1 Soil Profile

- 4.1.1 In all areas, the soil profile, where preserved, was the same and comprised:
- A dark reddish brown topsoil, with common flint and chalk inclusions, up to 0.36m in depth.
  - A pale greyish brown clay loam made ground with abundant chalk inclusions, up to 0.15m in depth.
  - Natural Upper Chalk
- 4.1.2 Across the majority of the Site, made ground deposits containing chalk and concrete rubble were revealed immediately below the turf line.
- 4.1.3 The depth of excavation was to the top of the formation level across the Site and varied between 0.20m and 0.36m below the present ground surface. Due to this shallow excavation depth, the natural chalk was only fully exposed in areas to the north and south of the main batching area.

### 4.2 Archaeological Features

- 4.2.1 Within the main batching plant area, stripping to the formation level was within the made ground deposits (**101**), although machining did uncover part of the upper surface of a concrete structure **102**, which had been previously identified in the geophysical survey.
- 4.2.2 Approximately 30% of the structure was uncovered, the remainder of the feature lying below the formation level. The structure (**102**) measured approximately 20m in radius and comprised a central concrete base, approximately 5m by 4m with a central recess. Radiating out from the central plate was a series of smaller concrete rectangular support bases, which gradually diminished in size from 3m by 0.9m to 1.2m by 0.6m.
- 4.2.3 No further archaeological features or deposits were observed during the stripping. Spoil from the stripped areas was also examined and no archaeological finds were recovered.

## **5 THE FINDS**

- 5.1.1 No datable artefacts were recovered.

## **6 PALAEO-ENVIRONMENTAL EVIDENCE**

- 6.1.1 No deposits were observed that had environmental potential and accordingly no sampling was undertaken.

## **7 DISCUSSION**

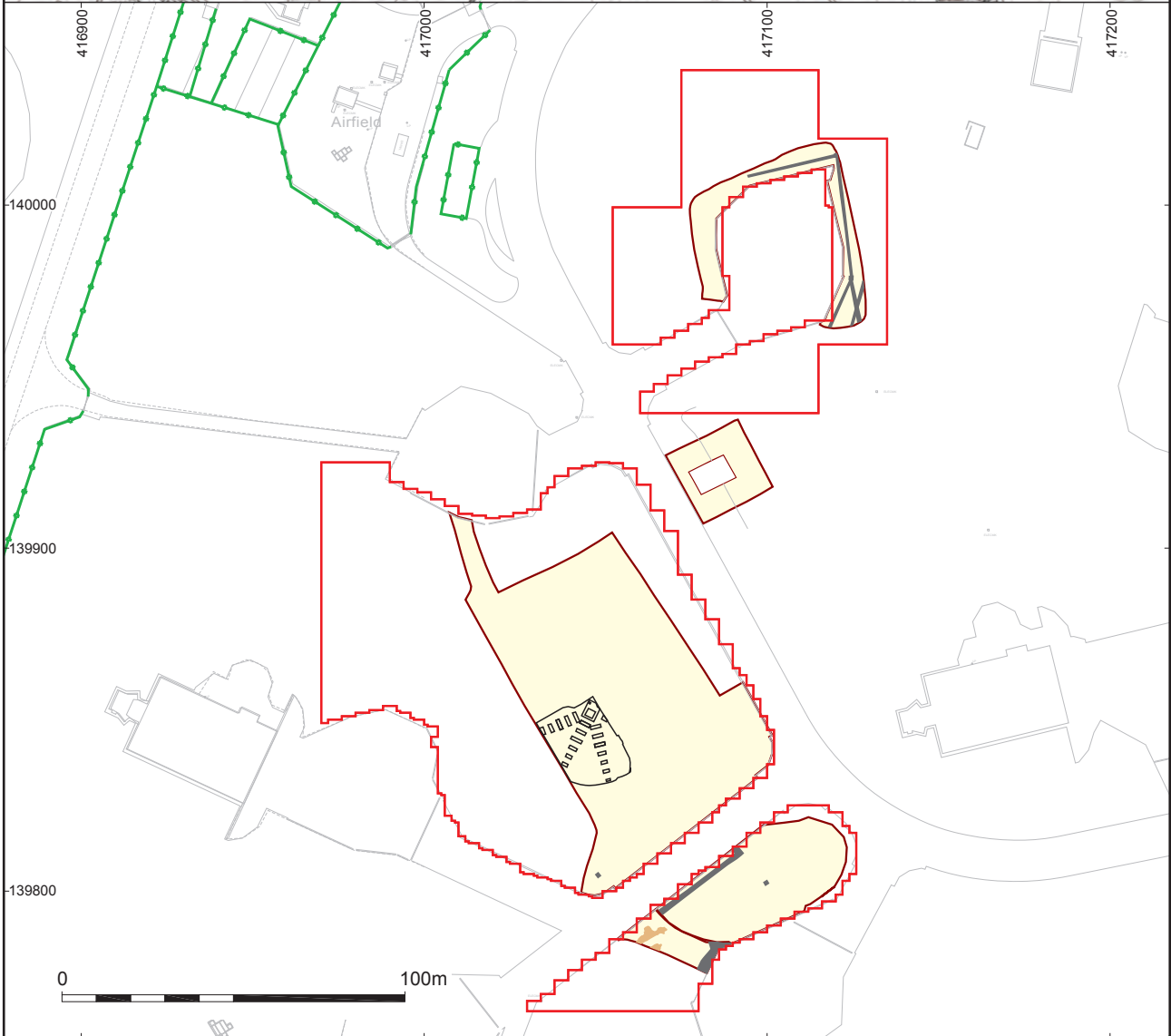
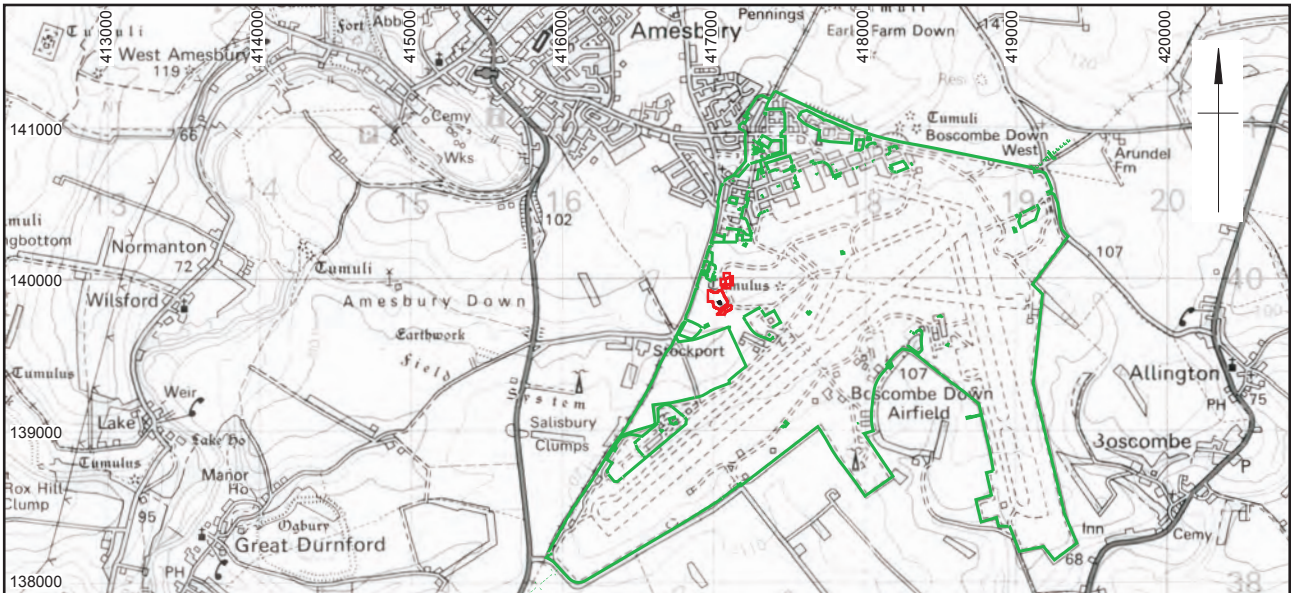
- 7.1.1 The Watching Brief identified no evidence for pre-Second World War archaeological features, deposits or artefacts in the observed stripped areas.
- 7.1.2 The geophysical survey, undertaken just before the commencement of the watching brief, had identified a number of possible archaeological features, although these were revealed, with one exception, during stripping as modern services. The exception, a circular feature approximately 20m in radius was confirmed by the stripping as a pattern of concrete bases, partly covered by brick and concrete rubble.
- 7.1.3 Despite enquires with English Heritage, Norman Parker (Archivist at Boscombe Down airfield) and examination of the existing available airfield records, no documentary evidence for this structure has been found and an accurate identification has proved impossible. The most likely interpretation would be that the structure is the base for an early post-second World War radar/signal installation, which still remains largely preserved below the recent development.
- 7.1.4 It is possible, due to the relatively shallow depth of the works, that there is the potential for surviving archaeological features below the formation level of the new batching plant. Although the geophysical survey did not positively identify any likely archaeological features, deposits in the area contained substantial amounts of building rubble, which may have had a screening effect. Thus, there is still the potential for the survival of archaeological features, within the examined area. This will need to be taken into account before any subsequent redevelopment of the area.

## **8 ARCHIVE**

- 8.1.1 The project archive, consisting of an A4 ringbinder, a collection of digital photographs and survey data is currently held at the offices of Wessex Archaeology at Old Sarum, Salisbury, Wiltshire under the project code **71000**. The archive will be deposited, in due course, with the Salisbury and South Wiltshire Museum, Salisbury, Wiltshire.

**9 REFERENCES**

- AC Archaeology, 2001, Boscombe Down FSTA: Results of Archaeological Trench Evaluation, Unpublished Client Report Ref. 1001/2/0, April 2001
- Palmer, R., 1984, *Danebury - an Iron Age Hillfort in Hampshire: an aerial photographic interpretation of its environs*, London, Royal Commission on Historical Monuments (England), Supplementary Series 6
- Rawlings M.N. and Fitzpatrick, A.P., 1996, Prehistoric features and a Romano-British settlement at Butterfield Down, Amesbury, Wiltshire, *Wiltshire Archaeological and Natural History Magazine* 89, 1-43
- Richards, J.C., 1990, *The Stonehenge Environs Project*, London, English Heritage Archaeology Report 16
- Richardson, K.M., 1951, The Excavation of Iron Age Villages on Boscombe Down West, *Wiltshire Archaeological and Natural History Magazine* 54, 123-168
- Wessex Archaeology, 2000, *Amesbury Phase 1 Housing, Boscombe Down, Wiltshire: excavations on the line of the Spine Road 1996, Excavations at New Covert 1997 and watching brief 1996-7*, unpublished client report 43193.1.
- Wessex Archaeology, 2005a *Land South-East of Amesbury, Boscombe Down, Wiltshire: Archaeological Evaluation of the Haul Roads, Spoil Storage, Southern Link Road proposed Cemetery, Drainage and Landscape Feature*, unpublished client report 56243
- Wessex Archaeology, 2005b, *Boscombe Down V Excavation 2004; Post-excavation assessment report and proposals for analysis and final publication*, unpublished client report 56240
- Wessex Archaeology, 2006, *Boscombe Down Airfield Fire Hydrant Works, Amesbury, Wiltshire: Archaeological Watching Brief Report*, unpublished client report 62260.03
- Wessex Archaeology, 2007, *Boscombe Down Airfield New Accommodation Block (OP Tamarin) Amesbury, Wiltshire: Archaeological Watching Brief Report*, unpublished client report 66980.02
- Wessex Archaeology, 2008, *Boscombe Down Airfield New Accommodation Block (OP Tamarin) Amesbury, Wiltshire: Archaeological Watching Brief Report*, unpublished client report 66982.02
- Wessex Archaeology, 2009, *Boscombe Airfield Batching Plant, Amesbury, Wiltshire: Detailed Gradiometer Survey Report*, unpublished client report 71000.01, February 2009





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Site location and extent of fieldwork

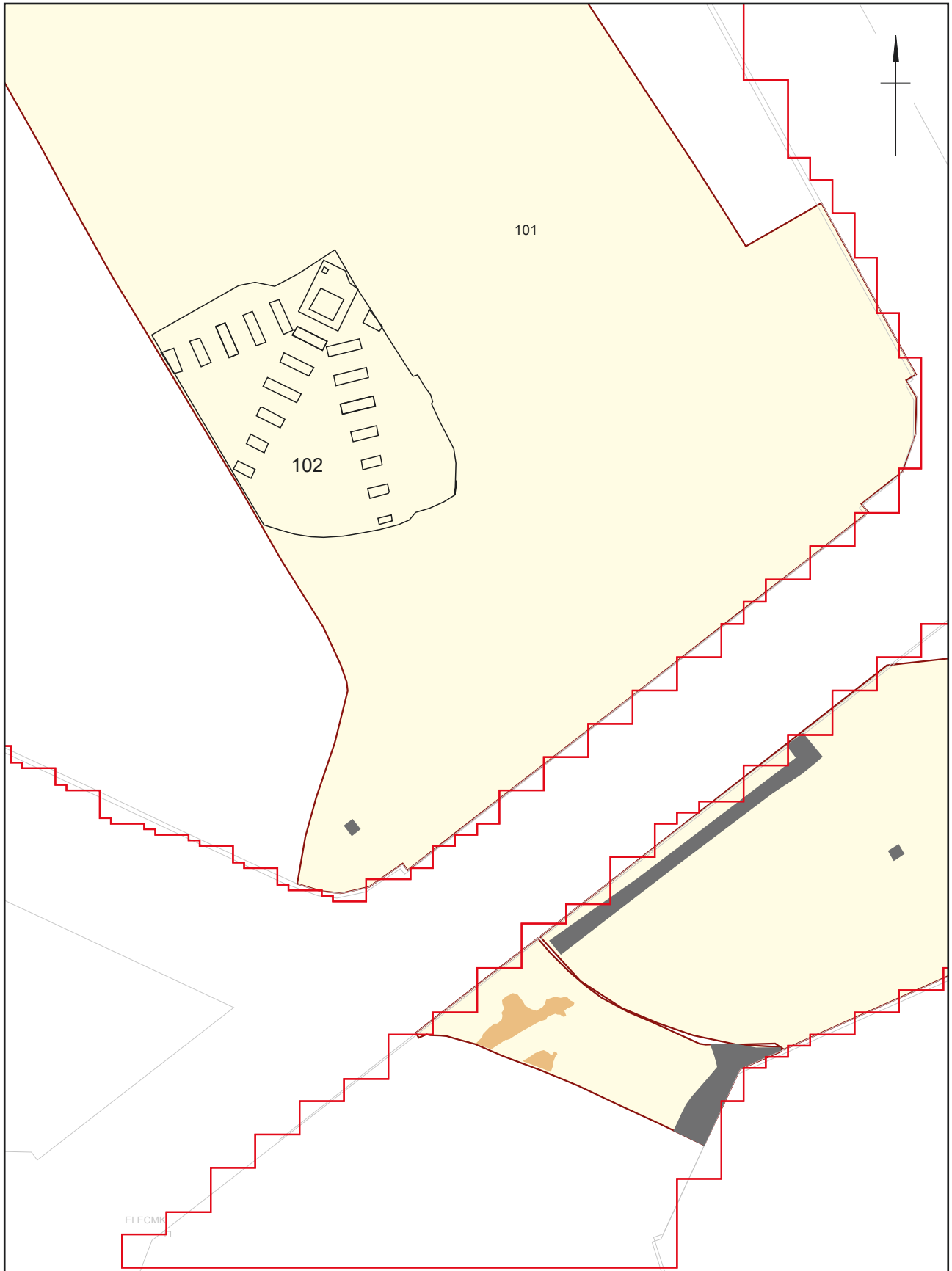
Figure 1




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Geophysical survey results

Figure 2



<p> <span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px; margin-right: 5px;"></span> Geophysical Survey Area  <span style="background-color: yellow; display: inline-block; width: 10px; height: 10px; margin-right: 5px;"></span> Area of stripping  <span style="background-color: grey; display: inline-block; width: 10px; height: 10px; margin-right: 5px;"></span> Modern services  <span style="background-color: brown; display: inline-block; width: 10px; height: 10px; margin-right: 5px;"></span> Natural geology   </p>	<p>Reproduced from the 1994 Ordnance Survey Landranger © map with the permission of the controller of Her Majesty's Stationery Office © Crown copyright, Wessex Archaeology, Portway House, Old Sarum Park, Salisbury, Wiltshire. SP4 6EB. Licence Number: 100028190. Data external to the boundary fence is OS digital data. Reproduced with the permission of The Controller of Her Majesty's Stationery Office © Crown Copyright Licence number 100042019. This material is for client report only © Wessex Archaeology. No unauthorised reproduction.</p>	
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Concrete structure 102

Figure 3

**APPENDIX 1: Boscombe Airfield Batching Plant, Amesbury, Wiltshire, Detailed  
Gradiometer Survey Report, Report Reference 71000.01, February 2009**



**BOSCOMBE AIRFIELD BATCHING PLANT,  
AMESBURY, WILTSHIRE**

**Detailed Gradiometer Survey Report**

Prepared for:  
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**Ref: 71000.01**

**February 2009**

# **BOSCOMBE AIRFIELD BATCHING PLANT, AMESBURY, WILTSHIRE**

## **Detailed Gradiometer Survey Report**

### **Summary**

Wessex Archaeology was commissioned by QinetiQ to conduct a geophysical survey on land at Boscombe Airfield, near Amesbury, Wiltshire. The survey formed the first element of a programme of archaeology fieldwork, undertaken during groundworks for the construction of a concrete batching plant, centred on NGR 417080 139890.

Three areas covering approximately 1.8ha were surveyed, bordered by concrete hard standing and access roads. The geophysical survey identified relatively few anomalies of potential archaeological interest. A series of linear anomalies, perhaps representing a former boundary or ditch were identified near the northernmost extent of the proposed development area.

Elsewhere, the data demonstrate extensive modern disturbance which will have masked the responses from any underlying archaeological anomalies that may lie within the development area. Numerous modern services have been identified, along with the possible foundations of a former structure.

# **BOSCOMBE AIRFIELD BATCHING PLANT, AMESBURY, WILTSHIRE**

## **Detailed Gradiometer Survey Report**

### **Acknowledgements**

The detailed gradiometer survey was commissioned by Jonathan Wade of QinetiQ and his assistance is gratefully acknowledged.

The fieldwork was directed by Ben Urmston, and assisted by Cristina Serra Ruiz. Ben Urmston processed and interpreted the geophysical data and prepared this report. Illustrations were prepared by Linda Coleman. The project was managed on behalf of Wessex Archaeology by Andrew Manning.

# **BOSCOMBE AIRFIELD BATCHING PLANT, AMESBURY, WILTSHIRE**

## **Detailed Gradiometer Survey Report**

### **1 INTRODUCTION**

#### **1.1 Project background**

1.1.1 Wessex Archaeology was commissioned by QinetiQ to undertake a geophysical survey on land at Boscombe Airfield, near Amesbury, Wiltshire, approximately centred on NGR 417080 139890 (hereafter 'the Site'). The Site comprises the proposed location for a concrete batching plant and associated infrastructure, to be used during resurfacing works.

1.1.2 The aim of the geophysical survey was to establish the likely presence/absence and extent of detectable archaeological remains and potential modern disturbance. The results would be then used to inform the nature and scope of subsequent fieldwork.

1.1.3 Salisbury District Council indicated that the proposed project did not require planning permission. Initial archaeological advice was sort from Richard Osgood of the Historical Environmental Team, Defence Estates and following recommendations, Wessex Archaeology were invited to prepare a geophysical specification to investigate the proposed study area.

1.1.4 This report presents a brief description of the methodology followed, detailed survey results and the archaeological interpretation of the geophysical data.

#### **1.2 The Site**

1.2.1 The Site comprises three areas separated by access roads and concrete hardstanding (**Figure 1**); approximately 0.5ha was suitable for survey in the northernmost area, 1.1ha in the central area and 0.2ha in the southern. Topographically, the Site lies at approximately 110m above Ordnance Datum (aOD) and slopes gently down from northeast to southwest.

1.2.2 The soils underlying the Site are the brown rendzinas of the 343h (Andover 1) association (SSEW 1983). Such soils have been shown to produce magnetic contrasts suitable for the detection of archaeological features through detailed survey using the Bartington Grad 601-2 gradiometer.

### **2 METHODOLOGY**

#### **2.1 Introduction**

2.1.1 Salisbury District Council had indicated that the proposed project did not require planning permission and accordingly, Wiltshire County Archaeology Service were not involved in monitoring the archaeological work. Initial archaeological advice was sort from Richard Osgood of the Historical Environmental Team, Defence Estates and a geophysical specification was prepared by Wessex Archaeology to investigate the proposed study area. The methodology consisted of a detailed gradiometer survey conducted

using a Bartington Grad 601-2 dual gradiometer system. The survey was conducted by Wessex Archaeology's in-house geophysical team on the 20<sup>th</sup> January 2009, in accordance with English Heritage Guidelines for Geophysical Surveys (2008).

- 2.1.2 Survey grids were established at 20m x 20m using a Leica 1200 RTK GPS system, which is able to provide locations in real-time, accurate to within 2cm, and therefore exceeds English Heritage recommendations.
- 2.1.3 The detailed gradiometer survey was conducted using a Bartington Grad 601-2 Gradiometer system over 20m x 20m grids with a sample interval of 0.25m along transects spaced 1m apart. Data were collected in the zigzag method along traverses running from south to north.
- 2.1.4 Results from the survey were subject to limited processing. Processes applied to correct the data were;
  - De-stripe/zero mean traverse ( $\pm 5$  nT thresholds applied)
  - De-stagger (to account for walking errors)
- 2.1.5 Further details of the geophysical and survey equipment, methods and processing are described in **Appendix 1**.

### **3 RESULTS AND INTERPRETATION**

#### **3.1 Introduction**

- 3.1.1 The geophysical survey identified a limited number of anomalies of possible archaeological interest. Results are presented as both a greyscale (**Figure 2**) and an XY trace plot (**Figure 3**) of the entire site.
- 3.1.2 The interpretation of the datasets highlights the presence of possible archaeological anomalies, trends, ferrous/burnt or fired objects and areas of general increased magnetic response. The interpretation is shown for the entire Site in **Figure 4**. Full definitions of the interpretation terms used in this report are provided in **Appendix 2**.
- 3.1.3 Numerous ferrous anomalies were visible throughout the detailed survey dataset. These are presumed to be modern in provenance and are not referred to in the interpretation, unless considered relevant to the archaeological interpretation.

#### **3.2 Detailed survey results and interpretation**

- 3.2.1 The geophysical survey detected a limited number of anomalies of potential archaeological interest. A series of linear anomalies **4001**, oriented approximately west southwest to east southeast, may represent a linear feature, such as a ditch or former boundary. Given the proximity of a band of strong magnetic disturbance immediately to the north, little confidence can be given to an archaeological origin for these anomalies. Nearby linear trends may be associated with **4001**, especially those extending to the southwest.
- 3.2.2 Elsewhere, linear trends appear on varying alignments. The extent of modern disturbance makes it difficult to understand their provenance in a

wider context. Numerous modern services are apparent in the data and the majority show excellent correlation with the locations of known services (e.g. **4002**, **4003** and **4004**). In the case of near-surface drainage, trends can be observed within the ferrous responses that closely match the known positions of such drains, but not all can be clearly identified from the local magnetic background from the geophysical survey alone. This is illustrated by two known services running through the southernmost portion of the central area and the southern area respectively. One anomaly relating to a low voltage cable (**4006**) can only just be separated from the local magnetic background, while another anomaly (a water drainage service **4006**) exhibits little contrast with the local magnetic background and is effectively untraceable.

- 3.2.3 The anomaly **4007** appears to represent the foundations of a possible modern circular structure, approximately 30m in diameter, and including a number of possible radial projections. This structure is surrounded by widespread disturbance, which may relate to extensive demolition debris, perhaps derived from post-structural levelling of this part of the Site.

## **4 CONCLUSION**

### **4.1 Introduction**

- 4.1.1 The detailed gradiometer survey appeared to indicate a relatively low archaeological potential. A series of linear anomalies near the northernmost extent of the geophysical survey may represent a ditch or former boundary, although the anomalies lack sufficient contrast with the magnetic background to allow confident interpretation.
- 4.1.2 Numerous modern services are apparent, and correlate well with the positions of known services. It is possible that the responses of other services crossing the survey areas have been masked by the strongly varying magnetic background; the responses from surface drainage channels are similarly swamped by nearby anomalies.
- 4.1.3 One large likely modern feature **4007** has been identified, although within large sections of the Site, there is a poor contrast between the strong magnetic background and potential anomalies. This may suggest that, within these areas, underlying archaeological features and/or deposits may still survive, although their magnetic responses will have been concealed by the much stronger magnetic debris overlying them.

## **5 REFERENCES**

English Heritage, 2008, *Geophysical survey in archaeological field evaluation*. Research and Professional Service Guideline No 1, 2nd edition.

Soil Survey of England and Wales, 1983, *Soils of South East England: Sheet 6*. Ordnance Survey, Southampton.

# **BOSCOMBE AIRFIELD BATCHING PLANT, AMESBURY, WILTSHIRE**

## **Detailed Gradiometer Survey Report**

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## **APPENDIX 1: SURVEY EQUIPMENT AND DATA PROCESSING**

### **Survey Methods and Equipment**

The magnetic data for this project was acquired using a Bartington 601-2 dual magnetic gradiometer system. This instrument has two sensor assemblies fixed horizontally 1m apart allowing two traverses to be recorded simultaneously. Each sensor contains two fluxgate magnetometers arranged vertically with a 1m separation, and measures the difference between the vertical components of the total magnetic field within each sensor array. This arrangement of magnetometers suppresses any diurnal or low frequency effects.

The gradiometers have a resolution of 0.1nT over a  $\pm 3000$ nT range, and measurements from each sensor are logged at intervals of 0.25m. All of the data are stored on an integrated data logger for subsequent post-processing and analysis.

Wessex Archaeology undertakes two types of magnetic surveys: scanning and detail. Both types depend upon the establishment of an accurate 20m or 30m site grid, which is achieved using a Leica 1200 RTK GPS system and then extended using tapes. The Leica 1200 RTK GPS system receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined to an accuracy of 1-2cm in real-time and therefore exceed the level of accuracy recommended by English Heritage (1995) for geophysical surveys.

Scanning surveys consist of recording data at 0.25m intervals along transects spaced 10m apart, acquiring a minimum of 80 data points per transect. Due to the relatively coarse transect interval, scanning surveys should only be expected to detect extended regions of archaeological anomalies, when there is a greater likelihood of distinguishing such responses from the background magnetic field.

The detail surveys consist of 30m x 30m grids, and data are collected at 0.25m intervals along traverses spaced 1m apart. This gives 1600 measurements per grid and is the recommended methodology for archaeological surveys of this type (English Heritage, 2008).



## Post-Processing

The magnetic data collected during the detail survey are downloaded from the Bartington system for processing and analysis using both commercial and in-house software. This software allows for both the data and the images to be processed in order to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.

As the scanning data are not as closely distributed as with detailed survey, they are georeferenced using the GPS information and interpolated to highlight similar anomalies in adjacent transects. Directional trends may be removed before interpolation to produce more easily understood images.

Typical data and image processing steps may include:

- Destripe – Applying a zero mean traverse in order to remove differences caused by directional effects inherent in the magnetometer;
- Destagger – Shifting each traverse forward or backward by a number of readings. This corrects for operator errors and is used to enhance linear features;
- Clipping – Limiting the displayed range of the processed data to either  $\pm 3nT$  or  $\pm 3SD$ . in order to enhance the appearance of smaller anomalies.
- Despiking – Filtering any data points that exceed the mean by a specified amount to reduce the appearance of dominant anomalous readings caused by modern, small ferrous objects at the surface

Typical displays of the data used during processing and analysis:

- XY Plot – Presents the data as a trace or graph line for each traverse. Each traverse is displaced down the image to produce a stacked profile effect. This image can include a hidden line algorithm to remove certain lines and enhance the image. This type of image is useful as it shows the full range and shape of individual anomalies.
- Greyscale – Presents the data in plan view using a greyscale to indicate the relative strength of the signal at each measurement point. These plots can be produced in colour to highlight certain features but generally greyscale plots are used during analysis of the data.

## **APPENDIX 2: GEOPHYSICAL INTERPRETATION**

The interpretation methodology used by Wessex Archaeology separates the anomalies into two main categories: archaeological and unidentified responses.

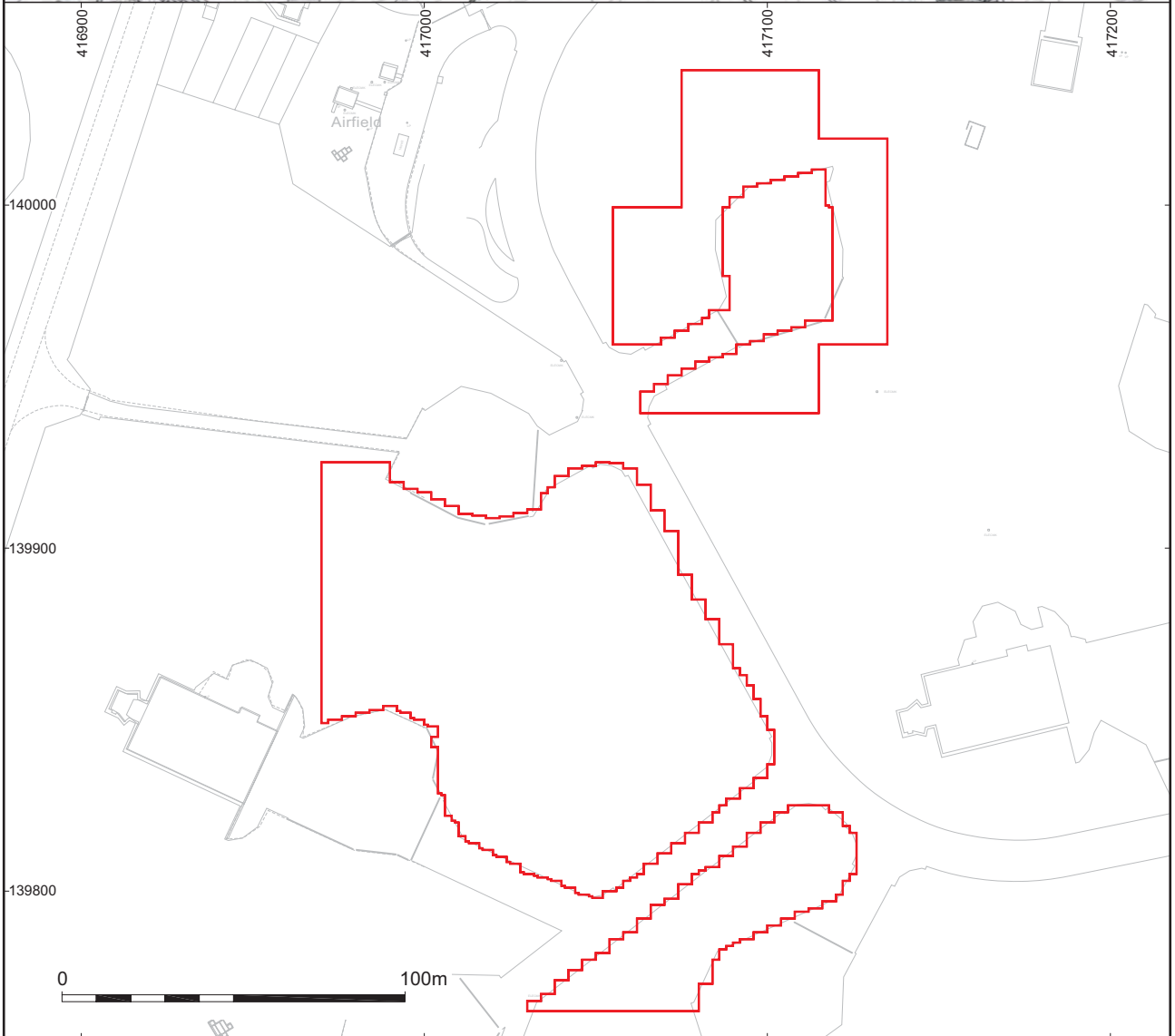
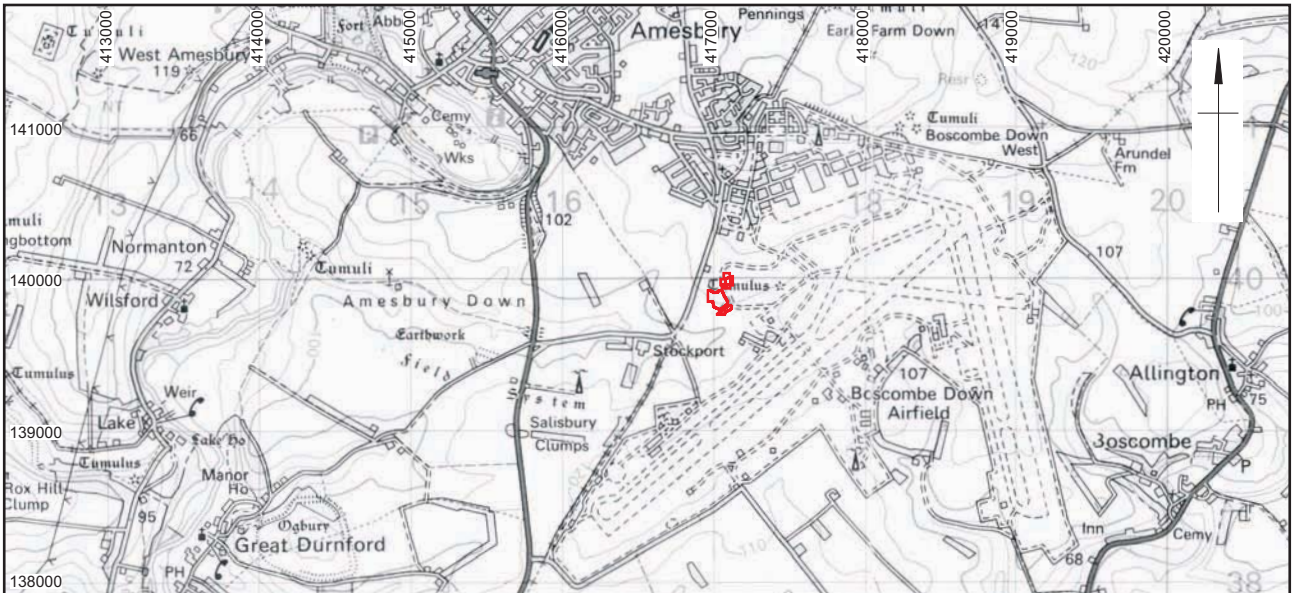
The archaeological category is used for features when the form, nature and pattern of the anomaly are indicative of archaeological material. Further sources of information such as aerial photographs may also have been incorporated in providing the final interpretation. This category is further sub-divided into three groups, implying a decreasing level of confidence:

- Archaeology – used when there is a clear geophysical response and anthropogenic pattern.
- Probable archaeology – used for features which give a clear response but which form incomplete patterns.

The unidentified category is used for features when the form, nature and pattern of the anomaly are not sufficient to warrant a classification as an archaeological feature. This category is further sub-divided into:

- Possible archaeology – used for features which give a response but which form no discernable pattern or trend.
- Increased magnetic response – used for areas dominated by indistinct anomalies which may have some archaeological potential.
- Trend – used for low amplitude or indistinct linear anomalies.
- Ferrous – used for responses caused by ferrous material. These anomalies are likely to be of modern origin.

Finally, services such as water pipes are marked where they have been identified.



 Geophysical Survey Area

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Scale: 1:50 000 & 1:2000 @ A4

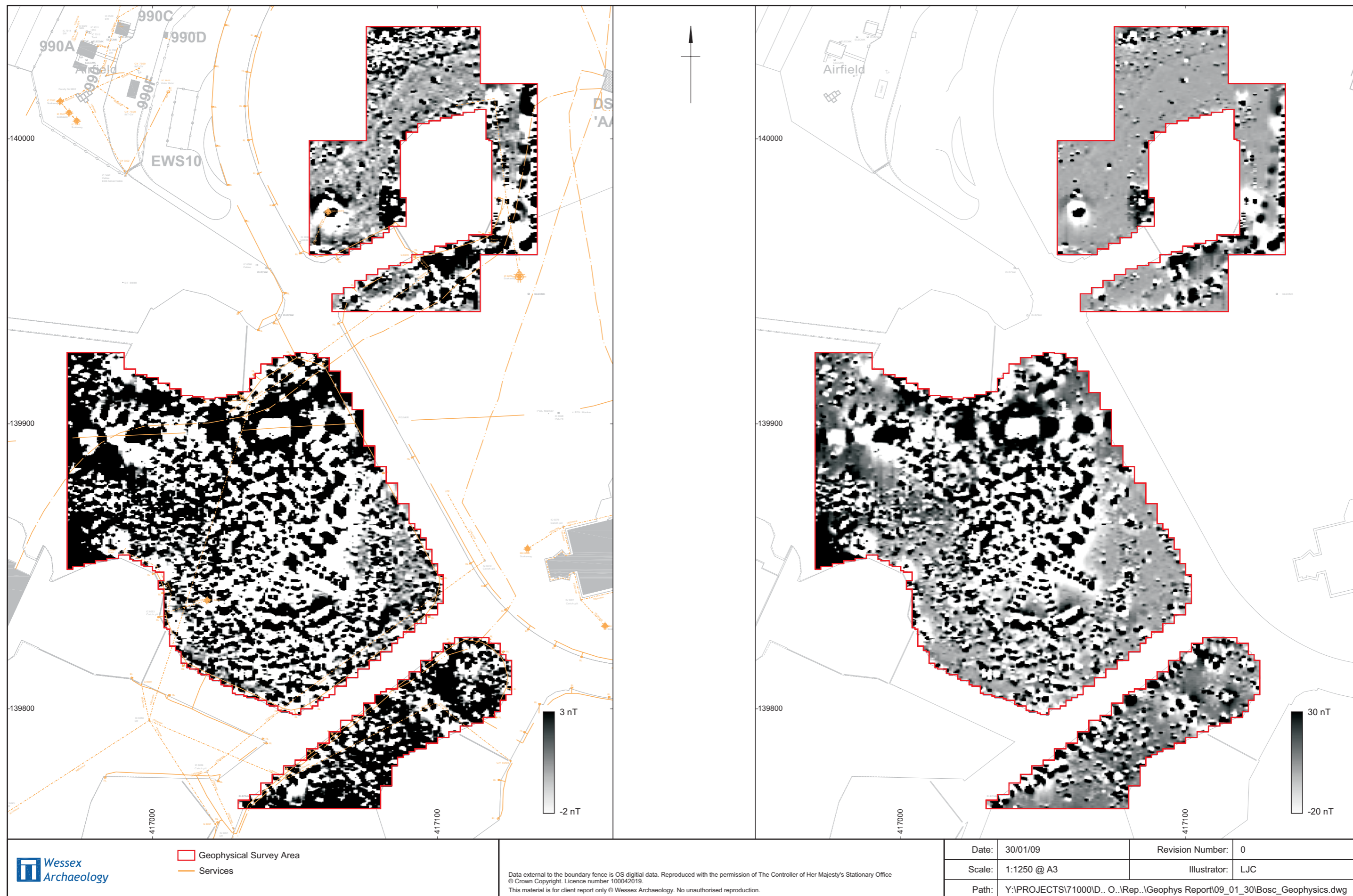
Illustrator: LJC

Path: Y:\PROJECTS\71000\Drawing Office\Report Figs\Geophys Report\09\_01\_30\Bosc\_Geophysics.dwg



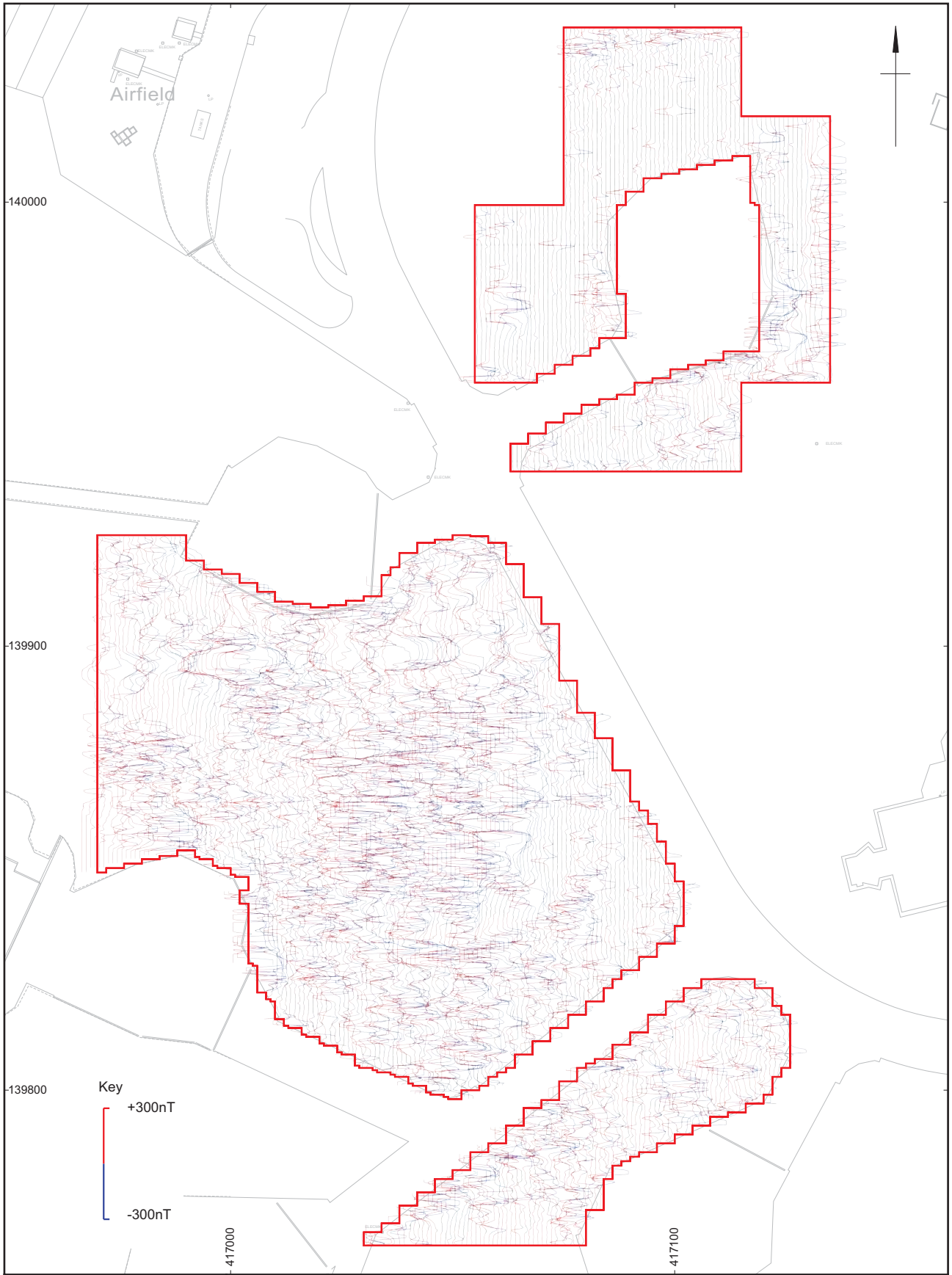
Site location and survey extents



Figure 1



Greyscale plots of geophysical results

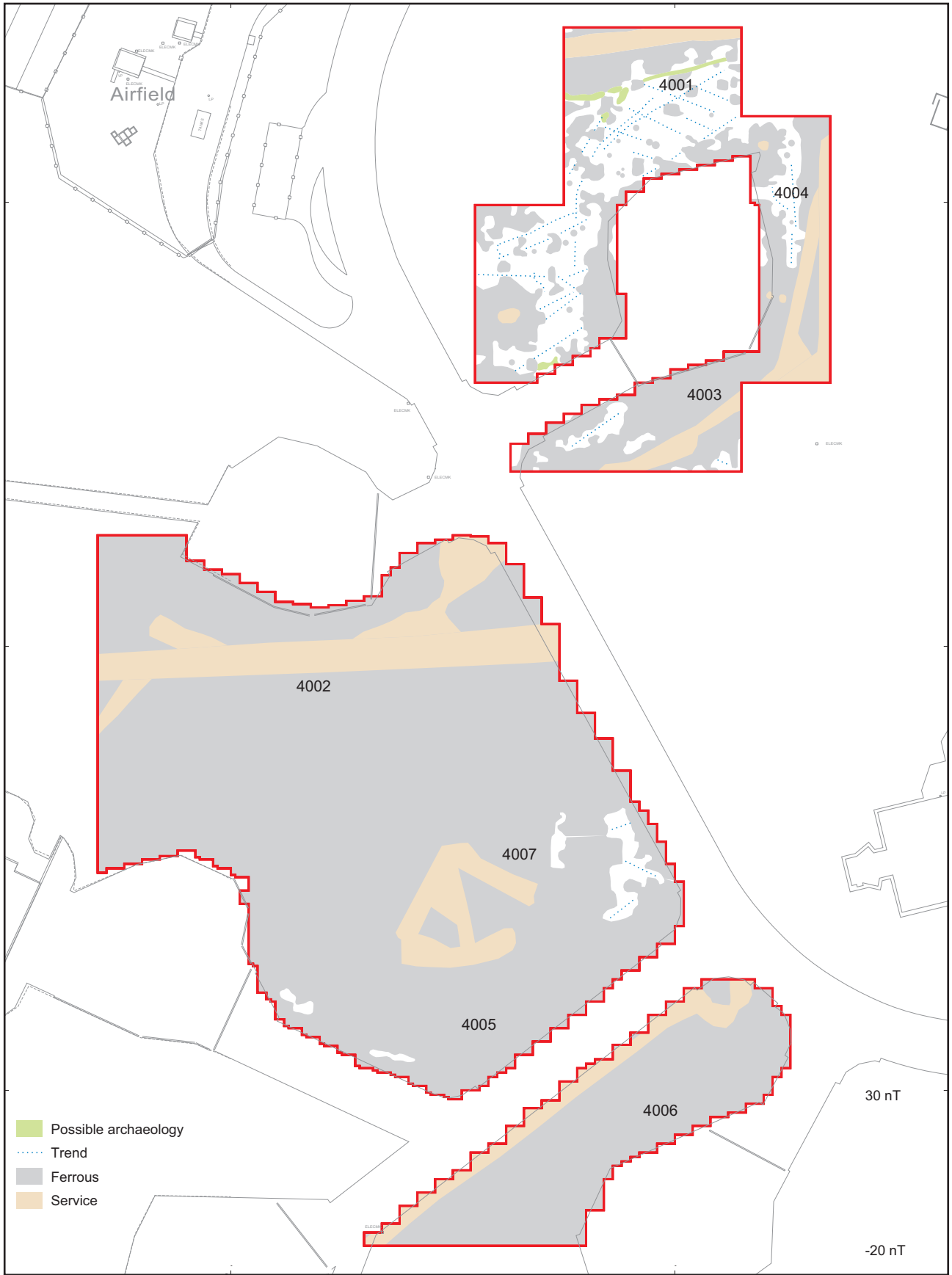
Figure 2



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XY plot of geophysical results

Figure 3



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Interpretation of geophysical results

Figure 4



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