A21
Tonbridge to Pembury Dualling

Geophysical and Walkover Survey

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A21 Tonbridge to Pembury Dualling, Kent

GEOPHYSICAL AND WALKOVER SURVEY

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SUMMARY

Oxford Archaeology was commissioned by the Highways Agency to undertake a geophysical survey and walkover survey to test for evidence of archaeological sites at locations within the route of the proposed A21 dualling scheme from Tonbridge to Pembury, Kent.

The geophysical survey detected numerous subsurface features and disturbances, a small number of which may be of potential archaeological concern. The walkover survey investigated the areas inaccessible to the geophysical investigation. Overall, the combined survey has not located any significant archaeological sites visible either as extant remains within the remaining landscape or as densities of archaeological/geophysical anomalies.

1 INTRODUCTION

1.1 Background and Scope of Work

1.1.1 In July 2009 Oxford Archaeology was commissioned by the Highways Agency to undertake an archaeological geophysical survey and a walkover survey of land adjacent to the existing course of the A21 road between Tonbridge and Pembury, Kent (Fig. 1). Each element of the survey was undertaken in accordance with separate Briefs supplied by Atkins Heritage. Oxford Archaeology (OA) produced a Written Scheme of Investigation (WSI) detailing how each survey would be completed to fulfil the relevant brief.

1.1.2 The geophysical survey was undertaken by Bartlett-Clark Consultancy in two phases between 17th June and 2nd July and 13th-14th July 2009. The walkover survey was undertaken by OA between 3rd-4th August 2009 and was designed to investigate the areas not accessible to, or those not covered by, the geophysical survey.

1.1.3 The geophysical survey areas as originally specified in the brief amounted to 12.7ha (as indicated in yellow on the survey location plan: Fig. 2). This was subsequently expanded for the two survey phases to 25.2ha. Some of the fields within the extended area included ground which was too densely overgrown for geophysical survey data collection to be possible, including some woodland. The total survey coverage as finally achieved therefore amounted to approximately 20ha. The combined phase 1 and 2 survey areas are indicated on figure 2 by red cross hatching, with the actual survey coverage in blue. The walkover survey was undertaken within the areas not accessible to the geophysical survey that amounted to 19.5ha as shown on figure 3.

1.2 Location and Topography

1.2.1 The A21 from Tonbridge to Pembury is located within the Weald and runs through the parishes of Capel, Pembury, Tonbridge and Malling between NGR TQ 600 447 to TQ 614 398 (Fig. 1). The surrounding landscape is characterised by major ridgelines and valleys. The A21 runs from north to south along one of these ridges, and in the

northern part of the study area the A21 runs along a high embankment to cross a valley.

1.3 Geology

1.3.1 The underlying geology within the study area is predominantly composed of the Hastings Beds, which are clays, sands and sandstones. There are also occasional outcrops of Ardingly Sandstone present. In general, the route can be divided into three distinct zones of drift geology: Ashdon Sands, Wadhurst Clay and Tunbridge Wells Sand. Outliers comprising outcrops of the Tunbridge Wells Sand, including massive, moderately strong sandstone, are present in several locations along the route, including at Castle Hill.

1.4 Archaeological and Historical Background

1.4.1 The following information repeats verbatim Section 4 from the Briefs.

1.4.2 As part of DMRB Stage 2 Assessment for Cultural Heritage, information on the known archaeological resource of a study area extending 500 metres either side of the current road has been collated. The following archaeological sites and find spots were identified.

1.4.3 The Scheduled Ancient Monument Castle Hill Fort (at Ordnance Survey grid reference TQ 6075 4390), which stands within the study area, has produced a radiocarbon determination of around 270 BC. The site consists of two non-contemporary forts placed on high ground, overlooking the ridge between Tonbridge and Pembury.

1.4.4 In addition to Castle Hill, there is further evidence from prehistoric periods in the area, comprising find spots of Mesolithic/Neolithic scraper (TQ 6248 4056), Neolithic flint axe (TQ 6248 4056), Bronze Age flint scraper (TQ 6245 4095), Bronze Age arrowhead (TQ 628 407) and Neolithic-Bronze Age scraper (TQ 630 410).

1.4.5 There are no known remains dated to the Roman period within the study area, but there are many undated archaeological features in the area. Of these, the DMRB Stage 2 Assessment for Cultural Heritage identified the following sites as being possibly of Roman date: earthworks (TQ 626 398, TQ 6030 4374 - TQ 6052 4370, TQ 6033 4364), terraces (TQ 6054 4380) and crop marks of a possible enclosure (TQ 5946 4454).

1.4.6 Three sites within the study area are dated to the medieval period: Bloomery site (TQ 6010 4414), a possible bank and ditch (TQ 6060 4411 - TQ 6023 4413) and boundary bank and ditch (TQ 6115 4130).

1.4.7 Notable post-medieval remains within the study area are the Tonbridge to Tunbridge Wells railway line (TQ 58 46 (linear)), an earthwork bank and ditch (TQ 6114 4195 - TQ 6116 4223), brickworks (TQ 6115 4130), and the site of an iron furnace and pond bay (TQ 5925 4402).

1.4.8 There are also a number of undated archaeological sites within the study area: field boundaries and possible lynchets (TQ 626 398), Devil's Gill Bloomery (TQ 6161 4402), earthworks (TQ 6030 4374 - TQ 6052 4370), mine pits (TQ 6023 4387), terraces (TQ 6054 4380), a boundary bank and ditch (TQ 6033 4364), and crop marks of a possible enclosure (TQ 5946 4454). A brickworks (TQ59538 45022) was noted on the 1st edition Ordnance Survey map, surviving until after the 1938 map was surveyed.

2 SURVEY AIMS

2.1 Geophysical Survey

2.1.1 The aims of the geophysical survey as defined by the Brief were:

- to establish the presence or absence of archaeological remains within the site;
- to determine the nature, extent, and potential significance of any archaeological features or structures below ground;
- to report on the results of the geophysical survey.

2.2 Walkover Survey

2.2.1 The aims of the survey as defined by the Brief were:

- to establish the presence or absence of archaeological remains within the study area;
- to determine the nature, extent, and potential significance of any visible archaeological features or structures;
- to aid identification and assessment of the archaeological and historic landscape potential of the scheme route by recording archaeological remains and historic landscape features in the field.
- to report on the results of the walkover survey.

3 SURVEY METHODOLOGY

3.1 Geophysical Survey

Magnetometer survey

3.1.1 Readings were collected using Bartington 1m fluxgate magnetometers, and were plotted at 25cm intervals along transects 1m apart. The results of the survey are shown as grey scale plots at 1:2000 scale (Figs 4-8), and as a graphical (x-y trace) plots at 1:1250 scale (Figs 9-15).

3.1.2 The survey plots show the magnetometer readings after standard treatments which include adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering was also applied to the grey scale plot to reduce background noise levels.

3.1.3 The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the

underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains. It is also strongly affected by ferrous and other debris of recent origin.

3.1.4 The survey at each site was located by reference to a grid of temporary markers. The survey grid was set out and tied to national grid co-ordinates by means of a differential GPS system.

3.1.5 All geophysical survey undertaken as part of this project was completed in accordance with the standards outlined in *Geophysical Survey in Archaeological Field Evaluation* (English Heritage 2008) and *Standard and Guidance for Archaeological Evaluation* (Institute of Field Archaeologists 2001).

Magnetic susceptibility survey

3.1.6 The magnetometer survey was supplemented by a minimal background magnetic susceptibility survey with readings taken at 20m intervals using a Bartington MS2 meter and field sensor loop. The results are presented as a plot of shaded squares of density proportional to the readings (Fig. 16).

3.1.7 A susceptibility survey may sometimes provide a broad indication of previously occupied or disturbed areas in which burning associated with past human occupation has enhanced the magnetic susceptibility of the topsoil, although this cannot be relied upon, and the readings are often affected by non-archaeological factors, including geology and land use. The main purpose of a supplementary survey of the kind done here is to indicate the strength of response which is likely to be obtained as an aid to the interpretation of magnetometer survey.

3.2 Walkover Survey

3.2.1 The walkover survey was undertaken in accordance with The Institute for Archaeologists' *Code of Conduct* and RCHME's *Recording Archaeological Field Monuments: A Descriptive Specification*. The site inspection was also completed to the standards of RCHME Level 2 Field Survey, including mapping, photographing and describing visible archaeological and heritage features encountered.

3.2.2 The inspection was undertaken in a systematic manner to visually examine the areas of the scheme not assessed by, or accessible to, the geophysical survey. This included as a matter of course the identification, photography, description and mapping of any previously unknown archaeological features which may be associated with the past activity. This would include observation of any material or artefactual concentrations and any other significant archaeological indicators.

3.2.3 A hand-held GPS unit was used in order to assist in the location of identified features. The accuracy of this unit varied according to the tree-cover to between +/- 7m and 23m. Digital photos were taken of identified features.

3.2.4 The study area was divided into nine parcels (denoted as A to I), and the land-use and form of each recorded as written notes. The parcels are described below and are shown on figure 3.

3.2.5 Access was not gained to Parcel I due to the unwillingness of the landowner to grant this without a formal notice being issued by the Highways Agency. Due to the short notice and timetable that this survey was undertaken within, it was not possible to issue this prior to undertaking the fieldwork.

3.2.6 Approximately 90% of the area subject to survey comprised woodland, which in most cases was obscured by a dense under story, severely restricting zones of vision, the visibility of the ground surface, and access to the interior of the woodlands.

3.2.7 The non-statutory criteria listed by English Heritage for the Monuments Protection Programme was applied to the assessment of the archaeological importance of the features recorded.

4 RESULTS

4.1 Geophysical Survey

Figure presentations

4.1.1 Groups of adjoining fields within the evaluation area have been labelled for reference in this report as Areas 1-8 (Fig. 2).

4.1.2 An interpretation of the findings is shown superimposed on the graphical plots (Figs 9-15), and is reproduced separately to provide a summary of the findings (Figs 17-19). Features as marked on these plans include magnetic anomalies thought to be of at least potential archaeological significance (in red), as well as other magnetic activity, much of which is likely to be of recent or natural origin. A number of larger-scale disturbances are outlined in brown, and other (probably mainly natural) background activity is shown in a lighter brown/orange. The division between these categories is not always clearly defined, and there are numerous borderline magnetic anomalies, particularly between natural and (potentially) archaeological features.

Geological considerations

4.1.3 Soils on clay and sandstone bedrock are often not strongly magnetic, as was confirmed within this survey by the topsoil magnetic susceptibility readings taken as a supplement to the magnetometer survey. These, other than in clearly anomalous areas, were mainly less than 10 (x 10^{-5} SI), which is towards the lower end of the commonly encountered range of values. This does not exclude the possibility of detecting archaeological features by magnetometer surveying, particularly at former settlement or industrial sites where there is likely to be localised soil magnetic enhancement, but it may mean that the response to isolated earthwork or other features lacking such enhancement is less reliable than would often be the case.

Results by area

Area 1 (Fig. 17)

4.1.4 This area of rough grassland produced minimal findings from the eastern part of the survey, but strong magnetic disturbances to the west (labelled A). The significance of these disturbances is difficult to assess, given the possibility of iron working in the area, and that the site is near to the former brickworks. A dense scatter of slag could produce an effect of this kind, but so could modern levelling or infilling. The disturbances as seen here show no internal variation or coherence of plan as might be expected at an industrial site containing structures or enclosures. The similarity of the response to that seen in areas containing visible modern debris in Area 2 suggests perhaps that the disturbance here is of comparable origin.

4.1.5 One small magnetic anomaly (B) has been outlined in red because it shows a rounded profile (in the xy plot) of a kind which could be characteristic of a silted pit, but such features can also be natural, and this one (in isolation) is unlikely to be archaeologically significant.

Area 2 (Fig. 17)

4.1.6 The proposed survey area here extended into woodland and could not be covered in full. The site also contained densely overgrown areas of nettles and thistles. Rubble was visible in places through the long grass, suggesting that parts of the area have been used for fly tipping. This could account for much of the magnetic response, including the high readings around C. The distribution of the debris appears to be reflected in the magnetic susceptibility readings, which are particularly high towards the south and east of the site.

4.1.7 Linear markings (D) are visible within the strongly disturbed areas, and are indicated in the interpretation as possible cultivation effects. Such markings could perhaps result from ploughing the disturbed and strongly magnetic soil.

4.1.8 A few magnetic anomalies can again be identified which (taking account of their strength and profile) could be interpreted as silted pits of potential archaeological origin (e.g. E, F, G). They are, however, isolated and widely scattered, and any detailed interpretation in this disturbed context must be problematic.

Area 3 (Fig. 18)

4.1.9 The fields within this area were mainly grass and only partly overgrown. The only area of strong magnetic interference is a horse exercise paddock at the northern end of the survey (H). This had a raked surface, which must have been laid over hardcore.

4.1.10 Other findings include an unusually dense scatter of small ferrous anomalies (outlined in blue) in the larger field to the south of the horse paddock. Some possible faint linear markings (J) can also be seen in the grey scale plot. Such markings can be a cultivation effect, but here they are very weak and perhaps insignificant. They do not align with present field boundaries.

4.1.11 The two remaining fields within Area 3 are largely undisturbed (except for pipes), but they again contain a small number of pit-like magnetic anomalies (in red), of which the most distinct are at K and L.

Area 4 (Fig. 18)

4.1.12 The arable field of Area 4 shows slightly more magnetic activity than was detected in Area 3, and is largely free of strong disturbances as seen in Areas 1 and 2. Magnetic susceptibility readings are also higher than in Area 3 (c. 10 SI).

4.1.13 Findings, other than disturbances near fences and a few ferrous objects, include scatters of small magnetic anomalies of a kind which are usually of geological origin (as outlined in orange). Disturbances of this scale and density are often seen on gravel soils, where small magnetic stones are present in the gravel. Here there are no drift deposits, but similar and stronger effects have been seen in surveys of areas of clay-with-flints on the North Downs. Concentrations of magnetic anomalies are seen at M, N, P. In each case a few larger features have been outlined in red in case they indicate silted pits, but they are not clearly demarcated from the smaller background anomalies. It is not wholly impossible that such findings could indicate small or sparse groupings of archaeological features, but such an interpretation is speculative in the absence of more clearly defined findings. Some very uncertain linear effects are indicated by broken lines.

Area 5 (Fig. 18)

4.1.14 This small and partly overgrown area was intersected by pipes and other strong recent disturbances. No other findings were identified.

Area 6 (Fig. 19)

4.1.15 This relatively undisturbed area contained some elongated magnetic features at Q, together with a few very doubtful individual pit-like magnetic anomalies. The linearity of the features at Q could indicate the presence of silted ditches, but their isolation and irregular plan do not suggest they are archaeologically significant.

Area 7 (Fig. 19)

4.1.16 This field contained relatively uniform scatters of magnetic anomalies of the kinds described in Area 4, but without such clear concentrations. The features as outlined in red were only marginally more distinct than other small and probably natural magnetic anomalies. The susceptibility values here were low.

Area 8 (Fig. 19)

4.1.17 The main hindrance in this grass field was a series of parallel fences used to mark out the central part of the site for car boot sales. The barriers comprised strings between iron posts, together with a few wooden fences. The metal post were hammered well into the ground, and were too numerous to move. The survey in this part of the site

was therefore re-aligned so that the magnetometer transects were recorded parallel to the barriers.

4.1.18 It was expected that the magnetic anomalies from the posts would be conspicuous in the plots, but also that there could be sufficient unaffected ground between them for some degree of interpretation to be possible. The plots therefore show lines of strong magnetic anomalies (as outlined in blue) against a background which appear to be generally undisturbed, except for a central metalled trackway (R).

4.1.19 Other findings from the boot sale area and to the west were limited to strong disturbances around S. This part of the field is grassed, but the disturbances are similar to those from the hardcore track (R), and to those seen previously in Area 1. They perhaps therefore represent a grassed-over area of modern filling or levelling. A fenced-off former track runs across the site nearby at T.

4.1.20 There were some potentially more relevant, but still marginal, findings towards the east of the field. Various small pit-like magnetic anomalies are outlined in red, of which the most distinct were at U and V. Others again merge into the smaller and probably natural background anomalies. There is once more (as in Area 4) only limited reason to expect that this could be an archaeological site, although a scatter of (natural or artificial) pit-like features could be an explanation for the observed response.

4.2 Walkover Survey

4.2.1 As outlined above, the study area was divided into nine parcels (denoted as A to I, Fig. 3). These parcels and associated recorded features are described below. Appendix 1 comprises a gazetteer of all the features identified during the survey. Each feature has been given an identity number (*eg* **OA B1**), deriving from the parcel in which the features was identified.

Parcel and feature descriptions

4.2.2 Parcels A to H are described here from north to south. The features referred to in the text are depicted on figure 3.

Parcel A

4.2.3 Parcel A comprises woodland and grassland between Vauxhall Lane and a public right of way running south-west to Forest Farm. The eastern edge of this parcel is dominated by the embankments of the existing A21 Tonbridge Bypass, which are covered by screening plantations. It is possible that archaeological deposits may survive beneath these earthworks. West and south of the road embankments are areas of open grassland (apparently uncultivated at the time of survey) and an area of dense, recent plantation. No access could be gained into the recent plantation.

4.2.4 The southern edge of Parcel A is defined by a lane used as a public right of way (Feature **A1**), and which may be regarded as of some historic value. It is bounded by a mature hedgerow on the north side and an intermittent earthwork bank on the south

side. The hedgerow may meet the definition of an 'Important Hedgerow' under the terms of the Hedgerow Regulations 1997.

Photo: Recent plantation in Parcel A

Parcel B

4.2.5 Parcel B comprises woodland and grassland between a public right of way (Feature **A1**) and the northern edge of the earthwork complex (**C1**). The grassland is actively maintained. Most of the woodland consists of recent mixed-species plantation, apparently intended for amenity value. The woodland in the southern portion of this parcel is mature, and includes oak, ash, sweet chestnut and hazel. It does not appear to be actively maintained.

4.2.6 One feature and another group of features were observed in the open grassland. Feature **B1** is a low bank visible as an eroded earthwork. It was relatively straight, aligned NE-SW and continued into the recent plantation to the south-west. This feature is possibly a former field boundary or a lynchet.

4.2.7 Feature **B2** consists of a group of three or possibly four diffuse, eroded earthworks, similar to **B1** but more curvilinear and matching the west-facing slope of the grassland. At least one of this group continues into the mature woodland to the SW and can be seen as a bank running downslope. These earthworks appear to represent former cultivation lynchets.

*Photo: Feature **B1***

*Photo: Feature **B2** Bank continuing south-west into woodland*

Parcel C

4.2.8 Parcel C comprises woodland on the west and north-west slope of Castle Hill, defined to the NW by the north edge of the earthwork complex (**C1**), and to the south by an access track to the utilities compound on top of the hill. The woodland in this parcel has distinct sub-parcels, that to the north (and over earthwork complex **C1**) consisting of dense, regenerated scrub. South of this, and toward the base of the steep slope, is an area of more open pine plantation, whilst the remainder of the parcel consists of dense, sweet chestnut former coppice-trees.

4.2.9 One feature and another group of features were observed in the woodland. Feature **C1** is an extensive complex of various earthworks, including hollows, pits, ditches, banks and platforms. These are shown on the OS mapping and are likely to be spoil and waste material derived from the construction of the A21 Tonbridge Bypass and fly-tipping. This complex may include areas of contaminated ground or potentially dangerous materials, and may mask earlier features below.

4.2.10 Feature **C2** is the possible course of former lane or hollow-way, shown further west on OS mapping in Castlehill Woods as a track. It appears to have been used to access the waste dump noted as **C1** but may be earlier.

Parcel D

4.2.11 Parcel D comprises woodland known as Burgess Rough, on Burgess Hill. It is defined to the west and south by the course of the current A21 and an access track. The woodland is composed of mature, mixed oak and sweet chestnut on the roadside fringe and northern portion, with some sweet chestnut former coppice to the south and east.

4.2.12 One feature was evident in the woodland (**D1**); it is shown on the OS mapping. This feature can be discerned for a distance of c 30m east of the road as a eroded bank and ditch boundary and may represent a former woodland boundary.

Parcel E

4.2.13 Parcel E comprises two distinct blocks of woodland defined to the north and south by existing property boundaries. The northern block comprises a dense conifer plantation, whilst the larger southern block consists of recent and actively managed sweet chestnut coppice. Both forms of woodland are very dense and it was not possible to access the central areas of either.

4.2.14 Dividing the two blocks was a woodland bank and ditch boundary (Feature **E1**). This feature is shown on OS mapping and was visible as a bank is up to c 0.25 m high, c 0.75 m wide; the is ditch c 1.20 m wide and c 0.50 m deep.

4.2.15 Feature **E2** is a complex of structures located alongside an access track through the coppiced woodland. The two large wood and corrugated iron sheds or workshops appear to be of recent origin, as does the barn type structure. These are currently used

for processing timber-products. At the west end of this group of structures is a long brick and tile shed and a small brick and tile structure with steeply pitched roof. Both are in poor condition. These more substantial structures appear to be of 19th or 20th century origin; the smaller has a non-domestic form. Given the place-name 'Potter's Wood' and the presence of a pond near the complex, it is quite possible the more substantial structures are former industrial, pottery structures.

*Photo: Feature **E2** brick and tile shed*

*Photo: Feature **E2** brick and tile structure with steeply pitched roof.*

Parcel F

4.2.16 Parcel F comprises two distinct blocks of woodland defined to the north by Pembury Walks Road and to the south by Feature **F1**, a substantial hollow-way and public right of way.

4.2.17 The larger, northern block is formed of grown-out, sweet chestnut coppice-stools, with occasional mature oaks and silver birch toward the edges. The southern block has been coppiced in the recent past, leaving young, growing coppice-stools.

4.2.18 Feature **F1** is a substantial hollow-way, used as a public right of way through Pembury Walks wood. The hollow-way is up to 5 m wide and c 1.5 m deep, with a bank to the southern edge. Further to the east, and outside of the study area, it cuts into the slope as it turns north and east.

*Photo: Feature **F1** holloway looking west*

Parcel G

4.2.19 Parcel G comprises a block of woodland defined to the north by Yew Tree Farm and to the south by the roundabout between Longfield Road and the A21. The southern and south-western portion of this parcel encompasses the substantial earthwork cutting that accommodates the roundabout and the short stretch of dual carriageway on the north side of the roundabout. Some material may have been placed beside the cutting as a bund and it is possible that archaeological deposits may survive beneath the bunds. The woodland itself is very mixed, and composed of hazel, silver birch and sweet chestnut. The central part of the parcel includes a dense under-story of rhododendron. No access could gained to the central part of this parcel.

4.2.20 One feature was noted as an earthwork (Feature **G1**),which is a dry hollow shown on OS mapping as a pond, and which has been used as a tip. It may have originated as a quarry pit.

Parcel H

4.2.21 Parcel H comprises two blocks of woodland defined to the north by Longfield Road and to the south and east by the course of the A21. The larger northern block consists of mixed woodland including silver birch, ash, sweet chestnut and pine. This block also includes dense clumps of rhododendron and bracken in areas where the pine dominates. The southern block consists of more dense and younger mixed woodland. No access could gained to the central part of this parcel.

4.2.22 No features were observed in this parcel.

Photo: Pine woodland in Parcel H

Provisional assessment of importance

4.2.23 A provisional assessment of the importance of the features identified during the survey has been undertaken using the English Heritage non-statutory MPP (Monuments Protection Programme) criteria and MIV (Monument Interest Value) scoring system. It should be emphasised that these are provisional assessments that may be significantly adjusted in the light of further information from studies of the historic landscape or the local and regional archaeological context.

4.2.24 The provisional assessment of the importance are shown in Appendix 1 and comprise:

- Feature **A1** (Lane) - Moderately Important;
- Feature **B1** (Earthwork Bank) - Minor Importance;
- Feature **B2** (Earthwork Complex) - Minor Importance;
- Feature **C1** (Earthwork Complex) - Not Important;
- Feature **C2** (Lane) - Minor Importance;
- Feature **D1** (Earthwork boundary) - Minor Importance;
- Feature **E1** (Earthwork boundary) - Minor Importance;
- Feature **E2** (Building complex) - Moderately Important;
- Feature **F1** (Earthwork holloway) - Moderately Important;
- Feature **G1** (Earthwork hollow) - Minor Importance.

5 CONCLUSIONS

5.1 Geophysical Survey

5.1.1 The survey has produced two categories of findings which may require further investigation to fully exclude the possibility that they could be archaeologically significant. The first includes some of the areas of strong magnetic interference, as shown by dark outlines in the interpretation (Figs 17-19). Some of these (the dumped rubble in Area 2, the paddock (H) in Area 3, and the track (R) in Area 8 clearly represent modern disturbances. Others (A in Area 1, S in Area 8) cannot be so immediately explained. They would usually be discounted as recent, but this might here be unsafe, given the history of iron working in the area. There is no strong reason to suppose that the disturbances at A and S are caused by scatters of iron-working slag or debris (and the susceptibility readings at these locations remain generally low), but the possibility cannot be excluded on the survey evidence alone.

5.1.2 Similar considerations apply to some of the pit-like magnetic anomalies identified at various locations, and particularly in Area 4 (M, N, P) and Area 8 (U, V). The features as outlined in red include magnetic anomalies of suitable strength and profile to represent silted pits, which are often indicative of archaeological sites. The features are found here in contexts which include other smaller and probably natural magnetic anomalies, and with no other findings (ditches, enclosures) which would suggest they could be archaeologically significant. It is possible, given the generally weak magnetic response to be expected from the sand and clay Wealden soils, that not all

such associated features (if present) would be detected. Some further examination of these findings might therefore be desirable.

5.2 Walkover Survey

5.2.1 The walkover survey was constrained by the generally dense woodland cover over most of the study area and the associated undergrowth. No access was gained to one of the nine parcels due to the unhelpful landowner and short notice available to access the land.

5.2.2 Ten features or groups of features were observed during the course of the walkover survey. These comprise three historic landscape features, two complexes of earthworks, four other earthwork features, and a complex of buildings. It is possible that some of these features may be of later medieval origin but the majority are likely to be post-medieval in date.

5.2.3 A provisional assessment of their importance has been undertaken using the Non-statutory MPP (Monuments Protection Programme) criteria and scoring system. Three features are assessed as Moderately Important, six as of Minor Importance, and one as Not Important.

5.2.4 One mature hedgerow partly defining a lane used as a public right of way may meet the definition of an 'Important Hedgerow' under the terms of the Hedgerow Regulations 1997.

5.2.5 The extensive modern earthworks noted in Parcel C may include areas of contaminated ground or potentially dangerous materials.

APPENDIX 1 GAZETTEER OF FEATURES IDENTIFIED DURING WALKOVER SURVEY

OA Ref. No.	*Feature Type*	*Description*	*Provisional Importance*
A1	Lane	A public right of way running between the A21 and Forest Farm. It is bounded by a mature hedgerow on the north side and an intermittent earthwork bank on the south side. The hedgerow may meet the definition of an 'Important Hedgerow' under the terms of the Hedgerow Regulations 1997.	Moderately Important
B1	Earthwork bank	Low bank visible as eroded earthwork in grassland. Up to *c* 8m wide and *c* 0.60m high. Aligned NE-SW, relatively straight, continues into recent plantation to SW. Possible former field boundary or lynchet.	Minor Importance
B2	Complex of earthworks	Group of three or possibly four eroded earthworks, similar to B1, but more curvilinear and matching the west-facing slope of the grassland. The southernmost bank continues into the mature woodland to the SW and can be seen as a bank running downslope. Complex is centred on NGR TQ 6037 4433.	Minor Importance
C1	Complex of earthworks	Extensive complex of earthworks, including hollows, pits, ditches, banks and platforms. Appears to be spoil and waste material of recent (?20th century origin), and associated with the A21 improvements in the past. Includes much builders rubble and some domestic waste. May include areas of contaminated ground or potentially dangerous materials (*eg* asbestos). May mask earlier features.	Not Important
C2	Lane	Possible course of former lane or holloway, defining the southern edge of complex C1. Shown as track through Castlehill Woods on current OS map.	Minor Importance
D1	Earthwork boundary	Curvilinear, eroded bank and ditch boundary running NE from road and disappearing into dense undergrowth. About 30m length visible. Bank is up to *c* 0.25m high, *c* 1m wide; the ditch *c* 1.20m wide and *c* 0.30m deep. Possible former woodland boundary.	Minor Importance
E1	Earthwork boundary	Bank and ditch boundary between coppice woodland and pine plantation to north. Bank is up to *c* 0.25m high, *c* 0.75m wide; the ditch *c* 1.20m wide and *c* 0.50m deep. Woodland boundary.	Minor Importance
E2	Building complex	Complex of buildings. Comprises two large wooden sheds or workshops, a wooden barn-type structure of apparently recent origin, a long brick and tile shed and a small brick and tile structure with steeply pitched roof. The wooden structures are currently used for coppicing and processing timber-products. The brick and tile structures are disused, in a dangerous condition and thickly over-grown. The brick and tile structures appear to be of 19th or 20th century origin; the small structure is a non-domestic, possibly industrial form.	Moderately Important
F1	Earthwork hollow-way	Substantial holloway defining the southern edge of Parcel F and shown on current OS mapping as a public right of way through Pembury Walks. The holloway is up to *c* 5m wide and *c* 1.5m deep, with a bank to the southern edge where it parallels the slope.	Moderately Important
G1	Earthwork hollow	Hollow shown on current OS mapping as a pond *c* 40m south of Yew Tree Farm. Possibly a former quarry pit.	Minor Importance

APPENDIX 4 SUMMARY OF SITE DETAILS

Site name: A21 Tonbridge to Pembury

Site code: A21 TOP 09

Grid reference: NGR TQ 600 447 to TQ 614 398

Type of survey: Geophysical Survey(Magnetometer and magnetic susceptibility) and Walkover Survey.

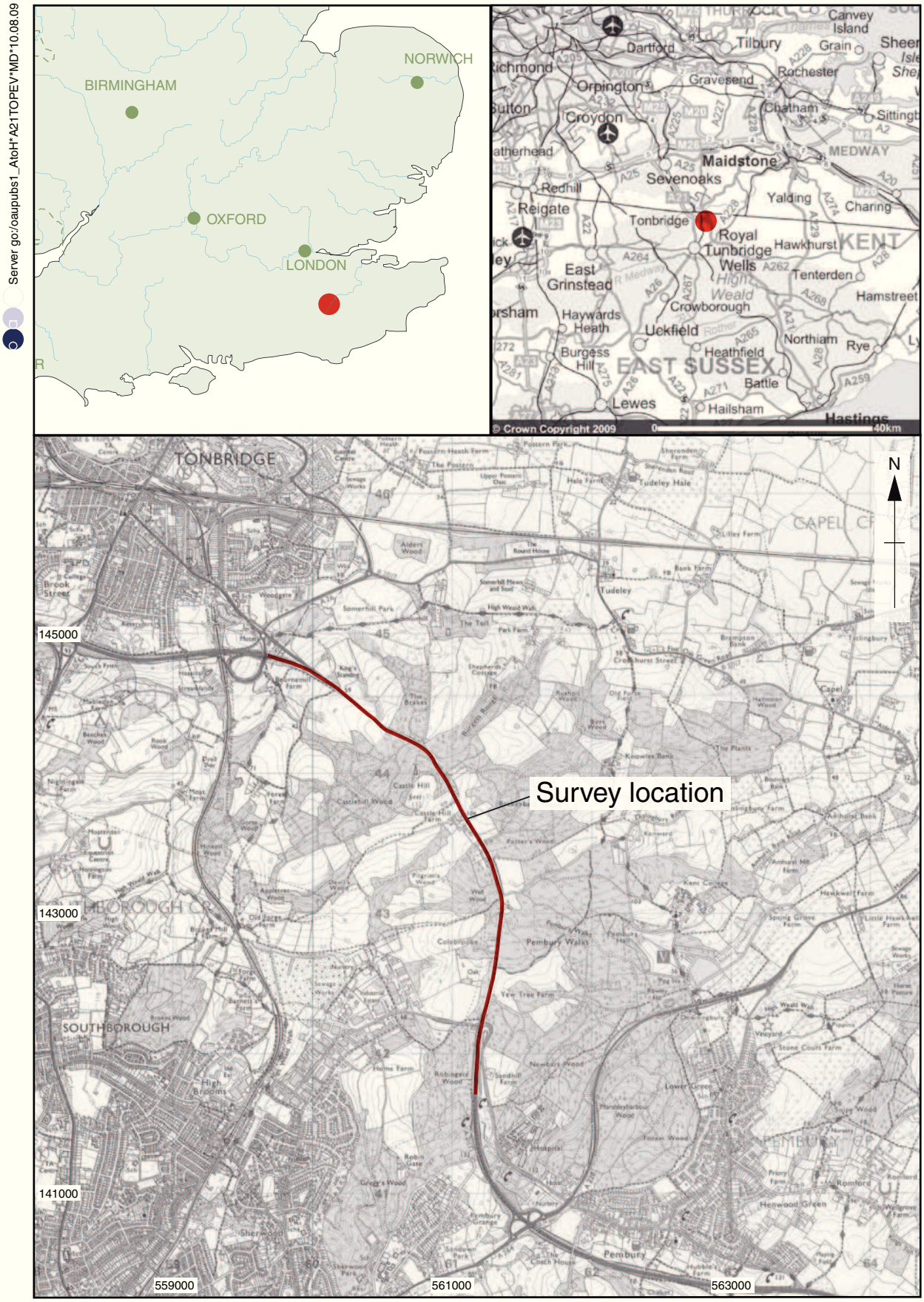
Date and duration of project: The geophysical survey was undertaken by Bartlett-Clark Consultancy in two phases between 17th June and 2nd July and 13th-14th July 2009. The walkover survey was undertaken by OA between 3rd-4th August 2009.

Limit of site: c 3.5 km linear corridor variably between 50-150 m wide.

Summary of results:

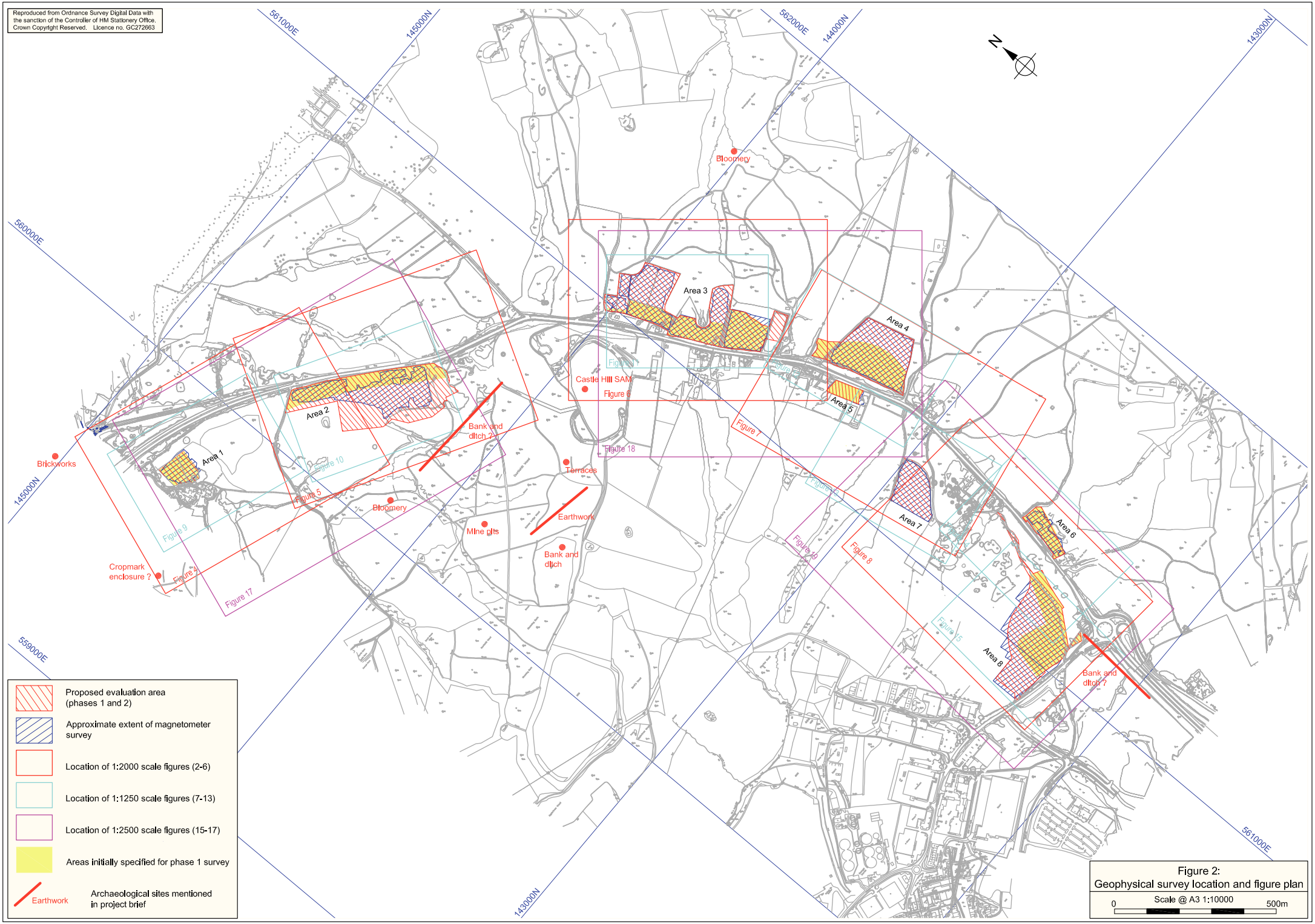
Oxford Archaeology was commissioned by the Highways Agency to undertake a geophysical survey and walkover survey to test for evidence of archaeological sites at locations within the route of the proposed A21 dualling scheme from Tonbridge to Pembury, Kent.

The geophysical survey detected numerous subsurface features and disturbances, a small number of which may be of potential archaeological concern. The walkover survey investigated the areas inaccessible to the geophysical investigation. Overall, the combined survey has not located any significant archaeological sites visible either as extant remains within the remaining landscape or as densities of archaeological/geophysical anomalies.



Scale 1:40,000

Figure 1: Survey location



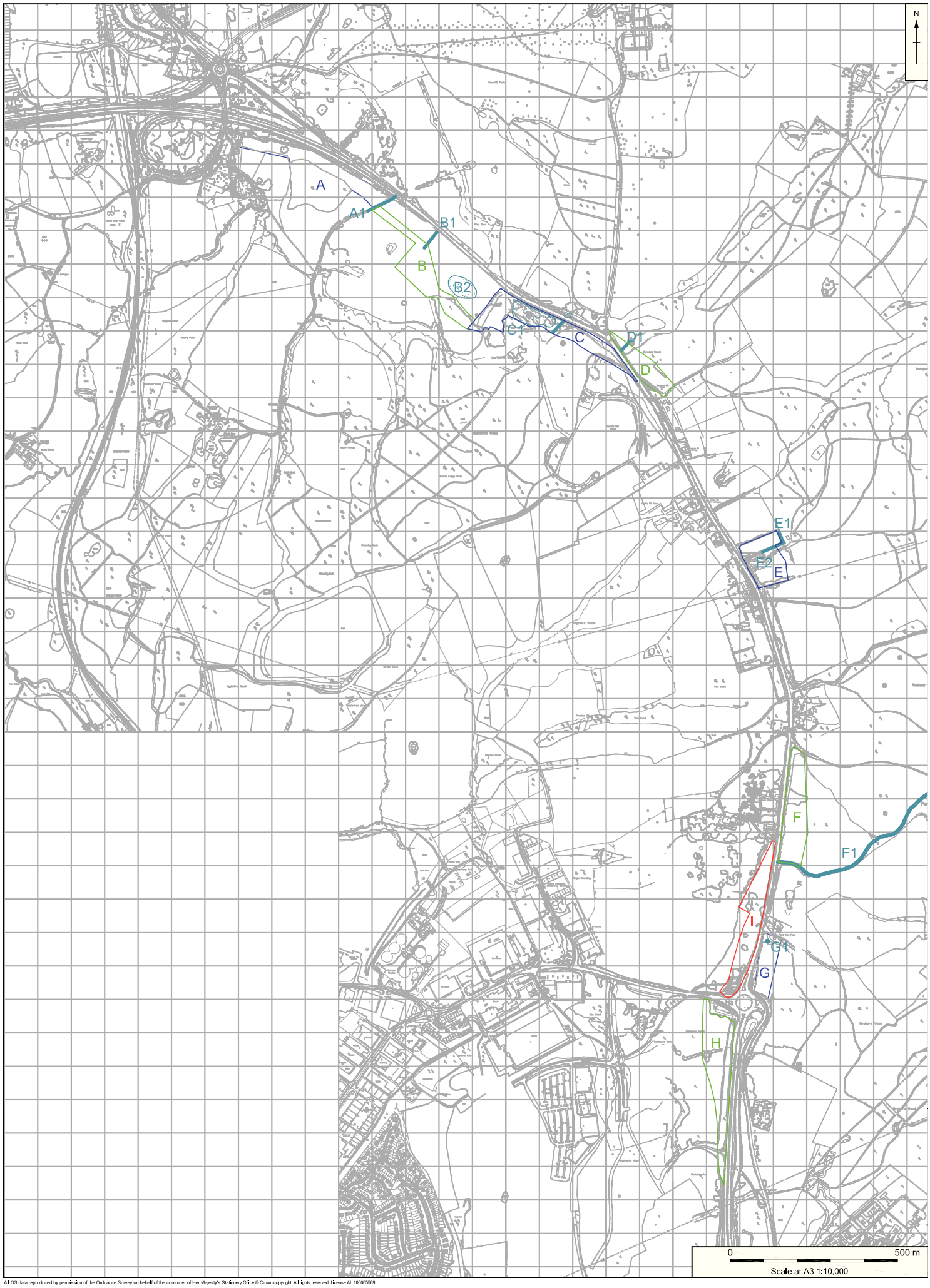
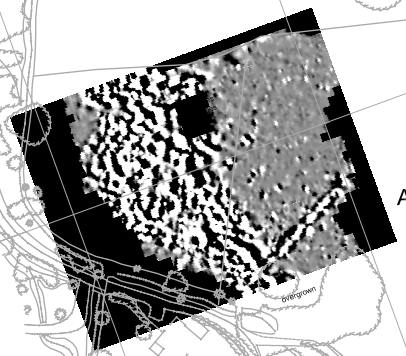
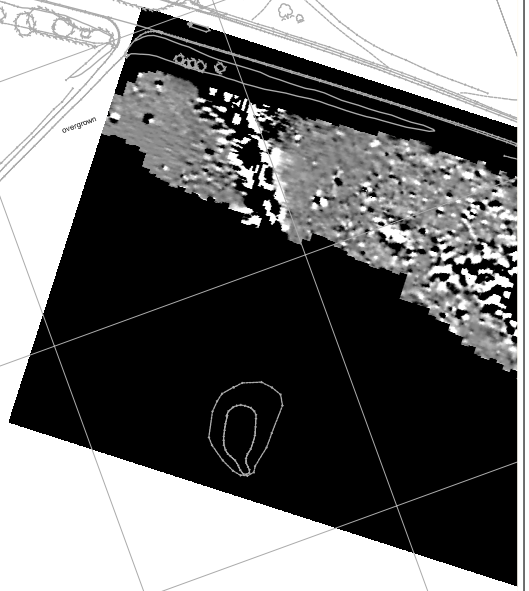
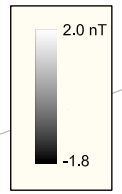


Figure 3: Walkover survey plan



Area 1





CASTLE HILL

A 21

King's Standing

Bourne Mill Dast

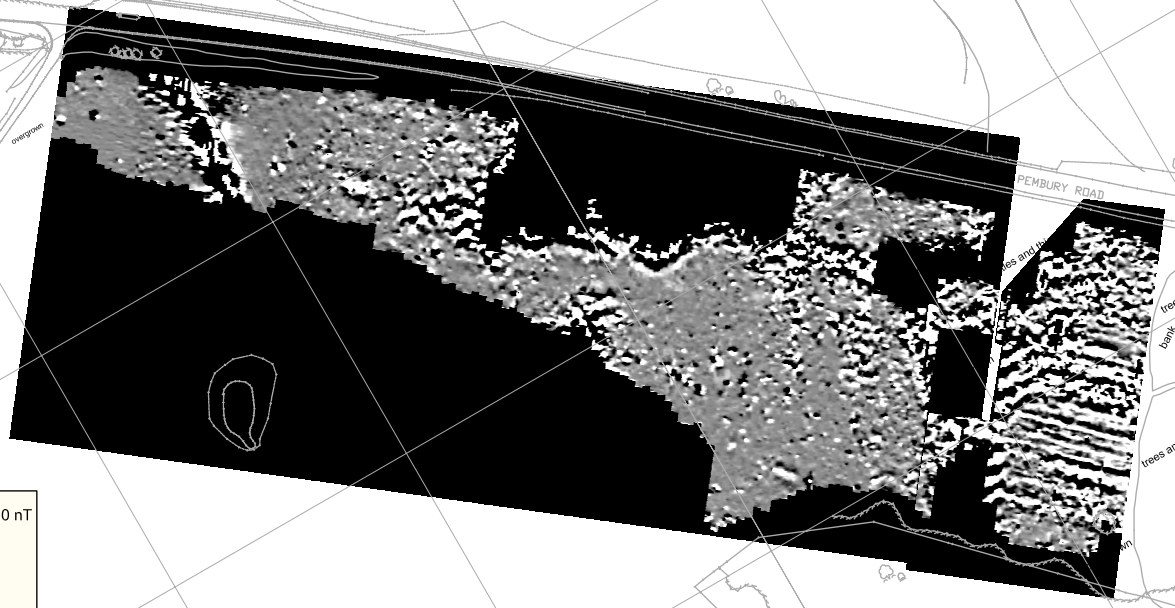
Bournehill Cottages

N

Figure 4:
Magnetometer survey grey scale plot

Scale @ A3 1:2000

0 100m



2.0 nT

-1.8

N

Pond

Miles Shaw

King's Standing

CASTLE HILL

PEMBURY ROAD

Pond

trees and shrubbery

bank

trees and shrubbery

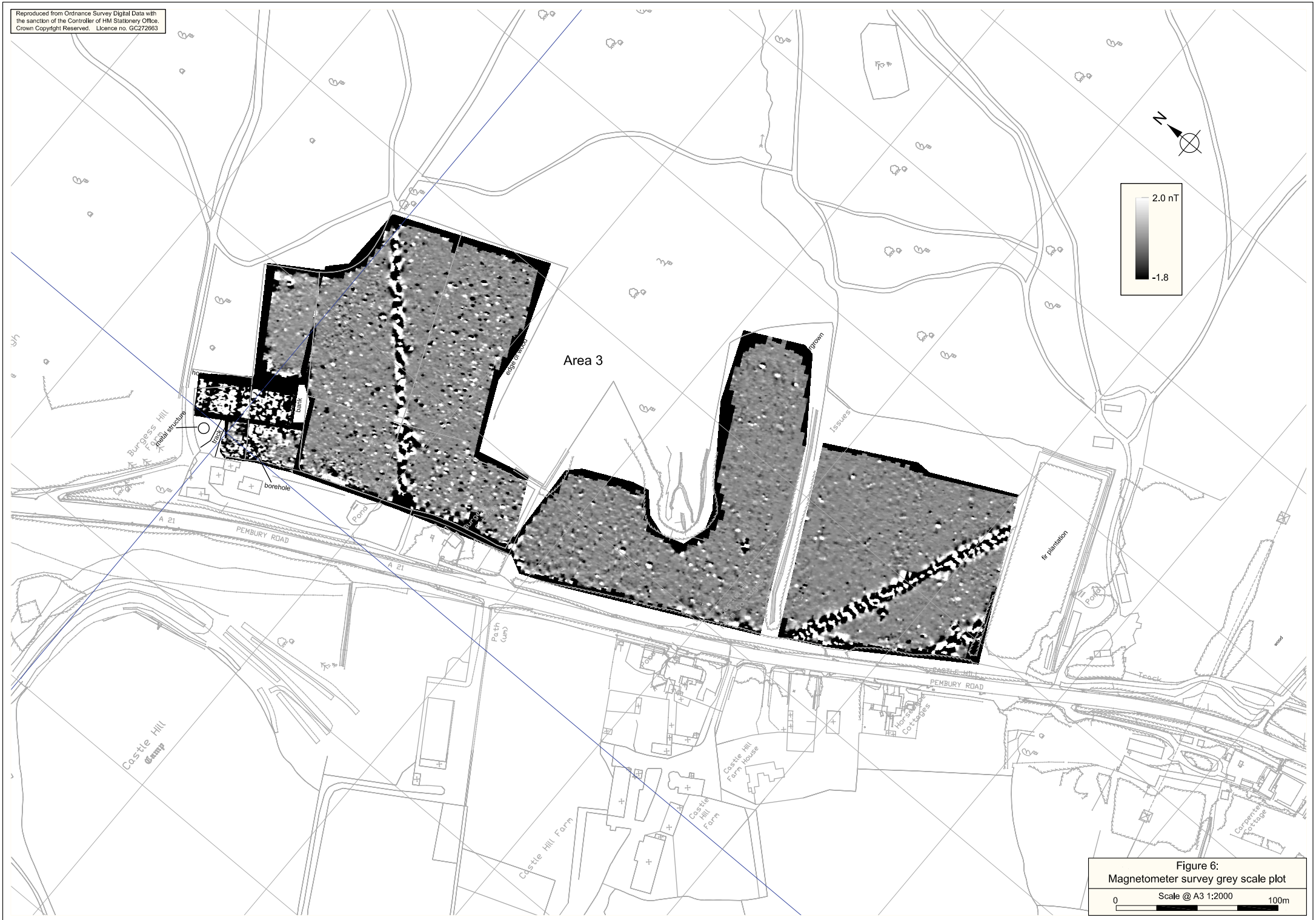
overgrown

Castlehill Wood

Figure 5:
Magnetometer survey grey scale plot

Scale @ A3 1:2000

0 100m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Area 3
2.0 nT
-1.8
N
metal structure
borehole
edge of wood
bank
Pond
A 21
PEMBURY ROAD
Burgess Hill Camp
Castle Hill Camp
Castle Hill Farm
Castle Hill Farm House
Horsmonde Cottages
fir plantation
Issues
Path (um)
track
Figure 6:
Magnetometer survey grey scale plot
Scale @ A3 1:2000
0
100m

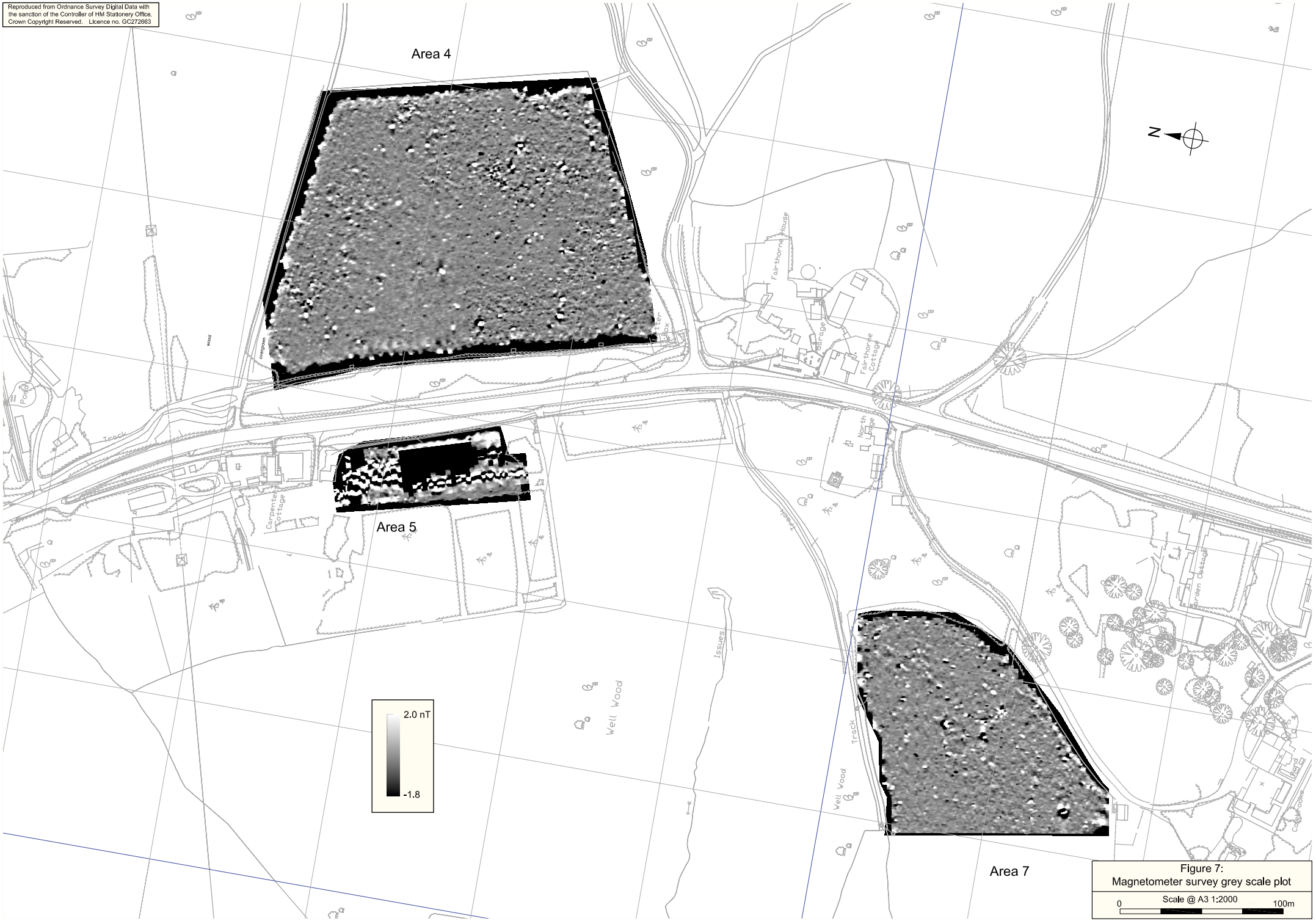


Figure 7:
Magnetometer survey grey scale plot

Scale @ A3 1:2000

0 100m

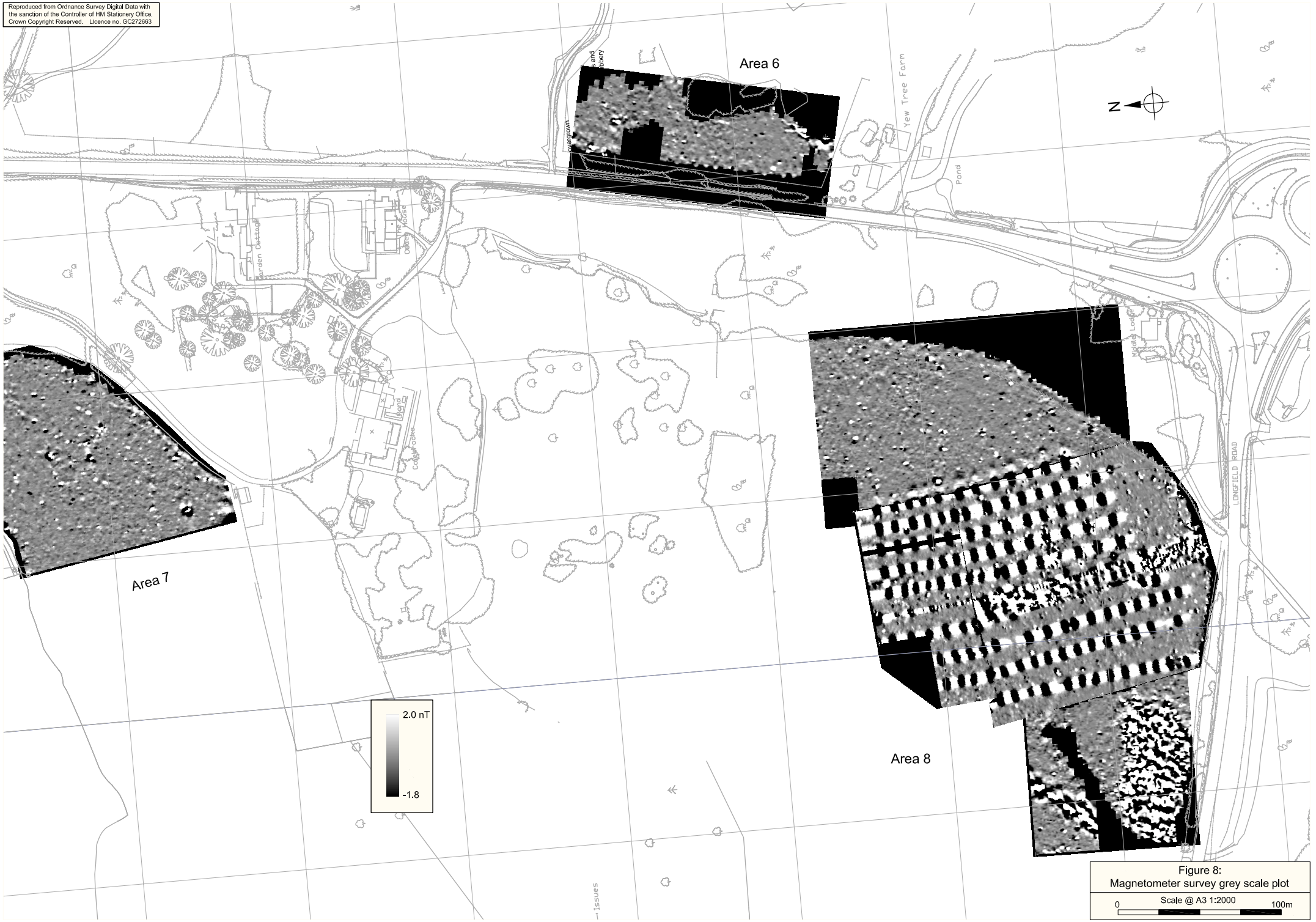


Figure 8:
Magnetometer survey grey scale plot

Scale @ A3 1:2000

0 100m

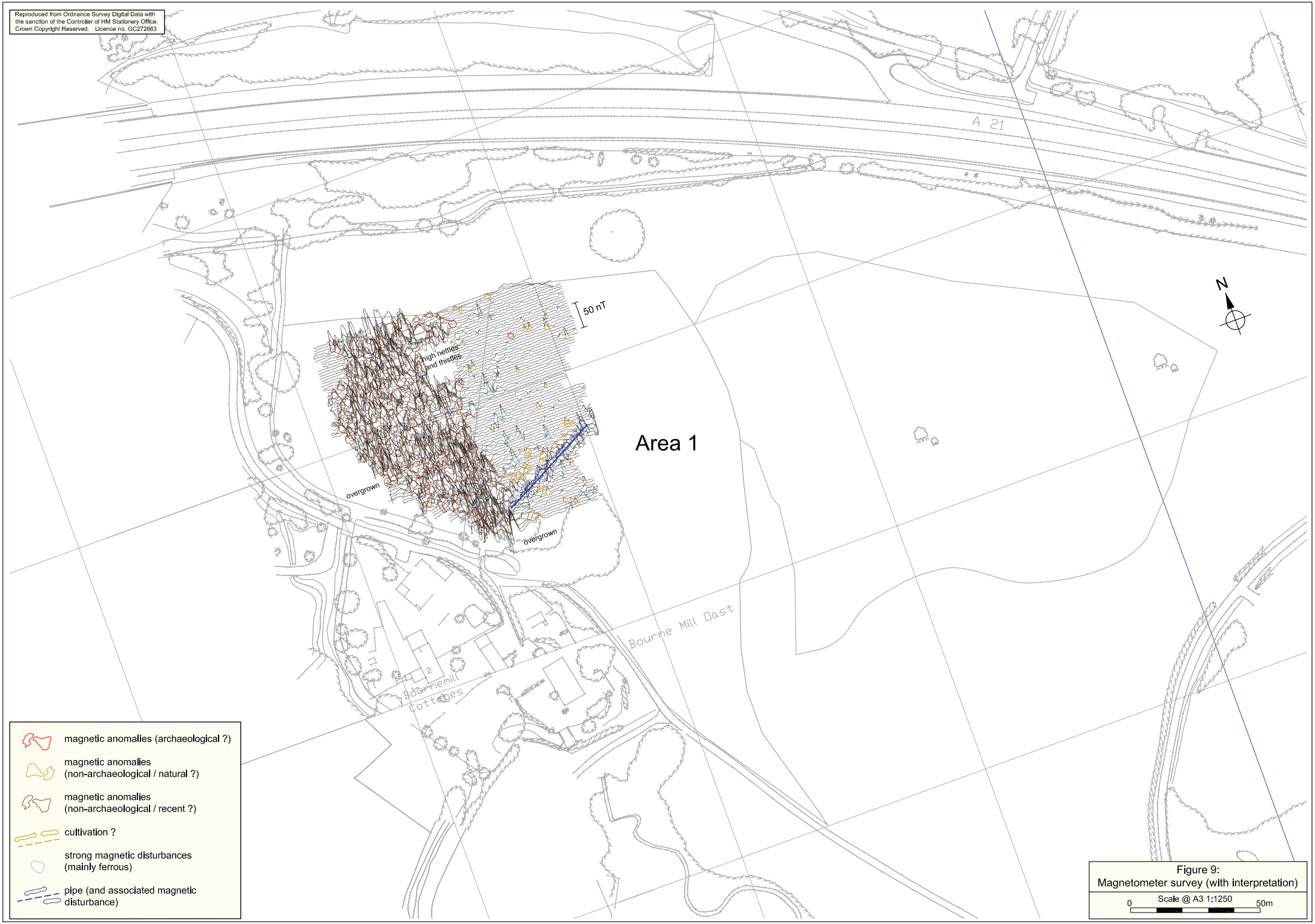


Figure 9:
Magnetometer survey (with interpretation)

Scale @ A3 1:1250

0 50m

Figure 10:
Magnetometer survey (with interpretation)

Scale @ A3 1:1250

0 50m

Figure 11:
Magnetometer survey (with interpretation)

Scale @ A3 1:1250

0 50m

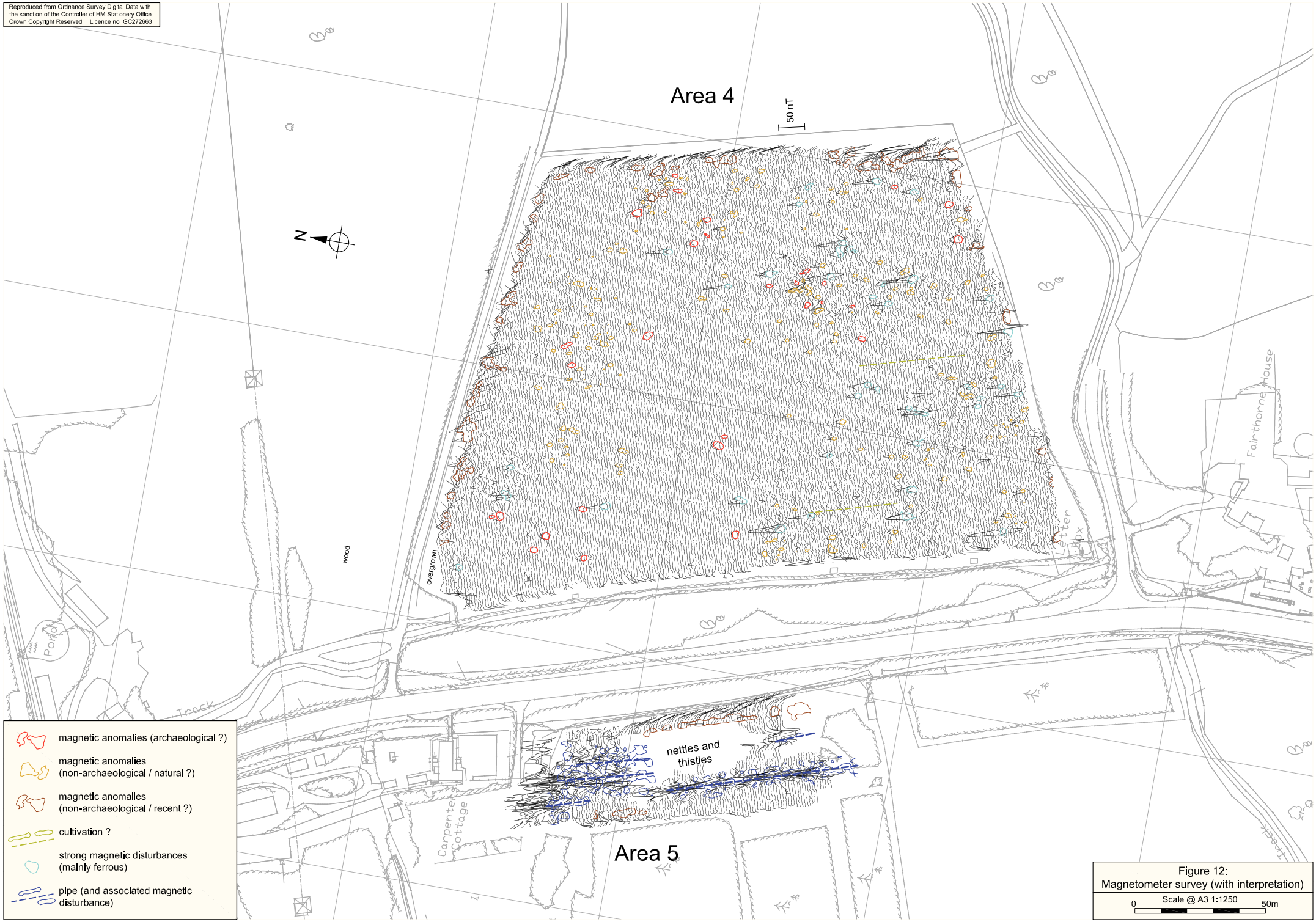


Figure 12:
Magnetometer survey (with interpretation)

Scale @ A3 1:1250

0 50m

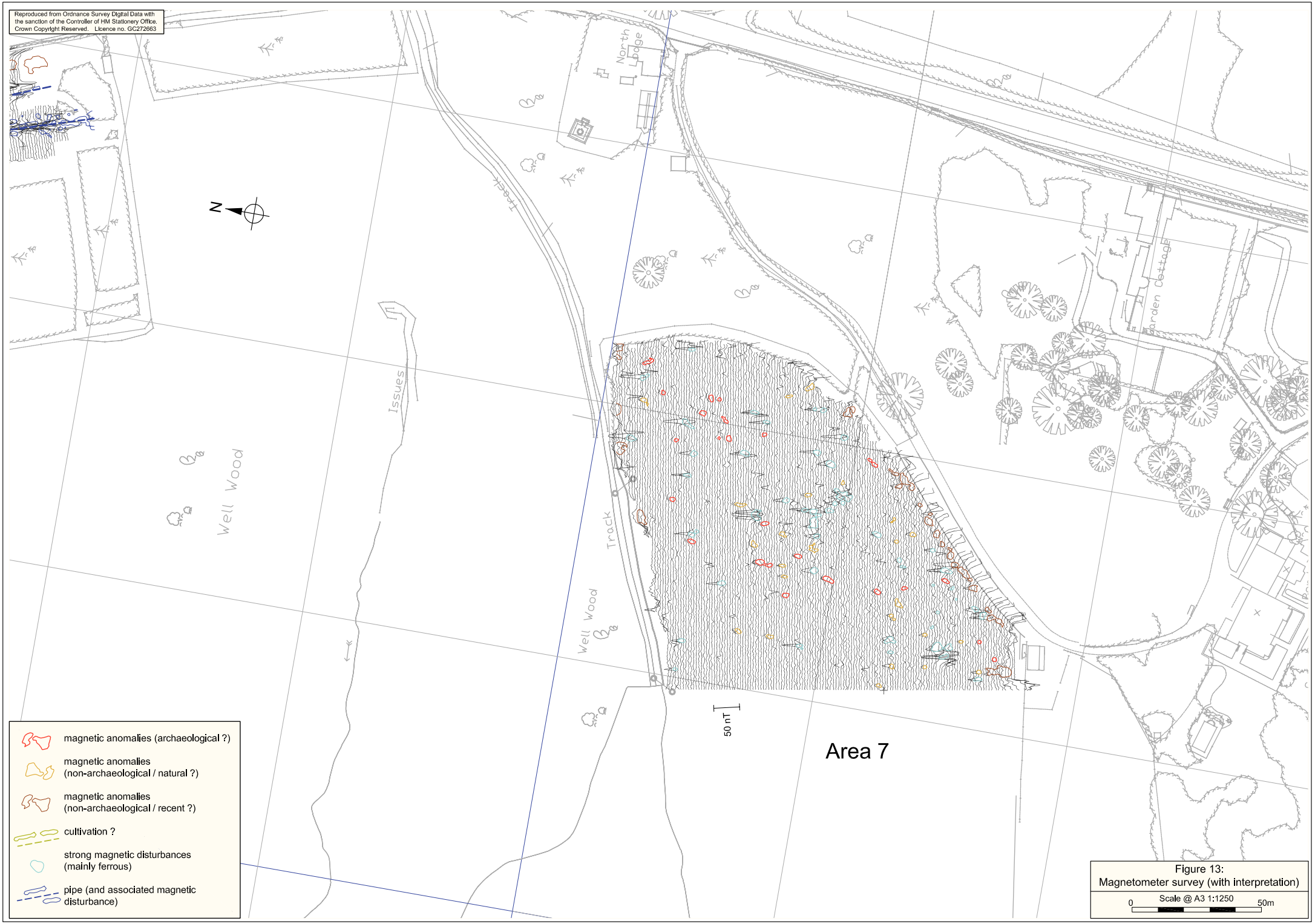


Figure 13:
Magnetometer survey (with interpretation)

Scale @ A3 1:1250

0 50m

Figure 14:
Magnetometer survey (with interpretation)

Scale @ A3 1:1250

0 50m

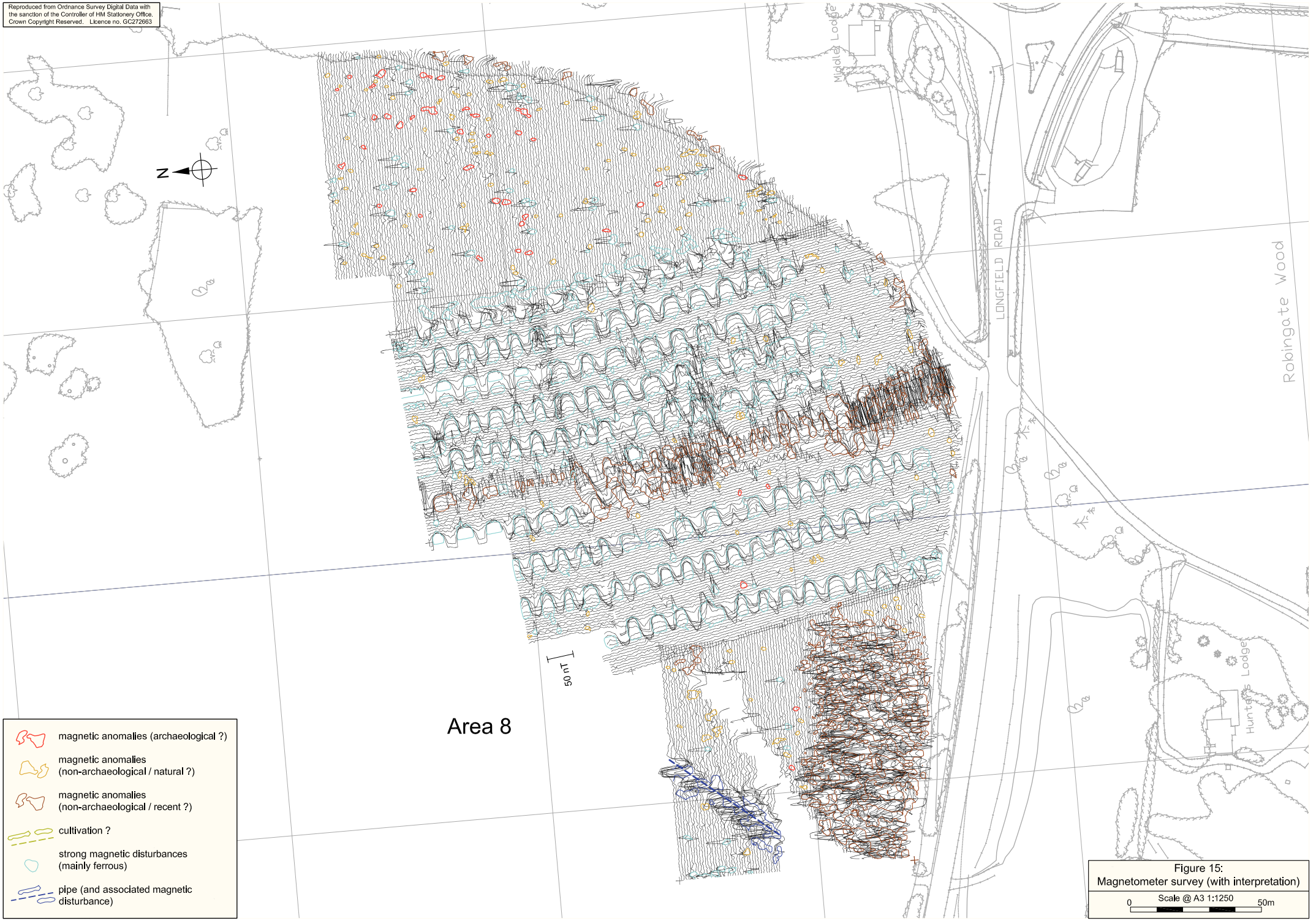


Figure 15:
Magnetometer survey (with interpretation)

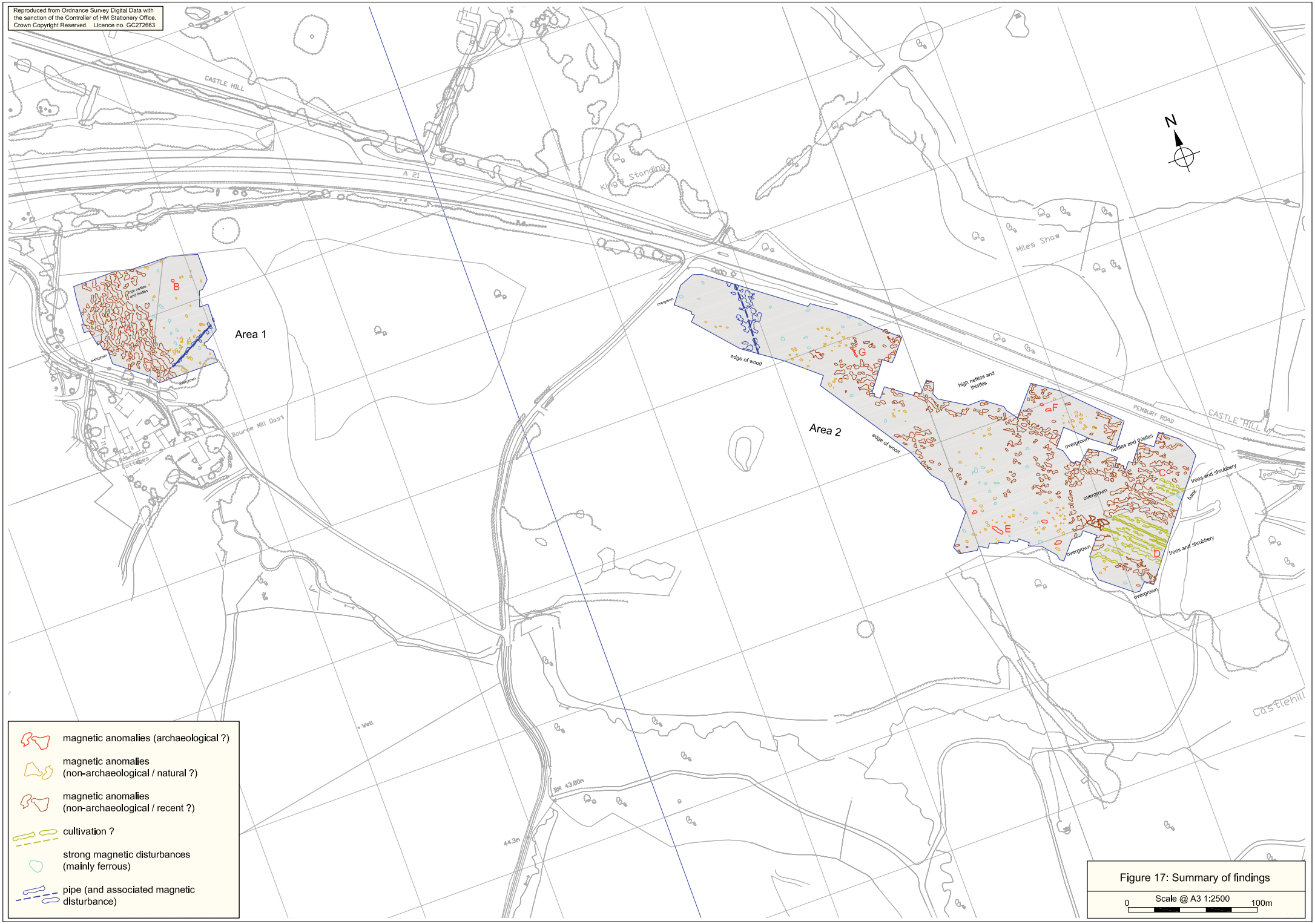
Scale @ A3 1:1250

0 50m

Figure 16: Magnetic susceptibility survey

Scale @ A3 1:10000

0 500m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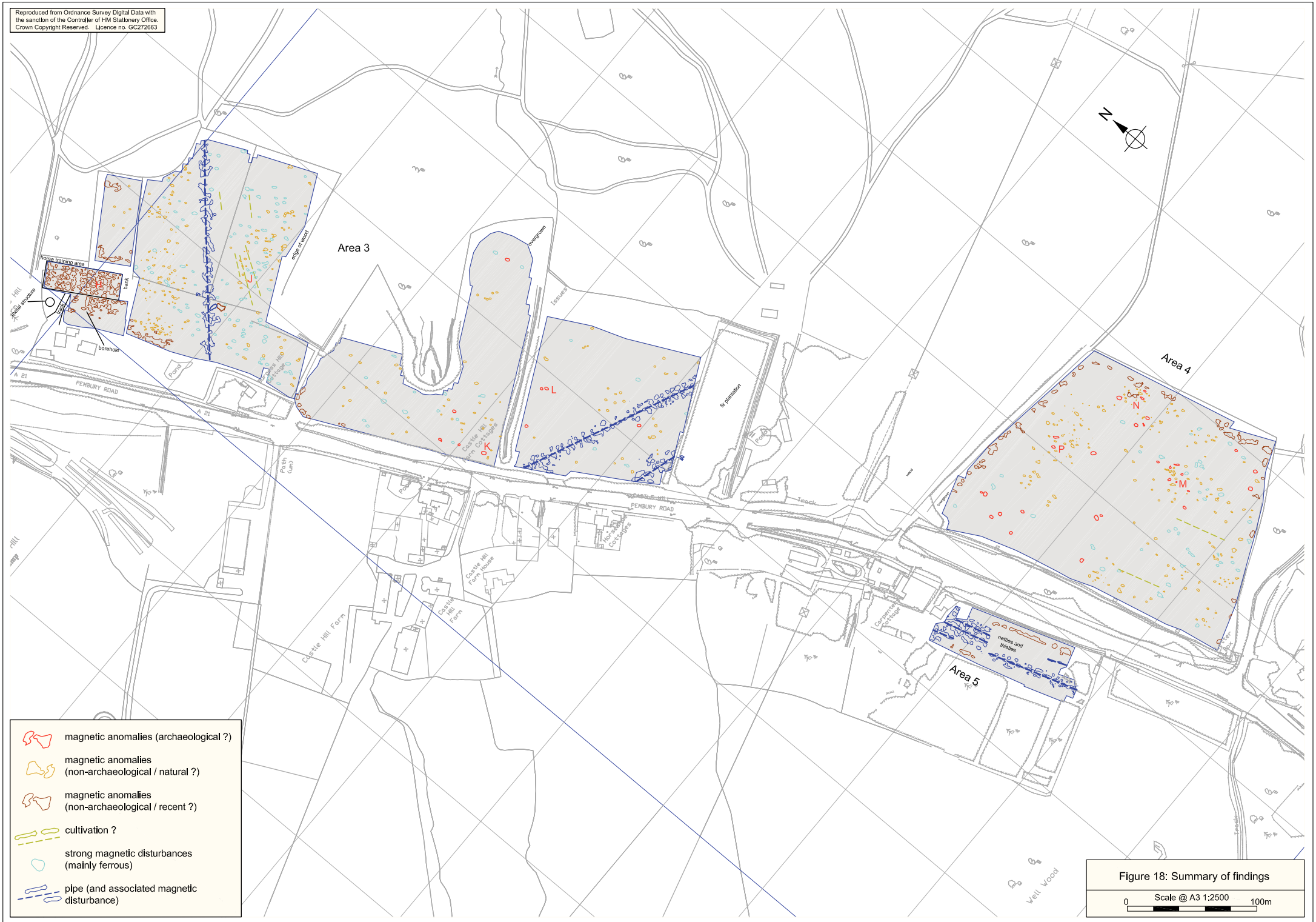
CASTLE HILL
A 21
King's Standing
Miles Shaw
N
Area 1
Area 2
A
B
C
D
E
F
G
high nettles and thistles
overgrown
edge of wood
PEMBURY ROAD
CASTLE HILL
nettles and thistles
trees and shrubbery
bank
pond
Bourne Mill Dast
Bourne Mill
Castlehill
BM 43.80m
44.3m
magnetic anomalies (archaeological ?)
magnetic anomalies (non-archaeological / natural ?)
magnetic anomalies (non-archaeological / recent ?)
cultivation ?
strong magnetic disturbances (mainly ferrous)
pipe (and associated magnetic disturbance)
Figure 17: Summary of findings
Scale @ A3 1:2500
0
100m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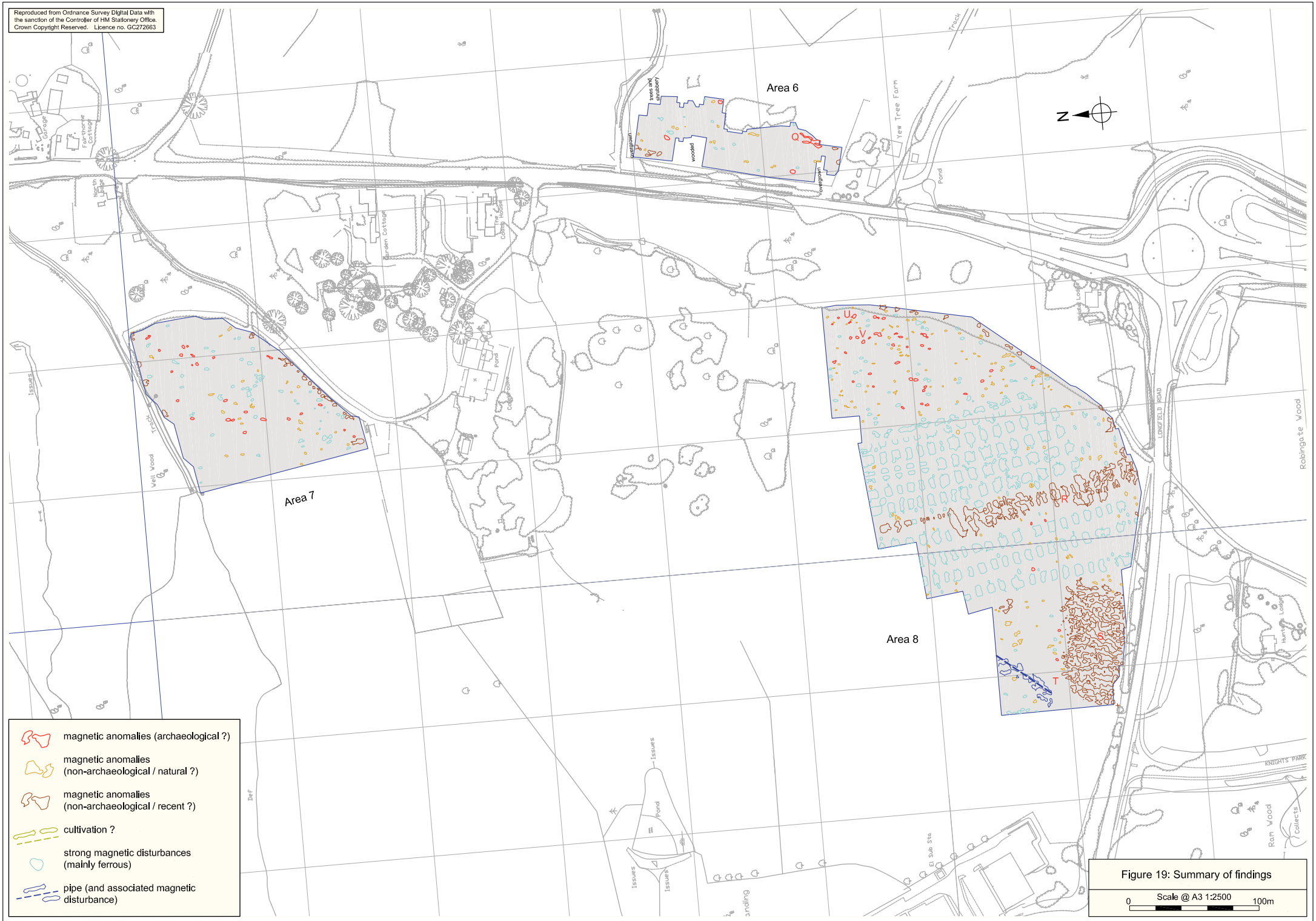
Area 3
Area 4
Area 5
horse training area
bank
edge of wood
overgrown
metal structure
trench
borehole
PEMBURY ROAD
A 21
Pond
Castle Hill Farm Cottages
Castle Hill Farm House
Castle Hill Farm
fir plantation
Carpenters Cottage
nettles and thistles
Well Wood
K
L
M
N
P
magnetic anomalies (archaeological ?)
magnetic anomalies (non-archaeological / natural ?)
magnetic anomalies (non-archaeological / recent ?)
cultivation ?
strong magnetic disturbances (mainly ferrous)
pipe (and associated magnetic disturbance)
Figure 18: Summary of findings
Scale @ A3 1:2500
0
100m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Area 6
Area 7
Area 8
N
magnetic anomalies (archaeological ?)
magnetic anomalies (non-archaeological / natural ?)
magnetic anomalies (non-archaeological / recent ?)
cultivation ?
strong magnetic disturbances (mainly ferrous)
pipe (and associated magnetic disturbance)
Figure 19: Summary of findings
Scale @ A3 1:2500
0
100m

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