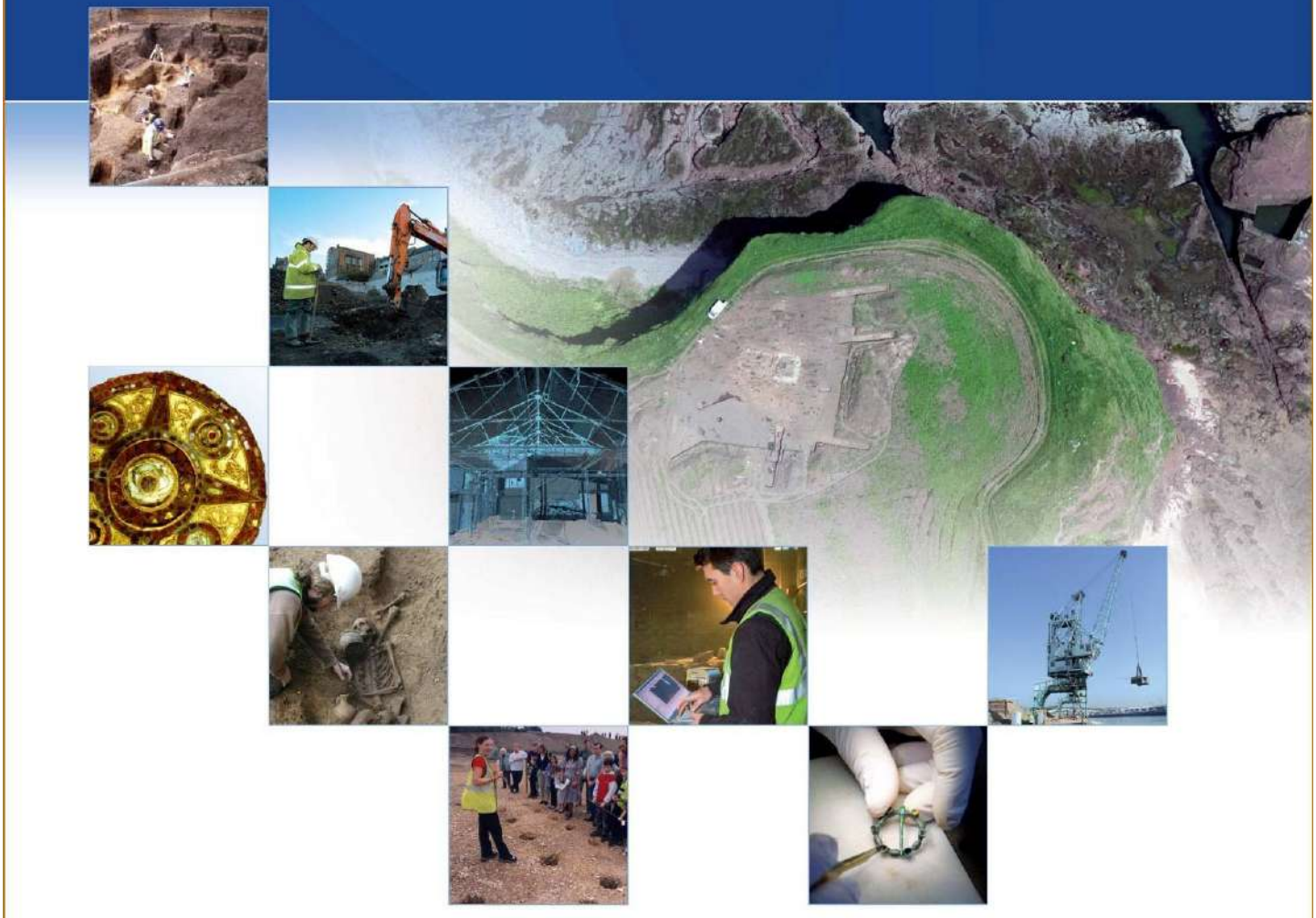
PDAS Appendix E – Archaeological Geophysical Survey Report

Part 1 of 3

Grove Farm Solar Farm, Bentley, Suffolk

Archaeological Geophysical Survey

National Grid Reference: TM 11610 37869
AOC Project No: 40371
Date: 01 December 2023



AOC Archaeology Group

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Grove Farm Solar Farm, Bentley, Suffolk

Archaeological Geophysical Survey

On Behalf of:	**Axis** **Camelia House** **76 Water Lane** **Wilmslow, Cheshire** **SK9 5BB**
National Grid Reference (NGR):	**TM 11610 37869**
AOC Project No:	**40371**
OASIS IC	**TBC**
HER	**HER Number to be requested (Client instruction)**
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This document has been prepared in accordance with AOC standard operating procedures.

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Report Stage: Initial Draft	**Date: 01 December 2023**

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Non-Technical Summary

AOC Archaeology Group was commissioned by Axis to undertake an archaeological geophysical survey using magnetic gradiometry to investigate the potential for buried archaeological remains prior to the proposed development of a solar farm at Grove Farm, Bentley, Suffolk (centred at NGR TM 11610 37869).

The survey area is located c. 0.8km NNE of the village of Bentley and c. 1.85km SSE of Capel St Mary Most of the survey area is located west of the Ipswich-Manningtree railway line (which runs along the eastern boundary of Field 3) and extends west as far as Engry Wood and Pond Hall Lane; Church Road runs approximately north-south through the survey area between Fields 2 and 3. A small detached portion of the survey area is located to the east of the railway line (Field 4) in the location of the proposed sub-station.

The survey area covers 44.7ha across four of fields in arable use at the time of the survey. The western part of the survey area is situated at around 40m above Ordnance Datum (aOD), on generally flat ground that slopes very gently down towards the east. At the northeastern corner of Field 3 the ground falls away into a shallow valley associated with a small tributary of the River Stour beyond the boundary of the survey area.

The Red Cragg formation bedrock combined with the glacially and fluvially emplaced superficial deposits have resulted in a speckled quality in the data, with a blanket of shall dipolar or positive anomalies of weak magnitude across the area. Variations in the character (both in terms of the type of anomaly and their concentration and strength) have been interpreted as being related to natural variations and processes affecting the composition of the sub-surface across the area.

This unusual magnetic background has not hindered the survey interpretation, as clear anomalies which correspond with boundaries attested on historic maps have been identified in the results, demonstrating that human activity in this landscape is capable of creating magnetic contrasts strong than these background anomalies. No anomalies of possible or probable archaeological interest have been identified in the results, though there are two classes of anomalies of unclear origin where an archaeological nature cannot be excluded.

Numerous ephemeral linear spreads or consistent but weak positive anomalies and trends are visible in the results but these are too weak, discontinuous and spatially disorganised for any reliable interpretation. They may equally result from past or recent human activity or relate to natural variations. Isolated larger positive discrete anomalies with negative centres have also been classified as being of unclear origin. These anomalies are unusual and not consistent with those produced by moder ferrous rubbish in the topsoil. They may relate to igneous inclusions in the superficial geology, or to iron pan material deriving from the underlying sandstone, or they have an origin in human activity of an unknown nature.

Despite the unusual magnetic environment and the presence of anomalies of uncertain origin, we can be reasonably confident that no substantial archaeological features are present but undetected within the survey area, as the identification of features on historic maps demonstrates that human activity in this landscape produces identifiable magnetic contrasts. The presence of archaeological material on site cannot be ruled out, but it is unlikely there are substantial buried features present. Equally, there may be anomalies of archaeological interest that have not, or would not develop a magnetic contrast, rendering them undetectable using magnetic methods.

1 Introduction

1.1 AOC Archaeology Group was commissioned by Axis to undertake an archaeological geophysical survey, using magnetic gradiometry of land at Grove Farm, Bentley, Suffolk. The survey was commenced on the 10th of October 2023 and completed on the 12th of October 2023 as part of a wider scheme of archaeological assessment in advance of the proposed development. The planned survey area was 45.7ha, not including the proposed access routes.

1.2 Archaeological geophysical survey uses non-intrusive and non-destructive techniques to determine the presence or absence of anomalies likely to be caused by archaeological features, structures or deposits, as far as is reasonably possible (CIfA 2014, updated 2020). It is therefore a common component of the process of evaluating the impact of development on the historic environment. It is also a key tool in archaeological research as it is non-destructive and able to cover large areas, to allow below ground interventions to be appropriately targeted.

1.3 This survey was carried out to provide information on the presence, character and extent of potential buried archaeological remains within the proposed development site. The significance of any such remains can only be determied with reference to further information; as such this report may form part of an assessment of significance, but cannot stand alone as such.

2 Survey Area Location and Description

2.1 The proposed development site (hereafter 'the survey area') is located c. 0.8km NNE of the village of Bentley and c. 1.85km SSE of Capel St Mary (Figure 1) (centred at NGR TM 11610 37869). Most of the survey area is located west of the Ipswich-Manningtree railway line (which runs along the eastern boundary of Field 3) and extends west as far as Engry Wood and Pond Hall Lane; Church Road runs approximately north-south through the survey area between Fields 2 and 3. A small detachted portion of the survey area is located to the east of the railway line (Field 4) in the location of the proposed sub-station.

2.2 The survey area covers 44.7ha across four of fields in arable use at the time of the survey (Figure 2). The western part of the survey area is situated at around 40m above Ordnance Datum (aOD), on generally flat ground that slopes very gently down towards the east. At the northeastern corner of Field 3 the ground falls away into a shallow valley associated with a small tributary of the River Stour beyond the boundary of the survey area.

2.3 The 1:50,000 scale British Geological Survey mapping indicates the underlying bedrock is Red Crag Formation sand (BGS 2023). The same mapping suggests this is overlain by various layers of superficial deposits, through which the watercourse has incised the narrow valley along the eastern side of the survey area. Consequently, zones (from west to east) of Lowestoft Formation diamicton, Lowestoft Formation sands and gravels, sand and gravel of the Kesgrave Catchment Subgroup and no recorded superficial deposits are mapped at the surface across Fields 1-3. Field 4 is shown to lie on the corresponding deposits of Kesgrave and Lowestoft sands and gravels on the eastern side of the narrow valley. It is noted that the boundaries of these deposits are approximate when mapped at this scale and likely to be present as transitional zones rather than clear-cut lines on the ground. The following more detailed observations about the geology within the survey area directly relate to the survey results as they explain some of the unusual anomalies seen in the data (see sections 2.8, 6 and 7 below).

2.4 The Red Crag formation in East Anglia is comprised of coarse-grained, poorly sorted, cross-bedded abundantly shelly sands. It is dark green and glauconitic in appearance when unoxidised, but typically oxidises to yellow or reddish brown with ferruginous concretions (iron pan).

2.5 The Lowestoft Formation forms an extensive sheet of chalky till (deposits from glacial proceses), together with outwash sands and gravels, silts and clays. The till is characterised by its chalk and flint content. The tills within the Lowestoft Formation typically contain a significantly higher percentage of chalk than the underlying tills and the gravels in the Lowestoft Formation contain common erratics from Scotland and northern England, and abundant chalk where not decalcified.

2.6 The Kesgrave Catchment subgroup is a superficial deposit of mainly gravels, characterised by quartz and quartzite from the Triassic, Carboniferous and Devonian rocks of the West Midlands, Welsh Borderland and possibly south-western Pennines, and by felsic (feldspar and quartz-rish) volcanic rocks from northern Wales. The members comprise bodies of cross-bedded and massive, moderately sorted sand and gravel. The Kesgrave Catchment Subgroup is fluvially emplaced.

2.7 The soils within the survey area are broadly classified as slightly acid loamy and clayey soils with impeded drainage across the western half of Field 1 and freely draining slightly acid loamy soils acros the rest of the survey area (Soilscapes 2023).

2.8 Magnetometry results over sandstones can vary but the technique is generally recommended over sedimentary geology; results over superficial deposits are heavily influenced by the mineralogy of the parent material and typically show a high degree of local variation (David *et al.* 2008: 15). In this instance, the soil and geological environment of the survey area are likely to account for the pronounced 'speckling' present across the greyscale dataset (Figures 3 and 5). This effect is created by a relatively consistent magnetic background, against which a high frequency of discrete dipolar and weakly positive anomalies have been detected (the latter are likely to represent similar dipolar magnetic fields created by small magnetic sources where the negative portion of the anomaly is too weak – possibly too deeply buried – for the magnetometer to detect from the surface). While a range of possible magnetic sources could be expected to produce similar anomalies, this 'texture' is often found in data collected over sedimentary and superficial geology of the types recorded on this site, where it results from mineralogical inclusions (see Section 6). Although the individual dipoles are widely distributed and relatively strong (i.e. compared to anomalies typically expected from archaeological features), they are also very localised and it is unlikely that they have 'masked' any substantial archaeological anomalies that would otherwise have been detected due to a magnetic contrast with their surroundings. It should, however, be noted that similarities in form and dimensions between the discrete positive anomalies caused by natural variations and by some archaeological features (e.g. pits) can make interpretation more difficult, for example, resulting in 'false positives'.

3 Archaeological Background

3.1 The archaeological background below is a summary of information contained in a Heritage Impact Assessment prepared by AOC Archaeology Group as part of the wider investigation of the proposed development site (Marot & Millward 2023). The HIA employed a study area of 1km radius beyond the survey area and draws on a range of sources including Suffolk Historic Environment Record and historical mapping.

Prehistoric (– AD 43) and Romano-British (AD 43 – AD 410)

3.2 No archaeological remains of prehistoric or Roman date are recorded in the survey area itself, although a number of records relate to surface finds within 1km. The closest of these to the survey area relates to an early Mesolithic tranchet axe (BTY056-MSF10001) that was found in 1941, however, it was found in a field clearance heap and its original provenance is unknown. A Bronze Age perforated hammer was located in the same clearance cairn.

3.3 Other prehistoric material recorded in the wider sear area includes further material from the neolithic and bronze age at Rookery farm c. 450m from the survey area to the southeast, a polished flint axehead from the neolithic or bronze age 1km to the south of the survey area, and a Mesolithic sectioned stone mace around 830m to the south near the railway station. Fieldwalking of an area covering 59ha located 685m west of the survey area in 1996 identified a concentration of worked flint including burned flints.

3.4 Cropmarks of an undated (but likely to lie within this broad period) have been identified roughly 615m to the northeast of the survey area. This complex contains elements also dated to the medieval or post-medieval period suggesting a long history of settlement an exploitation in the area west of Alton Water. One component of this crop-mark complex is a causewayed enclosure, and there is also evidence of pits.

3.5 Several Roman items have been recovered to the northeast of the survey area. These include brooches, coins, and steelyard. A roman coin dating to the 2nd century AD was recovered 960m to the south of the survey area.

Medieval (AD 410 – AD 1540)

3.6 No early-medieval to medieval remains have been recorded within the survey area. Several early-medieval and medieval finds have been recovered within the 1km Study Area. These vary widely in type.

3.7 Falstaff Manor lies directly south of the survey area and one of the original manors of Bentley and is mentioned in the Domesday Book. The current Falstaff Manor is a farmstead visible on the first Ordnance Survey map, with modern additions. Falstaff Manor is however recorded by the Draft Bentley Neighbourhood Plan as a Building of Local Significance as a medieval house with a clearly medieval setting. Other important buildings in the wider study area include Bentley Forge and Link House in Bentley to the south of the survey area. Bentley Hall also lies north of the survey area and is a Grade II* listed 15th to 16th century timber framed house. The Grade II* Church of St Mary, a 14th century parish church with a 12th century nave, is located 100m to the north of the survey area.

3.8 As mentioned above the cropmark complex c 615m northeast of the survey area has potential medieval and post-medieval elements. An aerial photographic survey revealed the location of possible prehistoric to medieval features identified as cropmarks 950m to the north of the Site. These include a semi-circular ditch system and possible medieval or later pits. Another area of cropmarks was

identified 856m to the north of the Site, covering approximately 8.6 hectares. These cropmarks comprise of a series of field boundaries and ditches of possible medieval date.

3.9 In addition to the recorded evidence for settlement discussed above, several early-medieval and medieval finds have been recovered within the 1km Study Area. Together, these illustrate the extensive settlement of the area surrounding the survey area, although there is no indication from the information available that the survey area itself was settled, and as such, may have been agricultural land.

Post-medieval – Industrial Period (AD 1540 – 1900)

3.10 Numerous post-medieval finds have been recorded to the north and north-east of the Site. These vary widely in type and include numerous post-medieval listed buildings.

3.11 The survey area is recorded on Bentley parish's tithe map taken in 1838 which records eight plots within the survey area to the west of Church Road and three plots within the survey area to the east of Church Road. Based on the plot description, all were arable fields. A small section of the eastern part of the survey area may, at this time, have been included within a woodland, although this appears to have been pushed back further east on later maps.

3.12 The Ordnance Survey (OS) map of 1882 provides more details about the survey area and the surrounding landscape. The individual plots are shown to have been slightly altered and include nine fields to the west of Church Road and two to the east. The survey area is shown to be bound to the east by the Ipswich to Colchester Railway which curves to the northwest further to the north as the Hadleigh Branch, now disused. This part of the railway opened in 1847 and closed to passengers by 1932 and freight by 1965. A Y-shaped footpath is depicted as crossing the survey area from north to south and extending to the northeast. A second footpath is depicted as crossing one of the fields from Potash Lane and a third crosses the survey area on a northeast to southwest diagonal, south of the Ancient Woodland Engry Wood. A further five Ancient Woodlands are identified on the OS map of 1882, Buxton Wood 'South' and 'North' located to the southeast of the Site, Great Martin's Hill Wood to the southwest and Tare/Pedlar's Grove and Bentley Long Wood to the northwest. Documentary sources from this period suggest the land remained in arable use aside from the southern half of the western field, which was recorded as being pasture.

3.13 Approximately 285m to the north of the survey area, at the rear of Bentley Hall, a programme of archaeological monitoring was conducted in 2010, during the construction of an attached boot room and detached garage block. The archaeological monitoring uncovered the remains of two post-medieval pits and the brick foundation of a former garden wall.

3.14 Based on documentary and cartographic evidence, the survey area is considered to have been in continuous agricultural use during the post-medieval period, at least from 1838.

Modern (1900 – present)

3.15 No changes are recorded within the survey area in the early 20th century with the exception of a field boundary and the shortest footpath having been removed.

3.16 An early 20th century documentary source, including relating to sales particulars for Estates in Bentley and Capel St Mary, dating to 1910, indicates that most of the Site was still held under the estate of Falstaff Manor. The map records no changes to the layout of the field plots from earlier mapping. All of the plots are described, within the sales catalogue, as being arable.

3.17 By the time of the publication of the OS map of 1958, the western part of the survey area is depicted as a single field, similar to its current layout. The eastern part of the survey area continues to be depicted as two plots.

3.18 By the OS map of 1970, the footpaths which were previously depicted as crossing the survey area are no longer depicted.

3.19 A single Grade II Listed Building dating to the modern period is recorded within 2km of the survey area, the Bentley War Memoria, which is located 740m to the south. A WWII Auxiliary Unit Operational Base is also recorded 980m to the south-west of the Site.

Previous Archaeological Investigations

3.20 Previous investigations discussed above in the relevant period are not repeated here. Further investigations comprise a fluxgate gradiometer survey and an evaluation by trial trenching, as well as archaeological monitoring along the A12, and a cropmark study.

3.21 A detailed fluxgate gradiometer survey covering c. 2.7 hectares was undertaken in 2018, approximately 300m to the south of the survey area. The survey identified several geophysical anomalies, of predominantly geological and agricultural derivation, although several anomalies indicative of archaeological pits were also identified.

3.22 An archaeological evaluation was conducted in 2017, at a site 925m to the southeast of the survey area. The evaluation consisted of six trenches which uncovered twelve undated features, although most were interpreted as probable tree throws. The other features uncovered were a possible ditch terminus, a gully, a possible pit, and post hole.

3.23 Archaeological monitoring along the A12 approximately 690m to the southwest of the survey area, identified a topsoil of 300mm thick and a subsoil 250mm thick. The monitoring however did not record any archaeological remains or finds.

3.24 An area of cropmarks, directly to the south of the survey area and Potash Lane suggest the potential for an overlapping linear ditch system. A trackway and possible field boundary were also identified as cropmarks, to the south of Rookery Farm.

3.25 LiDAR and aerial photography studies conducted by AOC Archaeology as part of the Heritage Impact Assessment have recorded crop marks related to boundaries depicted on historic maps, though the LiDAR analysis also shows that the survey area west of Church Road was at some point divided into two plots, bisected on a north-north-eat to south-south-west axis. The westernmost plot is crossed by widely spaced ridge and furrow earthworks running east-west. Other boundaries are weakly present but match historic mapping, with the exception of an L shaped boundary or enclosure visible along the easternmost boundary of the survey area, and a circular depression within the area west of Church Road, which do not have corresponding mapped features, and which may therefore predate the earliest OS maps.

4 Aims

4.1 The aim of the geophysical survey was to identify anomalies that suggest the presence of archaeological remains, in order to enhance the current understanding of the historical environment within the survey area.

4.2 Specifically, the aims of the gradiometer survey were:

- To locate, record and characterise any potential surviving sub-surface archaeological remains within the survey area.
- To produce a comprehensive site archive (Appendix 1) and report.

5 Methodology

5.1 The geophysical survey was undertaken between 10/10/2023 and 12/10/2023.

5.2 All geophysical survey work was carried out in accordance with current good practice specified in the EAC guidelines document (Schmidt *et al.* 2015), as recommended by Historic England, and in the Chartered Institute for Archaeologists' *Standard and Guidance for Archaeological Geophysical Survey* (2014, updated 2020).

5.3 Parameters and survey methods were selected that were suitable for the prospective aims of the survey and in accordance with recommended professional good practice (Schmidt *et al*. 2015).

5.4 The survey was carried out using a Sensys MAGNETO® MXPDA ATV-towed cart magnetometer system. The cart utilises eight FGM650/3 fluxgate gradiometer sensors mounted upon a frame along with data logging equipment and batteries (see Appendix 2).

5.5 Data was collected using zig-zag traverses alongside a constant stream of GPS data collected through a Trimble R10 GPS, enabling the collected data to be spatially georeferenced without the need for a pre-determined grid system. The data and measured tracks were collected through the data acquisition unit MXPDA and visualised through a tablet PC mounted to the cart.

5.6 Care was taken to attempt to avoid metal obstacles present within the survey area, such as metal objects within and adjacent to the survey area as gradiometer survey is affected by 'above-ground ferrous disturbance' and avoiding these improves the overall data quality and results obtained.

5.7 The data was downloaded via USB and converted using DLMGPS and Geoserver before being processed (compensated) using MAGNETO® 3.0 software. The details of these processed can be found in Appendices 2 and 3.

5.8 Interpretations of the data were created as layers in ArcGIS Pro and the technical terminology used to describe the identified features can be found in Appendix 4.

6 Results and Interpretation

6.1 The magnetic survey results have been visualised as greyscale plots, with the processed data plotted at -1nT to 2nT as seen in Figures 3 and 5.1-5.. An interpretation of the data can be seen in Figures 4 and 6.1-5. Figure 7 shows minimally processed data plotted as XY traces at 50nT/cm at A3.

6.2 Appendix 4 contains a guide to the interpretation categories employed and the logic used to assign anomalies to specific classes, as well as a short discussion of how past human activity results in these anomalies, however, some important points are noted below:

6.3 The classes have three sub-types (generally): anomalies (typically indicated by a solid colour polygon), spreads (a stippled polygon) and trends (a line with a colour matching the polygon colour). *Anomalies* refer to distinct changes in the survey data which suggest an abrupt boundary between materials below ground, such as a cut feature with a magnetically contrasting fill. *Spreads* of enhanced material refer to diffuse areas of altered magnetic contrast which suggest a localised spread of material with a magnetic contrast within the topsoil or ploughzone. Linear *trends* are less distinct and are typically visible as linear patterning in the overall texture of the data. A common example of these is the striping effect caused by recent ploughing.

6.4 Anomalies placed in the '*Uncertain'* class may have an archaeological origin, but other explanations are equally likely. Where any particular interpretation is *more* likely than others, the anomaly is assigned to that class.

6.5 The definite '*Archaeology'* class is only used for anomalies with no other possible explanation, either due to their diagnostic characteristics or because they are corroborated by other sources such as previous interventions within the survey area. Anomalies with magnetic characteristics or morphologies that suggest an archaeological origin will generally be assigned to the '*Possible Archaeology'* class.

6.6 The anomaly type '*Ferrous Spike'* is assigned to strong dipolar anomalies which cover a small spatial area and have a characteristic appearance in the XY traces of the survey data. These are strongly likely to be of recent origin in the form of magnetic or ferrous debris within the topsoil; 'spikes' of other origin will be assigned to their appropriate classification.

6.7 A distinction is made between modern *disturbance* from strongly ferrous materials within or adjacent to the survey area, such as the strong dipolar 'halos' produced by services like gas mains, and spreads of material within the topsoil causing noise that is assumed to have a recent origin. Generally speaking, '*Modern Disturbance'* occurs at a distance from a magnetic source, whereas *modern magnetic spreads/debris* are related to material directly at that location.

6.8 Generally, only anomalies (or groups thereof) of a likely archaeological or historical origin have been assigned an anomaly number on the interpretation figures. However, anomalies interpreted as resulting from other processes that are integral to the discussion of the results have also been assigned anomaly numbers.

6.9 Overall, the dataset demonstrates a relatively uniform magnetic background across the survey area, reflecting the underlying geology and soils. The distinctive 'speckled' nature of the greyscale plot (Figure xx) is typical of both the underlying sandstones and the superficial deposits recorded within the survey area. As discussed in section 2 above, the Red Crag formation sedimentary geology produces iron panning when weathered and oxidised, resulting in small but strongly ferrous concretions in the soils and sub-soils that develop over it. The Lowestoft Formation till also contains numerous inclusions of varying sizes of igneous origin, which will have some degree of

thermoremanent magnetisation. Similarly, the fluvially emplaced Kesgrave Catchment material contains igneous material (though of lower iron content than the Lowestoft Formation till). These materials combine in varying proportions across the survey area and have resulted in the speckled appearance of the survey results, with many small dipolar or discretely positive anomalies blanketing the area. However, though these small anomalies are ubiquitous, they are not overwhelmingly strong, and the soils and geology of the area suggest that magnetic enhancement related to human activity in the survey area would be as strong, or stronger, and therefore visible against this backdrop. This is borne out by the identification (see below) of anomalies associated with boundaries and footpaths depicted on historic maps.

Archaeology & Possible Archaeology

6.10 No anomalies of probable or possible archaeological origin have been identified within the survey results, though the presence of anomalies of uncertain origin (discussed below), means that an archaeological origin for some of these uncertain identifications remains possible, though unlikely. Overall, based on the identification of anomalies associated with features depicted on historic maps, and the discontinuous and ephemeral nature of the uncertain anomalies, it is likely that had significant archaeological features been present within the survey area, they would have been detected by and identified within the survey.

Unclear Origins

6.11 The survey area contains anomalies of uncertain origin of two different types: linear groups. Spreads or trends which are ephemeral or discontinuous in character and which do not relate to historical features or to natural variations in the soils and geology, and discrete positive or dipolar anomalies that are not obviously ferrous in nature.

6.12 The former of these may relate to a variety of processes or features including recent or historical agricultural activity, boundaries, or other linear features that pre-date available maps (including from periods of archaeological interest), or natural variations and processes in the subsurface. These anomalies are too weak or discontinuous to reliably classify.

6.13 The discrete positive anomalies **[1A, 1B, 2A, 2B, 3A]**, many of which have an unusual negative magnetisation in their centre, are similarly classified as uncertain in their origin, but are in this case considered to more likely relate to the soils and geology than to anthropogenic activity of any date. This identification is however not certain, and it remains possible these anomalies relate to pits or other features with unusual fills. One group of these run in an somewhat evenly spaced line, oriented north-west south-east **[1A, 2A]** and are perhaps more likely to be of human origin, though their apparent organisation may be co-incidental.

Historical Features

6.14 Several former field boundaries have been detected within the survey area and have been identified as such based on the form and morphology of the geophysical anomalies as well as their correlation with features recorded on historical maps.

6.15 Anomalies interpreted as former field boundaries include narrow linear anomalies aligned parallel with the extant boundaries in Field 2 **[2C]**. These are categorised using solid colour polygons and appear as weakly positive anomalies probably indicative of narrow ditches backfilled with relatively magnetically homogenous material. In the southeastern quadrant of Field 1, a similar linear anomaly **[1C]** has been detected and is probably caused by a similar feature; although its northern end curves away from the boundary shown on 19th-century OS maps, it does not appear to extend beyond the NNW-SSE boundary at its northern end and is likely to form part of this enclosure-period field pattern.

Agricultural

6.16 There are trends in the survey results that appear to relate to recent or historical ploughing regimes, but the ridge and furrow cultivation identified in the LiDAR survey was not visible in the geophysical survey results, possibly as an artefact of the direction of data collection. The ploughing trends have only been drawn indicatively in the interpretation to avoid overwhelming the other features.

Non – Archaeology

6.17 The expected magnetic disturbance associated with modern ferrous infrastructure at field margins is present in some places but poses no significant obstacle to the interpretation of the survey results.

6.18 Bands of variation in the character of the speckling have been identified as geological or natural in origin and relate to variations in the composition of the superficial geology as discussed in section 2. This is particularly noticeable where the ground drops towards the stream in the northeastern edge of survey area 3, where increased erosion has made these variations more apparent **[3B]**.

7 Conclusion

7.1 The survey results largely confirm the assessment made in the Heritage Impact Assessment that the survey area has generally been in continuous agricultural use for a long period, likely back into the medieval period.

7.2 There is no evidence of substantial archaeological features in the survey results, though the presence of anomalies of unclear origin means that the presence of archaeological material cannot be completely ruled out. It is also possible that there are buried features of archaeological interest which have not developed a magnetic contrast, and so cannot be detected by magnetic methods.

7.3 The geology of the survey area has produced an unusual magnetic environment, but this has not impeded the survey interpretation. The majority of the anomalies identified in the results relate to known boundaries and paths depicted on historic maps, and to natural variations within, or inclusions within the sub-surface that are derived from natural processes. Modern debris or infrastructure has had a negligible impact on the results.

7.4 In assessing the results of the geophysical survey against the specific aims set out in Section 4:

- The survey has succeeded in locating, recording, and characterising surviving sub-surface remains within the Site, though more remains may be present that are not suitable for detection using magnetic methods.
- The survey has resulted in a comprehensive report and archive.

8 Statement of Indemnity

8.1 Although the results and interpretation detailed in this report have been produced as accurately as possible, it should be noted that the conclusions offered are a subjective assessment of collected datasets.

8.2 The success of a geophysical survey in identifying archaeological remains can be heavily influenced by several factors, including geology, seasonality, field conditions and the properties of the features being detected. Therefore, the geophysical interpretation may only reveal certain archaeological features and not produce a complete plan of all the archaeological remains within a survey area.

9 Archive Deposition

9.1 In accordance with professional standard practice an online OASIS database record will be completed for submission to the HER and Archaeological Data Service (ADS) (Appendix 2).

9.2 One digital and hard copy of the report and data will be submitted to the relevant Historic Environment Record (HER) at the Client's discretion.

9.3 A digital copy of the report and data will also be submitted to the ADS at the Client's discretion.

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*Denotes a reference that occurs in Appendix 2 rather than the main body of this report.

11 Figures

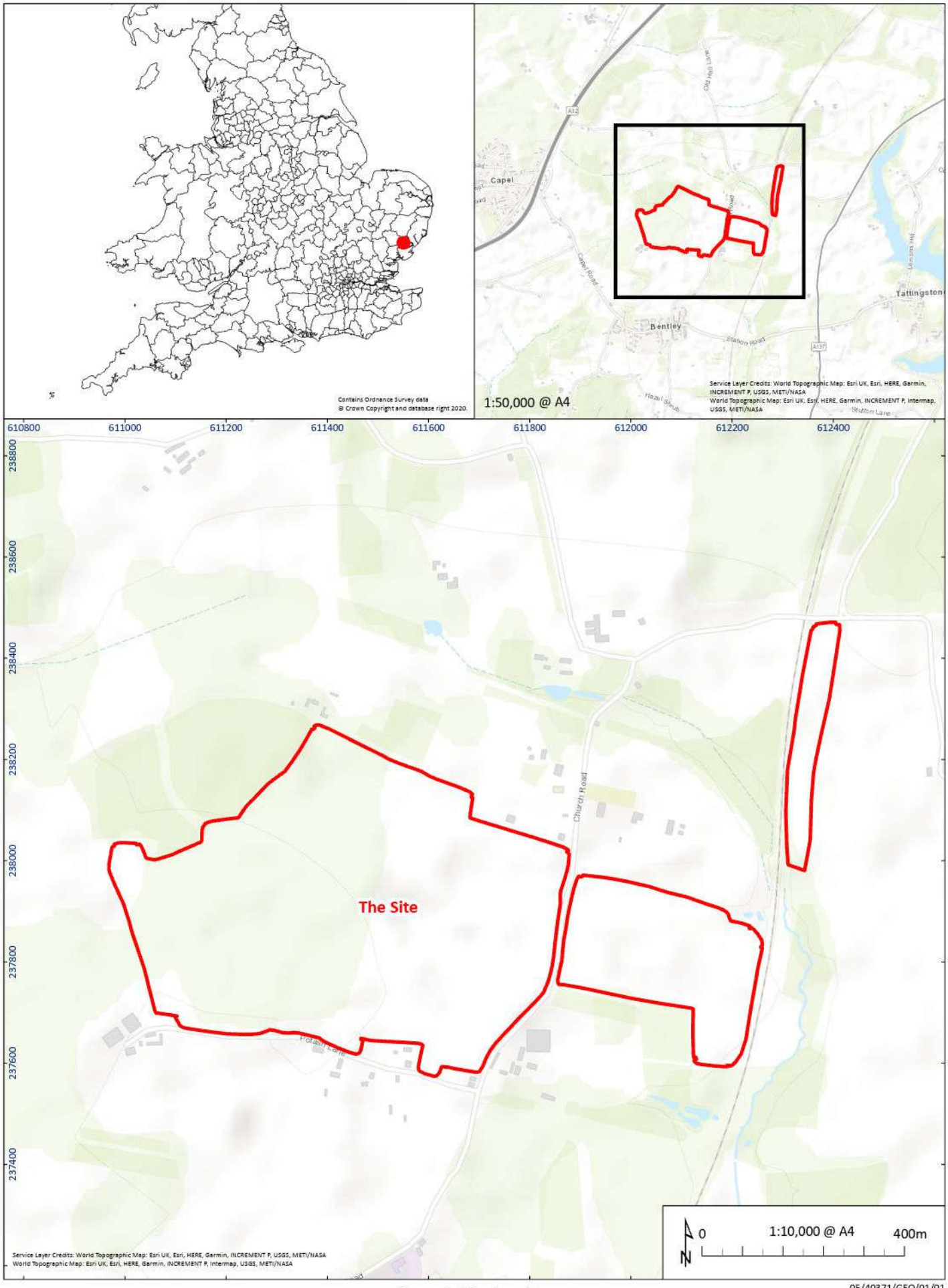
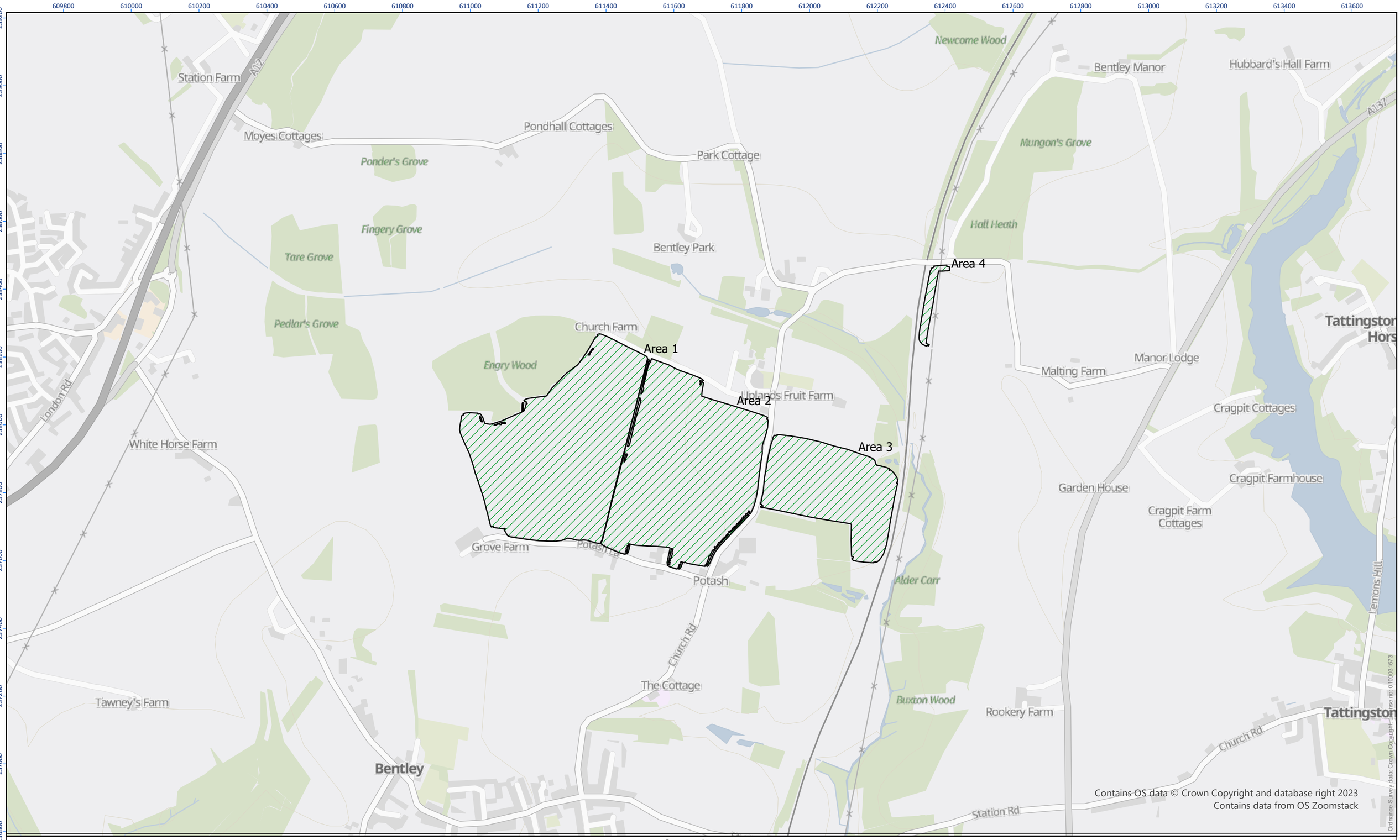


Figure 1: Site Location

05/40371/GEO/01/01



Survey Areas

Figure 2

Surveyed

N

0 180m

Scale: 1:10,000@ A3

Drawing Number: 05/40371/GEO/2/01	
Created by: AC	Date: 23/11/2023
Checked by: SO	Date: 23/11/2023
Approved by: SO	Date: 23/11/2023

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Processed Gradiometer Data – Greyscale Plot - Overview

Figure 3	2nT / -1nT	N; 0 – 90m; Scale: 1:4,500 @ A3	Drawing Number: 05/40371/GEO/3/01	AOC Archaeology Group
			Created by: AC Date: 23/11/2023	
			Checked by: SO Date: 23/11/2023	
			Approved by: SO Date: 23/11/2023	

610800 611000 611200 611400 611600 611800 612000 612200 612400

238400 238200 238000 237800 237600

Bentley Park
Church Farm
Engry Wood
Church Rd
Cemetery
Uplands Fruit Farm
Area 1
Area 2
Area 3
Area 4
Area 4
Potash La
Grove Farm
Potash La
Potash
Church Rd
Alder Carr

Interpretation of Processed Gradiometer Data - Overview

Figure 4

- Anomaly (Historic Feature)
- Spread (Historic Feature)
- Anomaly (Unclear Origin)
- Spread (Unclear Origin)
- Anomaly (Agricultural)
- Spread (Geology/Natural)
- Spread (Magnetic Disturbance)
- Anomaly (Ferrous/Iron Spike)
- Spread (Ferrous/Iron Spike)
- Linear Trend (Historic Feature)
- Linear Trend (Unclear Origin)
- Linear Trend (Agricultural, Ploughing)
- No Access
- Outstanding
- Surveyed Area
- Unsuitable

N

0 90m

Scale: 1:4,500 @ A3

Drawing Number:	05/40371/GEO/4/02
Created by: AC, KA	Date: 01/12/2023
Checked by: SO	Date: 01/12/2023
Approved by: SO	Date: 01/12/2023

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611000 611200 611400

238000

237800

Area 1

Processed Gradiometer Data – Greyscale Plot - Detailed

Figure 5.1

2nT
-1nT

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/5.1/01	
Created by: AC	Date: 23/11/2023
Checked by: SO	Date: 23/11/2023
Approved by: SO	Date: 23/11/2023

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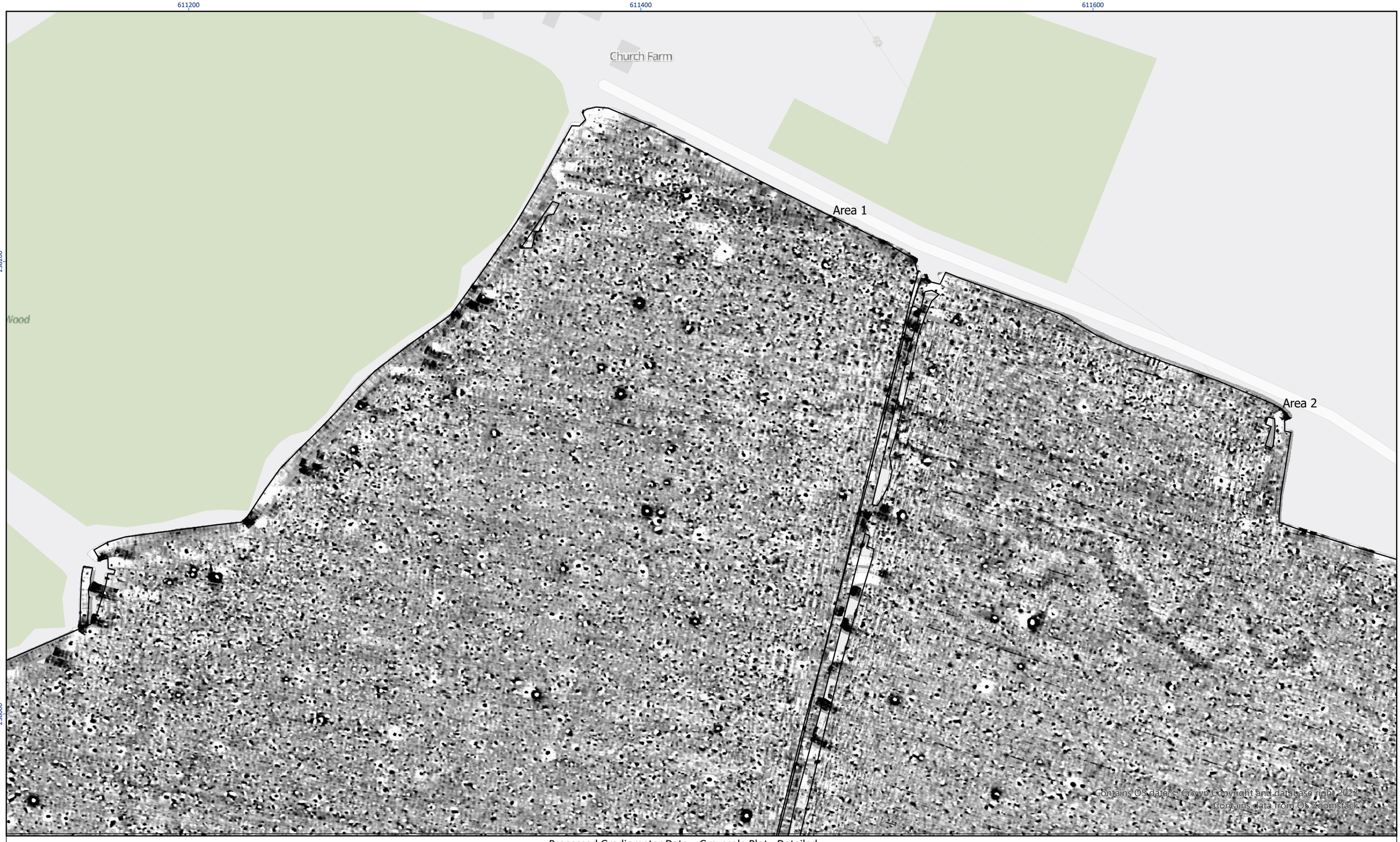

Processed Gradiometer Data – Greyscale Plot - Detailed

Figure 5.2

2nT
-1nT

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/5.2/01	
Created by: AC	Date: 23/11/2023
Checked by: SO	Date: 23/11/2023
Approved by: SO	Date: 23/11/2023

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611600 611800 612000

238000

237800

St Mary's Church

Cemetery

Uplands Fruit Farm

Church Rd

Area 2

Area 3

Processed Gradiometer Data – Greyscale Plot - Detailed

Figure 5.3

2nT

-1nT

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/5.3/01	
Created by: AC	Date: 23/11/2023
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611800 612000 612200

237800

237600

Area 2

Area 3

Church Rd

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Processed Gradiometer Data – Greyscale Plot - Detailed

Figure 5.4

2nT

-1nT

N

0 30m

Scale: 1:1,500 @ A3

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Processed Gradiometer Data – Greyscale Plot - Detailed

Figure 5.5

2nT
-1nT

N

0 30m

Scale: 1:1,500 @ A3

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Created by: AC	Date: 23/11/2023
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Processed Gradiometer Data – Greyscale Plot - Detailed

Figure 5.6

2nT
-1nT

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/5.6/01	
Created by: AC	Date: 23/11/2023
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611000 611200 611400

238000 237800

Area 1

Area 2

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Interpretation of Processed Gradiometer Data - Detailed

Figure 6.1

- Spread (Historic Feature)
- Anomaly (Unclear Origin)
- Spread (Unclear Origin)
- Spread (Geology/Natural)
- Spread (Magnetic Disturbance)
- Anomaly (Ferrous/Iron Spike)
- Spread (Ferrous/Iron Spike)
- Surveyed Area

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/6.1/02	
Created by: AC, KA	Date: 01/12/2023
Checked by: SO	Date: 01/12/2023
Approved by: SO	Date: 01/12/2023

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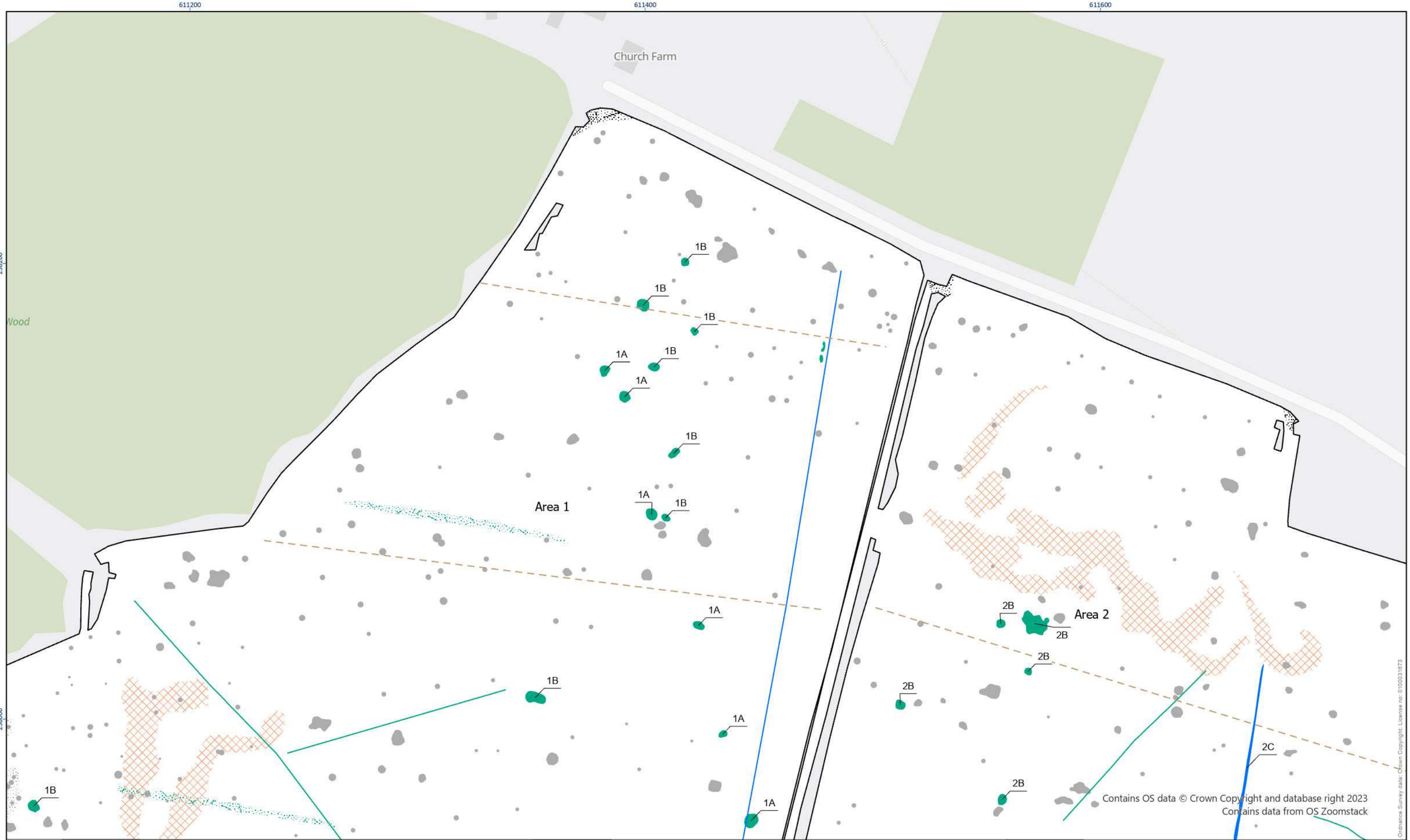

Interpretation of Processed Gradiometer Data - Detailed

Figure 6.2

- Anomaly (Historic Feature)
- Anomaly (Unclear Origin)
- Spread (Unclear Origin)
- Spread (Geology/Natural)
- Spread (Magnetic Disturbance)
- Anomaly (Ferrous/Iron Spike)
- Spread (Ferrous/Iron Spike)
- Surveyed Area

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/6.2/02	
Created by: AC, KA	Date: 01/12/2023
Checked by: SO	Date: 01/12/2023
Approved by: SO	Date: 01/12/2023

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611600 611800 612000

238000 237800

Area 1 Area 2 Area 3

St Mary's Church Cemetery Uplands Fruit Farm Church Rd

2B 2C 3A 3B

Interpretation of Processed Gradiometer Data - Detailed

Figure 6.3

- Anomaly (Historic Feature)
- Spread (Historic Feature)
- Anomaly (Unclear Origin)
- Spread (Unclear Origin)
- Spread (Geology/Natural)
- Spread (Magnetic Disturbance)
- Anomaly (Ferrous/Iron Spike)
- Spread (Ferrous/Iron Spike)
- Surveyed Area

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number:	05/40371/GEO/6.3/02
Created by: AC, KA	Date: 01/12/2023
Checked by: SO	Date: 01/12/2023
Approved by: SO	Date: 01/12/2023

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611800 612000 612200

237800 237600

Area 2

Area 3

Church Rd

2B 2B 2B

2C

3A 3A 3A 3A 3A 3A 3A 3A 3A

3B

Interpretation of Processed Gradiometer Data - Detailed

Figure 6.4

- Anomaly (Historic Feature)
- Spread (Historic Feature)
- Anomaly (Unclear Origin)
- Spread (Unclear Origin)
- Anomaly (Agricultural)
- Spread (Geology/Natural)
- Spread (Magnetic Disturbance)
- Anomaly (Ferrous/Iron Spike)
- Spread (Ferrous/Iron Spike)
- Surveyed Area

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number:	05/40371/GEO/6.4/02
Created by: AC, KA	Date: 01/12/2023
Checked by: SO	Date: 01/12/2023
Approved by: SO	Date: 01/12/2023

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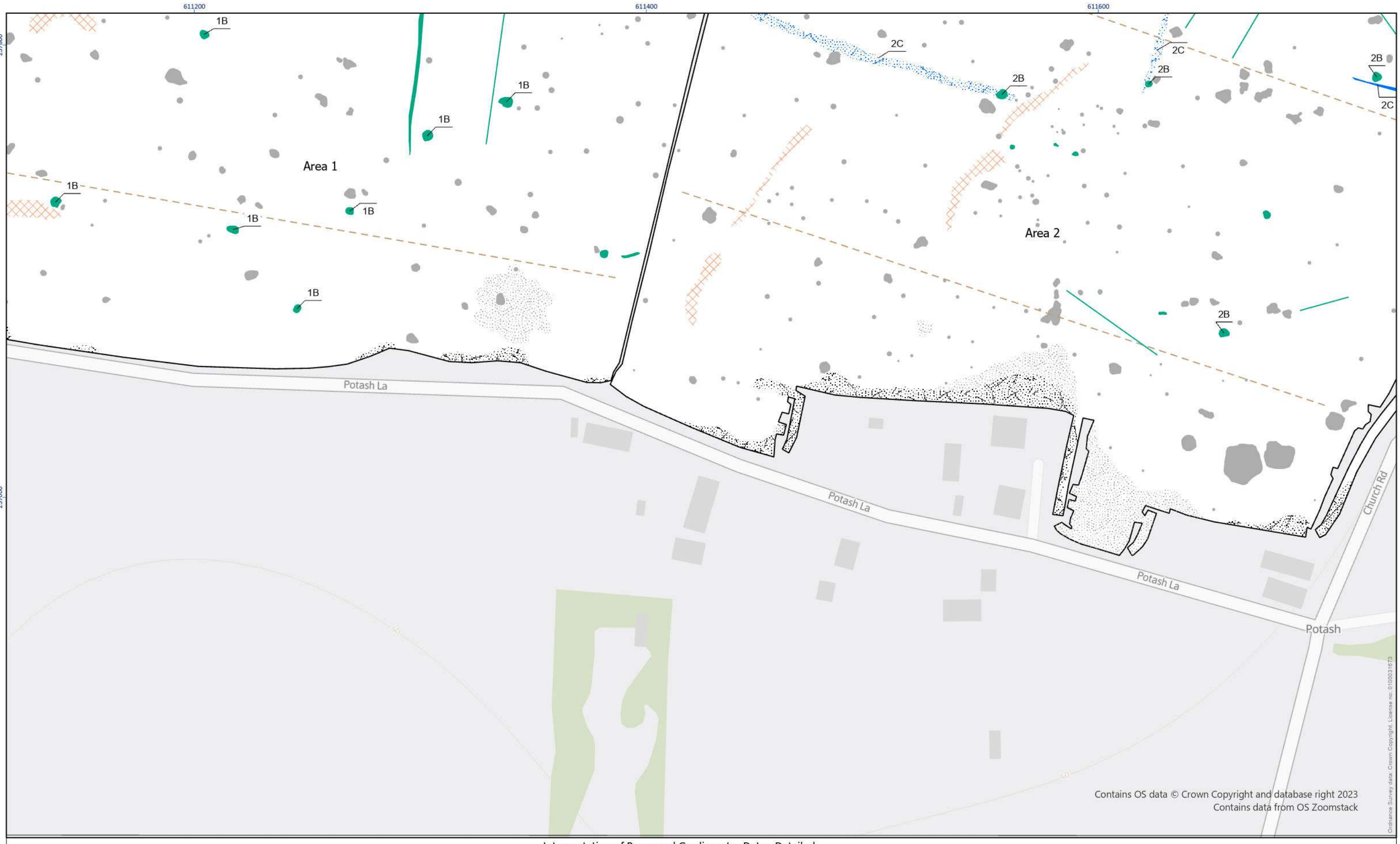

Interpretation of Processed Gradiometer Data - Detailed

Figure 6.5

- Anomaly (Historic Feature)
- Spread (Historic Feature)
- Anomaly (Unclear Origin)
- Spread (Geology/Natural)
- Spread (Magnetic Disturbance)
- Anomaly (Ferrous/Iron Spike)
- Spread (Ferrous/Iron Spike)
- Surveyed Area

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/6.5/02	
Created by: AC, KA	Date: 01/12/2023
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612200 612400 612600

238400

238200

Area 4

Area 4

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Interpretation of Processed Gradiometer Data - Detailed

Figure 6.6

- Anomaly (Unclear Origin)
- Spread (Magnetic Disturbance)
- Anomaly (Ferrous/Iron Spike)
- Unsurveyed Area
- Surveyed Area

N

0 30m

Scale: 1:1,500 @ A3

Drawing Number: 05/40371/GEO/6.6/02	
Created by: AC, KA	Date: 01/12/2023
Checked by: SO	Date: 01/12/2023
Approved by: SO	Date: 01/12/2023

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