Defensive Links: Burntisland's Military Past

Gradiometer and Ground Penetrating Radar Survey Report

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Summary

A gradiometer survey was conducted over land know as 'The Links' in Burntisland (centred on NGR NT 23553 85897), with smaller areas of ground penetrating radar used for engagement within the wider survey area. The project was commissioned by Fife Council with the aim of establishing the presence, or otherwise, and nature of detectable archaeological features.

The geophysical survey covered an area of 4.24 ha and was undertaken between 20 – 24 March 2023.

Weak parallel linear anomalies are noted across the site. The majority of these likely pertain to ditches, possibly archaeological in origin or perhaps modern drainage. A pair of parallel linear anomalies indicate roadside ditches associated with the former 'Petty-cur and Kinghorn' road displayed in the Elphinstone 1745 map.

A former World War 2 air raid shelter marked on a map discovered in a loft clearance, and digitally available on the Burntisland heritage group website has been identified in the north-west of the site. There is some evidence for another structure to the north-east of this.

There is evidence of landscaping across much of the site. It is not clear whether this is modern or relates to the 19th century links golf course.

Numerous strong dipolar, and high amplitude, anomalies have been identified across the site. These indicate modern services and pathways

Acknowledgements

Wessex Archaeology would like to thank Fife Council for commissioning the geophysical survey. The assistance of Morag Paterson is gratefully acknowledged in this regard.

The fieldwork was undertaken by Brett Howard, who processed and interpreted the geophysical data, wrote the report, and produced the illustrations. The geophysical work was quality controlled by Rok Plesnicar and the project was managed on behalf of Wessex Archaeology by Tom Richardson.

Defensive Links: Burntisland's Military Past

Gradiometer and Ground Penetrating Radar Survey Report

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology in conjunction with Burntisland Heritage Trust, conducted three days of geophysical survey on 'The Links', Burntisland (centred on NGR NT 23553 85897) (**Figure 1**) as part of the project Defensive Links: Burntisland's Military Past. Fife Council, National Lottery Heritage Fund Scotland, Historic Environment Scotland, and Wessex Archaeology funded this project. The survey forms part of a programme of archaeological works including workshops on research skills, historic building recording, photogrammetry, aerial imagery, and report writing.

1.2 Scope of document

1.2.1 This report presents a brief description of the methodology followed by the detailed survey results and the archaeological interpretation of the geophysical data. In format and content, it conforms to current best practice, as well as to the guidance outlined in *Management of Research Projects in the Historic Environment* (MoRPHE, Historic England 2015), the Chartered Institute for Archaeologists' (CIfA) *Standards and guidance for archaeological geophysical survey* (CIfA 2014a), European Archaeologiae Consilium recommendations (Schmidt *et al.* 2015) and Historic England *Thesauri* (English Heritage 2014).

1.3 The site

1.3.1 The site is in the eastern portion of the town of Burntisland, on the northern shore of the Firth of Forth. Burntisland is situated between the towns of Aberdour to the West and Pettycur and Kinghorn to the East. The geophysical survey was comprised of a detailed gradiometer survey and ground penetrating radar (GPR) survey over 5.5 ha of Burntisland Links. The site is bounded by Kinghorn Road to the north, a railway line to the south and east, a car park and path to the west, and further links to the north-east.

1.3.2 The solid geology comprises Pittenweem Formation – Sedimentary rock cycles, strathclyde group type. Sedimentary bedrock formed between 337 and 330.9 million years ago during the Carboniferous period (BGS 2023).

1.3.3 The soils underlying the site are likely to consist of blown sand. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period (BGS 2023).

2 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

2.1.1 The following archaeological and historical background covers the history and development of Burntisland and 'The Links' using publicly available online resources and in-house resources. Information has been gathered from Fife Council, CANMORE from Historic

Environment Scotland (HES). Additional sources of information are referenced, as appropriate.

Summary of the archaeological resource

2.1.2 'The Links' park and gardens is set within a conservation area (CA134) meaning it 'is an area of special architectural or historical interest, the character of which it is desirable to preserve or enhance'.

2.1.3 Within the conservation area there are 109 listed buildings, 2 Category A, 33 Category B and 74 Category C.

Romano-British

2.1.4 Less than 2 km to the north-west of Burntisland is Dunearn Hill, upon which is an Early Iron Age fort alongside a post-Roman defensive enclosure. An account (Canmore ID 52856) also states that Dunearn Hill was known as 'Agricolas camp, or garrison'.

2.1.5 It is thought that Burntisland has been under some form of occupation since at least the Roman period. Agricola is said to have chosen Burntisland as a naval base in AD 83. A theory that is continued in Chalmers Caledonia who suggests that the Roman fleet found a harbour at Burntisland in AD 83.

Medieval

2.1.6 The scheduled monument Kirkton, Old Parish Church (SM828) can be found 1 km north-west of the survey area. This church was thought to have been originally constructed in the 13th century but rebuilt in the 15th century.

Post-Medieval

2.1.7 In 1541, Burntisland was granted burgh status. At this time the harbour was known as 'Brint Lland' and had been little more than a fishing settlement belonging to the Abott of Dunfermline's estate of Wester Kinghorn. Merchant trade began to flourish and in 1578 Burntisland was admitted to the Convention of Royal Burghs (Fife Council). The Links was granted by Royal Charter to the Burgh of Burntisland King James V. Highland games are held year-round on the site and are Scotland's second oldest games dating back to 1652.

2.1.8 In 1650 – 51 Burntisland was a Royal Burgh of historic significance and was possibly the most strategically important town in Scotland at the time. The town was the key to crossing the Forth and was an important location for Cromwell's army, however unable to defeat Burntisland's seaward defences they were forced to cross at Inverkeithing (A Tale of Two Maps (burntisland.net)).

2.1.9 A 1745 map of Burntisland produced by John Elphinstone, eldest son of the 9th Lord Elphinston, is an illustrative plan of Burntisland showing the town itself as a built area with two main streets to the east of the harbour and surrounded by a town wall on the north and east sides. Notable on the map to the east of the town wall in the area now known as 'The Links' is annotated 'Hessian camp'. This is in reference to the some 3000 to 3500 troops on reserve for the government campaign against the Jacobite's in 1745, who, following the Stuart defeat, left Burntisland in 1746.

2.1.10 During the 19th century The Links functioned as a golf course (Canmore ID 348512). This is shown on the 2nd edition of the OS 1:10560 map (1893-1912). Current OS maps denote The Links as a park.

2.1.11 The Links Common was further altered in the 19th century with the removal of the main road near the beach to Pettycur and the construction of the railway embankment.

2.1.12 Burntisland served as the northern station of the ferry across the Forth to Granton until the opening of the Forth Rail Bridge and extension in 1890. In 1876 the West Dock (Canmore ID 281006) opening and in 1901 the East Dock (Canmore ID 281004) opened.

3 METHODOLOGY

3.1 Introduction

3.1.1 The geophysical survey was undertaken by Wessex Archaeology's in-house geophysics team between 20 – 24 March 2023. Field conditions at the time of the survey were conducive throughout the period of survey. An overall coverage of 4.24 ha was achieved.

3.1.2 The methods and standards employed throughout the geophysical survey conform to current best practice, and guidance outlined by the Chartered Institute for Archaeologists' (CIfA 2014) and European Archaeologiae Consilium (Schmidt *et al.* 2015).

3.2 Project aims

3.2.1 The aims (or purpose) of the geophysical survey, in compliance with the CIfA' *Standards and guidance for archaeological geophysical survey* (CIfA 2014a), are:

- To determine, as far as is reasonably possible, the nature of the detectable archaeological resource within a specified area using appropriate methods and practices;
- To provide an opportunity for training in archaeological skills to members of the public and archaeology societies within the Edinburgh, Midlothian, and East Lothian areas; and
- To inform the scope and nature of any future heritage asset management strategy.

3.3 Project objectives

3.3.1 In order to achieve the above aims, the objectives of the geophysical survey are:

- To conduct a geophysical survey covering as much of the specified area as possible, allowing for on-site obstructions;
- To clarify the presence/absence of anomalies of archaeological potential; and
- Where possible, to determine the general nature of any anomalies of archaeological potential, including testing the validity of the cropmark assessment completed on aerial imagery.

3.4 Fieldwork methodology

Gradiometer survey

3.4.1 The detailed gradiometer survey was conducted using a non-magnetic cart fitted with four SenSys FGM650/3 magnetic gradiometers. The instrument has four sensor assemblies fixed horizontally 1 m apart allowing four traverses to be recorded simultaneously with an effective sensitivity of ±8 µT over ±1000 nT range. Data was collected at 100 Hz along transects spaced 1 m apart, in accordance with European Archaeologiae Consilium recommendations (Schmidt *et al.* 2015). Data was collected in the zigzag method.

3.4.2 The cart-based gradiometer system used a Leica Captivate RTK GNSS instrument, which receives corrections from a network of reference stations operated by the Ordnance Survey (OS) and Leica Geosystems. Such instruments allow positions to be determined with a precision of 0.02 m in real-time and therefore exceeds European Archaeologiae Consilium recommendations (Schmidt *et al.* 2015).

3.5 Data processing

3.5.1 Data from the survey were subjected to minimal correction processes. These comprise a 'Destripe' function (±5 nT thresholds), applied to correct for any variation between the sensors, and an interpolation used to grid the data and discard overlaps where transects have been collected too close together.

3.5.2 Further details of the geophysical and survey equipment, methods and processing are described in **Appendix 1**.

Ground Penetrating Radar

3.5.3 The survey was conducted using an Impulse Radar Crossover 4080 system with a dual frequency antenna. The Crossover 4080 antenna is mounted on a rough terrain cart which is fitted with an odometer to measure horizontal distance along the ground surface. This was deployed across specific areas, with data collected along traverses spaced 0.5 m apart.

3.6 Data processing (GPR)

3.6.1 Where necessary data from the survey will be subject to common radar signal correction processes. These comprise amplitude and wobble correction of the radar profile to correct for variance in temperature and soil moisture content, background, and bandpass filtering to remove noise in the data from the surrounding area, and XYZ mean line to correct for mosaic effects from variance in the day-to-day conditions during the survey.

3.6.2 The approximate depth conversion for the 400 MHz antenna is shown in **Table 1**, and for the 250 MHz antenna in **Table 2** below. These have been calculated on the assumption that the GPR pulse through the ground is 0.163 m/ns. It is possible to determine more precisely the average velocity of the GPR pulse through the ground is excavated features at a known depth can be identified in the data. Radargrams were analysed for suitable hyperbolic reflections, which can be used to determine the velocity of the GPR pulse through the subsurface deposits.

3.6.3 Further details of the geophysical and survey equipment, methods and processing are described in **Appendix 2**.

Table 1 Relative velocity to depth conversion based on a dielectric constant of 3.37 for the 400 MHz antenna

Time Slice	Time (ns)	Depth (m)	Time Slice	Time (ns)	Depth (m)
1	0–1.27	0.-0.1	11	12.56-13.83	1.03-1.13
2	1.26-2.53	0.1-0.21	12	13.82-15.09	1.13-1.23
3	2.51-3.78	0.21-0.31	13	15.07-16.34	1.23-1.34
4	3.77-5.04	0.31-0.41	14	16.33-17.6	1.33-1.44
5	5.02-6.29	0.41-0.51	15	17.58-18.85	1.44-1.54
6	6.28-7.55	0.51-0.62	16	18.84-20.11	1.54-1.64
7	7.54-8.81	0.62-0.72	17	20.1-21.37	1.64-1.75
8	8.79-10.06	0.72-0.82	18	21.35-22.62	1.75-1.85
9	10.05-11.32	0.82-0.93	19	22.61-23.88	1.85-1.95
10	11.3-12.57	0.92-1.03	20	23.86-25.13	1.95-2.05

Table 2 Relative velocity to depth conversion based on a dielectric constant of 3.37 for the 250 MHz antenna

Time Slice	Time (ns)	Depth (m)	Time Slice	Time (ns)	Depth (m)
1	0–2.24	0.-0.1	11	22.19-24.43	0.95-1.04
2	2.22-4.46	0.09-0.19	12	24.41-26.65	1.04-1.14
3	4.44-6.68	0.19-0.28	13	26.63-28.87	1.14-1.23
4	6.66-8.9	0.28-0.38	14	28.85-31.09	1.23-1.33
5	8.88-11.12	0.38-0.47	15	31.07-33.31	1.33-1.42
6	11.1-13.34	0.47-0.57	16	33.29-35.53	1.42-1.52
7	13.32-15.56	0.57-0.66	17	35.51-37.75	1.51-1.61
8	15.54-17.78	0.66-0.76	18	37.73-39.97	1.61-1.7
9	17.75-19.99	0.76-0.85	19	39.95-42.19	1.7-1.8
10	1 19.97-22.21	0.85-0.95	20	42.17-44.41	1.8-1.89

4 GEOPHYSICAL SURVEY RESULTS AND INTERPRETATION

4.1 Introduction

Gradiometer

4.1.1 Results are presented as a series of greyscale plots and archaeological interpretations at a scale of 1:1500 (**Fig. 2 – 4**). The data are displayed at -2 nT (white) to +3 nT (black) for the greyscale images, but for the purposes of better display data is also presented at -6 nT (white) and 9 nT (black).

4.1.2 The interpretation of the dataset highlights the presence of potential archaeological anomalies, ferrous responses, burnt or fired objects, and magnetic trends (**Figure 4**). Full definitions of the interpretation terms used in this report are provided in **Appendix 3**.

4.1.3 Numerous ferrous anomalies are visible throughout the dataset. These are presumed to be modern in provenance and are not referred to, unless considered relevant to the archaeological interpretation.

4.1.4 It should be noted that small, weakly magnetised features may produce responses that are below the detection threshold of magnetometers. It may therefore be the case that more archaeological features may be present than have been identified through geophysical survey.

Ground penetrating radar

4.1.5 Results are presented as greyscale timeslice plots and archaeological interpretations at a scale of 1:800 (**Fig. 5** and **6**).

4.1.6 The 400 MHz antenna used in this survey has the potential of detecting features to a depth of 2 – 3 m in optimal conditions, however, the total depth reached varies depending on the specific conditions of each area.

4.1.7 All features are described in terms of their geophysical character. It is important to stipulate that all the depths referred to in this report are approximate levels below the current ground surface. The interpretation of the dataset highlights the presence of high or low amplitude anomalies corresponding to subsurface features (**Figure 6**).

4.1.1 It should be noted that small, waterlogged, or low contrast features may produce responses that are below the detection threshold the geophysical instruments. Excessive disturbance can also impede the ability of geophysical techniques to detect archaeology. It may therefore be the case that more archaeological features may be present than have been identified through these methods.

4.1.2 The geophysical survey techniques may also not detect all services present on site. This report and accompanying illustrations should not be used as the sole source for service locations and appropriate equipment (e.g. CAT and Genny) should be used to confirm the location of buried services before any trenches are opened on site.

4.2 Survey results and interpretation

Gradiometer results

4.2.1 Weak positive linear anomalies are present at **4000** (**Figure 4**). The anomalies present as two parallel linear anomalies, spaced between 4 m – 5 m apart and 2 m – 3 m in width, with an overall length of 83 m north-east to south-west. A possible continuation of the northern linear is present at **4001**, 24 m to the west. This anomaly is 16 m long and 2 m wide. These anomalies may collectively indicate the position of the former 'Petty-cur and Kinghorn' road displayed in the Elphinstone 1745 map. The anomalies may be associated with the corresponding roadside ditches. However, these anomalies are weak and may represent more modern landscaping activity or drainage.

4.2.2 Further weak linear anomalies are present across the site at **4002** – **4009** (**Figure 4**). These anomalies range in length but are between 2 m – 3 m wide and some appear to collectively form rectilinear features. These likely indicate ditch features, possibly associated with archaeological activity, such as boundary ditches. Equally, they may relate to drainage.

4.2.3 Several areas of increased magnetic response are present across the site, with one of specific interest at **4010** (**Figure 4**). The anomaly is 25 m long by 13 m wide and corresponds to the position of a former World War 2 air raid shelter marked on a map discovered in a loft clearance, and digitally available on the Burntisland heritage group website.

4.2.4 Further areas of increased magnetic response have been indicated across the site. These range in size but have been interpreted as activities related to landscaping, either modern or associated with the construction of the 19th century links.

4.2.5 Immediately adjacent to the east of **4010**, is a rectangular arrangement of ferrous anomalies, at **4011** (**Figure 4**). These cover an area of 25 m by 8 m and infer the footings of a structure. However, without further investigation it is not possible to interpret it further.

4.2.6 Strong dipolar linear anomalies are present across the site at **4012** (**Figure 4**). These correspond to modern pathways.

4.2.7 Numerous other dipolar linear anomalies have been identified across the site. These have been interpreted as modern services.

Ground penetrating radar results

4.2.8 The ground penetrating radar has identified numerous high amplitude linear anomalies across the areas surveyed (**Figure 6**). These vary in length and width but have been interpreted as modern services. No evidence of archaeological activity has been identified in the surveyed areas.

5 DISCUSSION

5.1.1 The geophysical survey has identified features pertaining to possible archaeological activity, landscaping practices, modern services, and pathways.

5.1.2 Weak parallel linear anomalies were noted across the site. The majority of these likely pertain to ditches, possibly archaeological in origin or perhaps modern drainage. However, a pair of parallel linear anomalies indicate roadside ditches associated with the former 'Petty-cur and Kinghorn' road displayed in the Elphinstone 1745 map.

5.1.3 A former World War 2 air raid shelter marked on a map discovered in a loft clearance, and digitally available on the Burntisland heritage group website has been identified in the north-west of the site. There is some evidence for another structure to the north-east of this.

5.1.4 There is evidence of landscaping across much of the site. It is not clear whether this is modern or relates to the 19th century links golf course.

5.1.5 Numerous strong dipolar, and high amplitude, anomalies have been identified across the site. These indicate modern services and pathways.

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National Library of Scotland (NLS) https://maps.nls.uk/geo/explore/ (accessed June 2023)

APPENDICES

Appendix 1 Survey equipment and data processing

Survey methods and equipment

The magnetic data for this project were acquired using a non-magnetic cart fitted with four SenSys FGM650/3 magnetic gradiometers. The instrument has four sensor assemblies fixed horizontally 1 m apart allowing four traverses to be recorded simultaneously. Each sensor contains two fluxgate magnetometers arranged vertically with a 0.6 m 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 an effective resolution of ±8 µT over ±1000 nT range. All of the data are then relayed to a CS35 tablet, running the MONMX program, which is used to record the survey data from the array of FMG650/3 probes at a rate of 100 Hz. The program also receives measurements from a GPS system, which is fixed to the cart at a measured distance from the sensors, providing real time locational data for each data point.

The cart-based system relies upon accurate GPS location data which is collected using a Leica Captivate system with rover and base station. This receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined with a precision of 0.02m in real-time and therefore exceed the level of accuracy recommended by European Archaeologiae Consilium recommendations (Schmidt et al. 2015) for geophysical surveys.

Data may be collected with a higher sample density where complex archaeological anomalies are encountered, to aid the detection and characterisation of small and ephemeral features. Data may be collected at up to 0.01 m intervals along traverses spaced up to 0.25 m apart.

Post-processing

The magnetic data collected during the survey is downloaded from the 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.

Typical data and image processing steps may include:

- GPS DeStripe – Determines the median of each transect and then subtracts that value from each datapoint in the transect within the defined window. May be used to remove the striping effect seen within a survey caused by directional effects, drift, etc.

- Discard Overlaps - Intended to eliminate a track(s) that have been collected too close to one another. Without this, the results of the interpolation process can be distorted as it tries to accommodate very close points with potentially differing values.

- GPS Base Interpolation – Sets the X & Y interval of the interpolated data and the track radius (area around each datapoint that is included in the interpolated result).

Appendix 2 Ground Penetrating Radar Survey Equipment and Data Processing

Survey Methods and Equipment

The ground penetrating radar (GPR) data were collected using a cart mounted shielded antennae with central frequencies suitable for the types of target being investigated. Lower frequency antennae are able to acquire data from deeper below the surface, whereas higher frequencies allow high resolution imaging of near-surface targets at the expense of deep penetration. The exact make and model of equipment varies.

The depth of penetration of GPR systems is determined by the central frequency of the antenna and the relative dielectric permittivity (RDP) of the material through which the GPR signal passes. In general, soils in floodplain settings may have a wide range of RDPs, although around 8 may be considered average, resulting in a maximum depth of penetration c. 2.5m with the GPR signal having a velocity of approximately 0.1m/ns.

The GPR beam is conical in shape, however, and whilst most of the energy is concentrated in the centre of the cone, the GPR signal illuminates a horizontal footprint, which becomes wider with increasing depth. At the maximum depth of the antenna, it becomes impossible to resolve any feature smaller than the horizontal footprint for the corresponding depth. The size of the footprint is dependent upon central frequency, and its size increases as the central frequency decreases.

The vertical resolution is similarly dependent upon the central frequency; for example, the 300MHz antenna, features of the order of 0.05m may be resolved vertically. Antennae with lower frequencies can therefore penetrate more deeply but are less resolute in both horizontal and vertical directions. Choice of antenna frequency is guided largely by the anticipated depth to the target and the required resolution.

GPR data for detailed surveys are collected along traverses of varying length separated by 0.5m with cross lines collected running perpendicular to these traverses at wider separations. The data sampling resolution is governed by the data logger and a minimum separation of 0.05m between traces is collected for all surveys.

Post-Processing

The radar data collected during the detail survey are downloaded from the GPR system for processing and analysis using commercial software (GPR Slice). 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.

Typical data and image processing steps may include:

- Gain – Amplifies GPR data based upon its position in the profile, which boosts the contrast between anomalies and background. A wobble correction is also applied during this step;
- Background Filter - is used to remove banding noises that are seen across the radargrams
- Bandpass – Removes GPR data lying outside a specified range, which removes high- and low-frequency noise.

Typical displays of the data used during processing and analysis:

- Timeslice – Presents the data as a series of successive plan views of the variation of reflector energy from the surface to the deepest recorded response. The variation in amplitude is represented using a greyscale with black indicating high amplitude and white indicating low amplitude responses.

- Radargram – Presents each radar profile in a vertical view with distance along the profile expressed along the x axis and depth along the y axis. The amplitude variation is expressed using a greyscale.

Appendix 3 Geophysical interpretation

The interpretation methodology used by Wessex Archaeology separates the anomalies into four main categories: archaeological, modern, agricultural, and uncertain origin/geological.

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.
- Possible archaeology – used for features which give a response, but which form no discernible pattern or trend.

The modern category is used for anomalies that are presumed to be relatively modern in date:

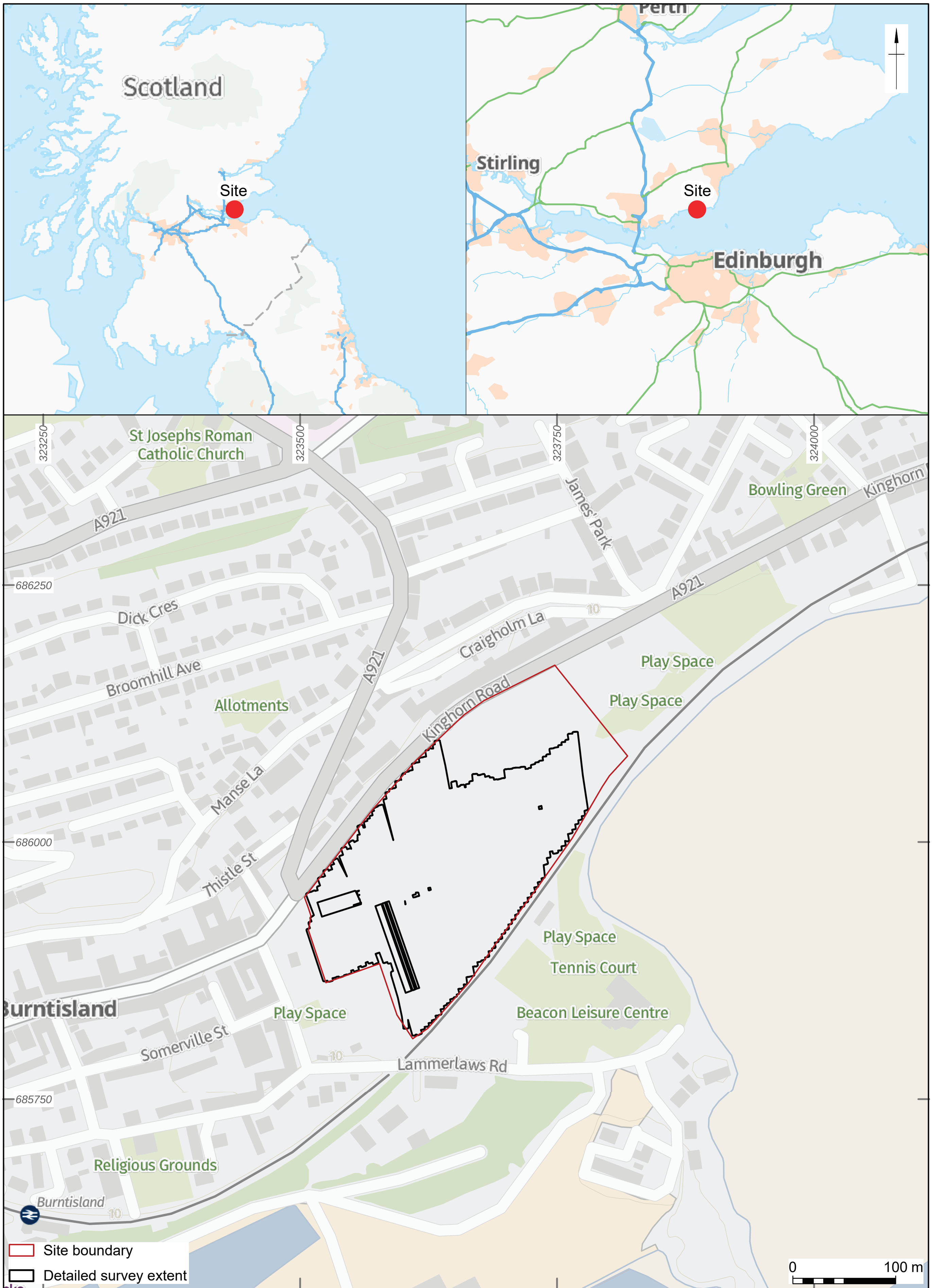
- Ferrous – used for responses caused by ferrous material. These anomalies are likely to be of modern origin.
- Modern service – used for responses considered relating to cables and pipes; most are composed of ferrous/ceramic material although services made from non-magnetic material can sometimes be observed.

The agricultural category is used for the following:

- Former field boundaries – used for ditch sections that correspond to the position of boundaries marked on earlier mapping.
- Ridge and furrow – used for broad and diffuse linear anomalies that are considered to indicate areas of former ridge and furrow.
- Ploughing – used for well-defined narrow linear responses, usually aligned parallel to existing field boundaries.
- Drainage – used to define the course of ceramic field drains that are visible in the data as a series of repeating bipolar (black and white) responses.

The uncertain origin/geological 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:

- 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.
- Superficial geology – used for diffuse edged spreads considered to relate to shallow geological deposits. They can be distinguished as areas of positive, negative, or broad bipolar (positive and negative) anomalies.



X: Projects 242580 GIS ArcPro 242580 working 242580 working.aprx

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Figure 1: Site location and survey extent

X: Projects 242580 GIS ArcPro 242580 working 242580 working.aprx

Site boundary

Detailed survey extent

-2 nT 3 nT

0 50 m

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Figure 2: Detailed gradiometer survey results - greyscale plot

X: Projects 242580 GIS ArcPro 242580 working 242580 working.aprx

Site boundary

Detailed survey extent

-6 nT 9 nT

0 50 m

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Figure 3: Detailed gradiometer survey results - greyscale plot

Site boundary
Detailed survey extent
Path
Possible archaeology
Increased response
Ferrous
Modern service

Coordinate system: OSGB 1936 British National Grid
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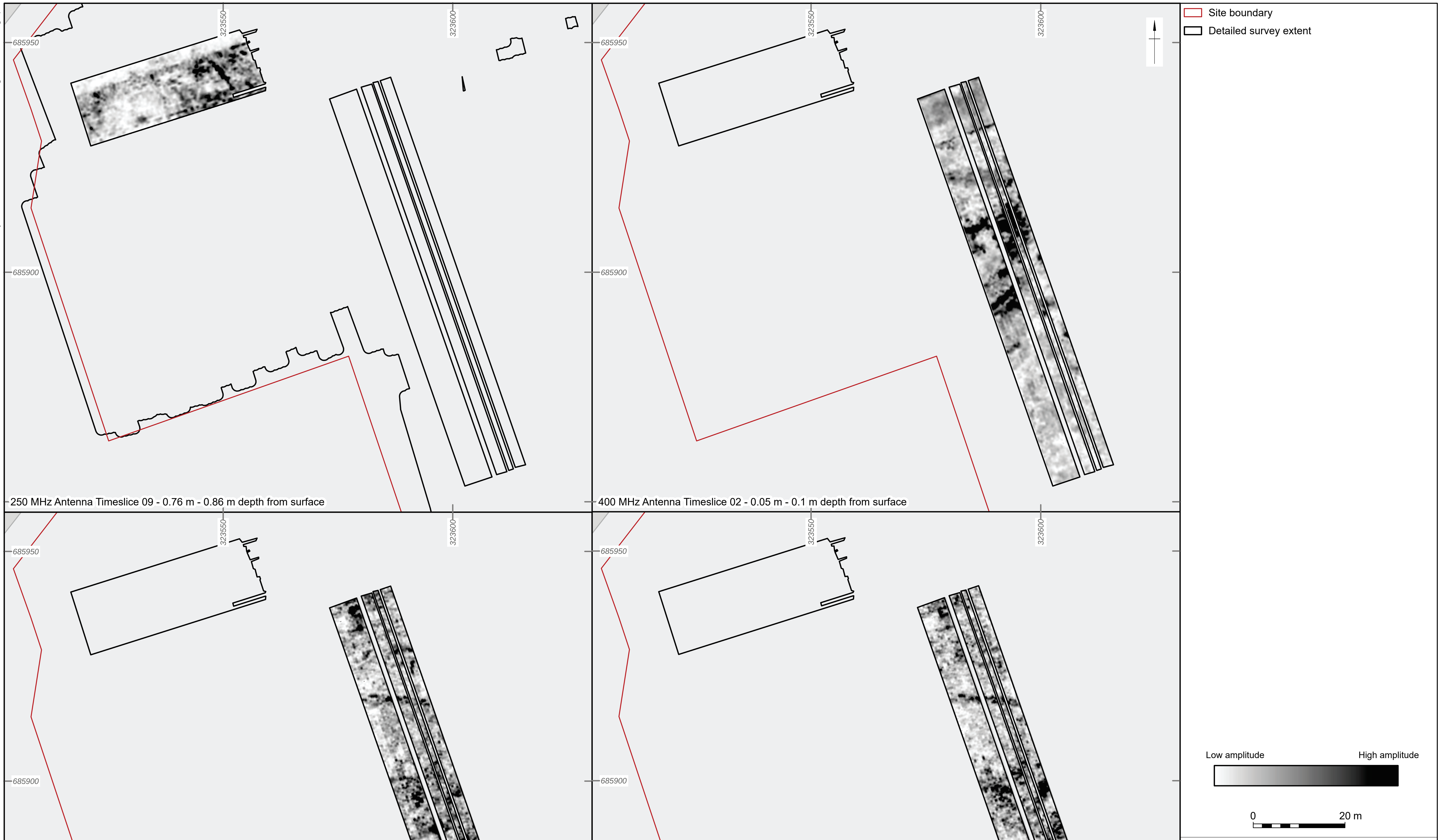
Scale: 1:1500 at A3 | Revision: 0

Figure 4: Detailed gradiometer survey results - interpretation



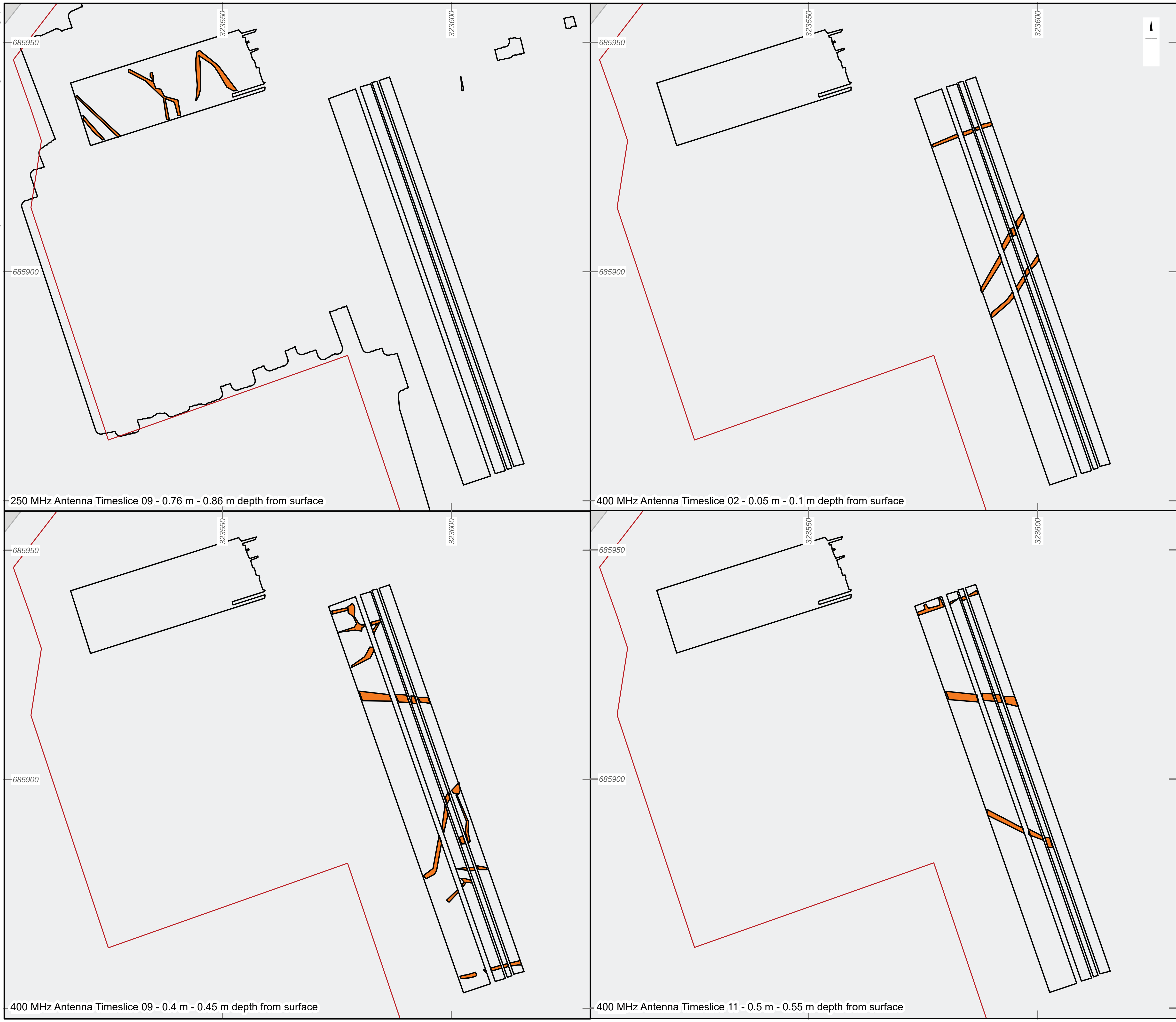
X: Projects 242580 GIS ArcPro 242580 working 242580 working.aprx

Coordinate system: OSGB 1936 British National Grid

Date: 05/07/2023 | Created by: BH
Scale: 1:800 at A3 | Revision: 0

Figure 5: Ground penetrating radar survey results: timeslices

X: Projects 242580 GIS ArcPro 242580 working 242580 working.aprx



Site boundary
Detailed survey extent
Modern service

0 20 m

Date: 05/07/2023	Created by: BH
Scale: 1:800 at A3	Revision: 0

Figure 6: Ground penetrating radar survey results: interpretation

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